CANADIAN WOODWORKER

Vol. 1.] MARCH 1908 [No. 1.

PRINCIPAL CONTENTS

See Index to Advertisements, page 38.

Address all Correspondence to the Publishers.
BIGGAR-WILSON LIMITED
79-80 Confederation Life Building.
TORONTO CANADA

John Ballantine & Company

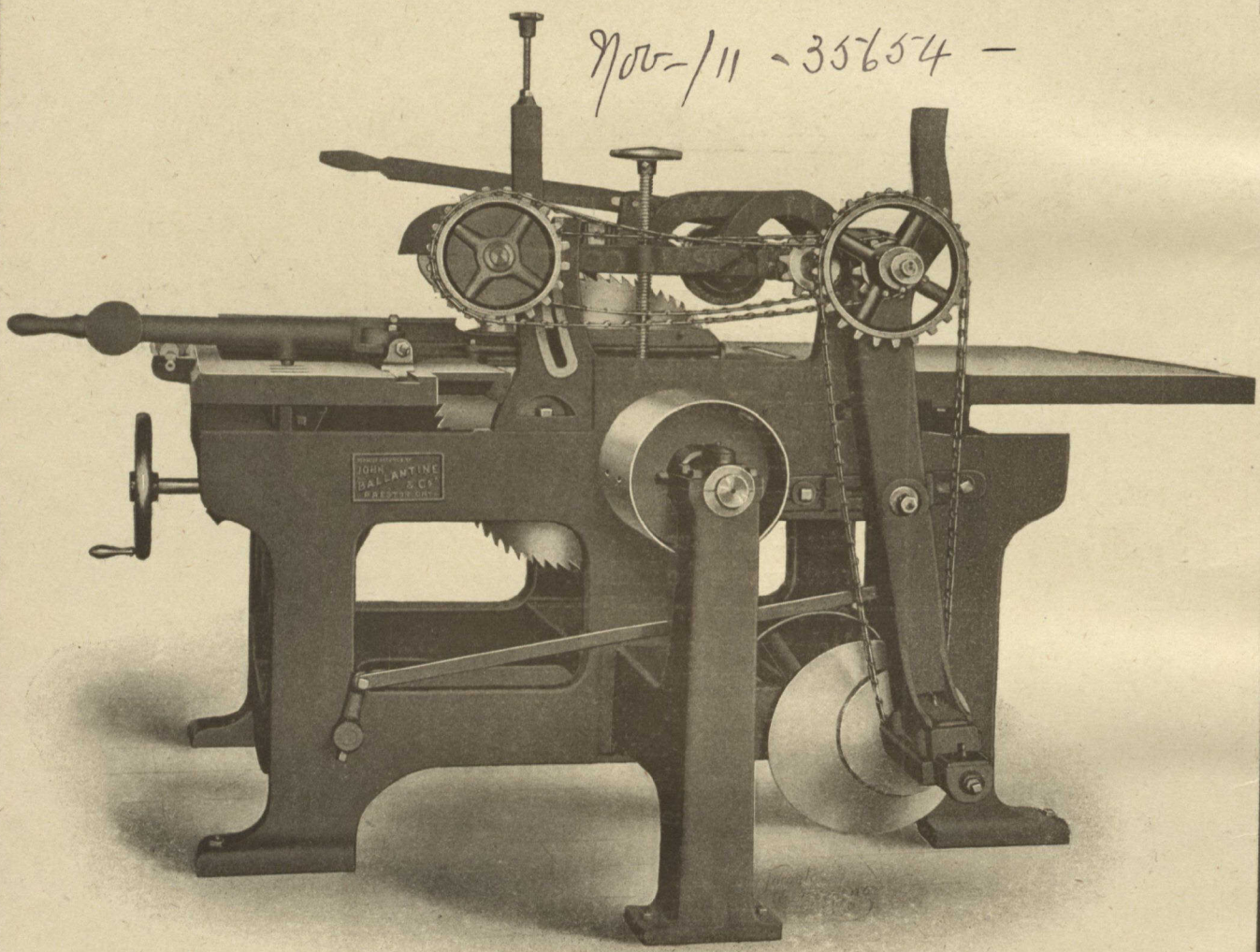
LIMITED

PRESTON, - ONTARIO

MANUFACTURERS OF SUPERIOR

WOODWORKING MACHINERY

Nov-/11 - 35654 -

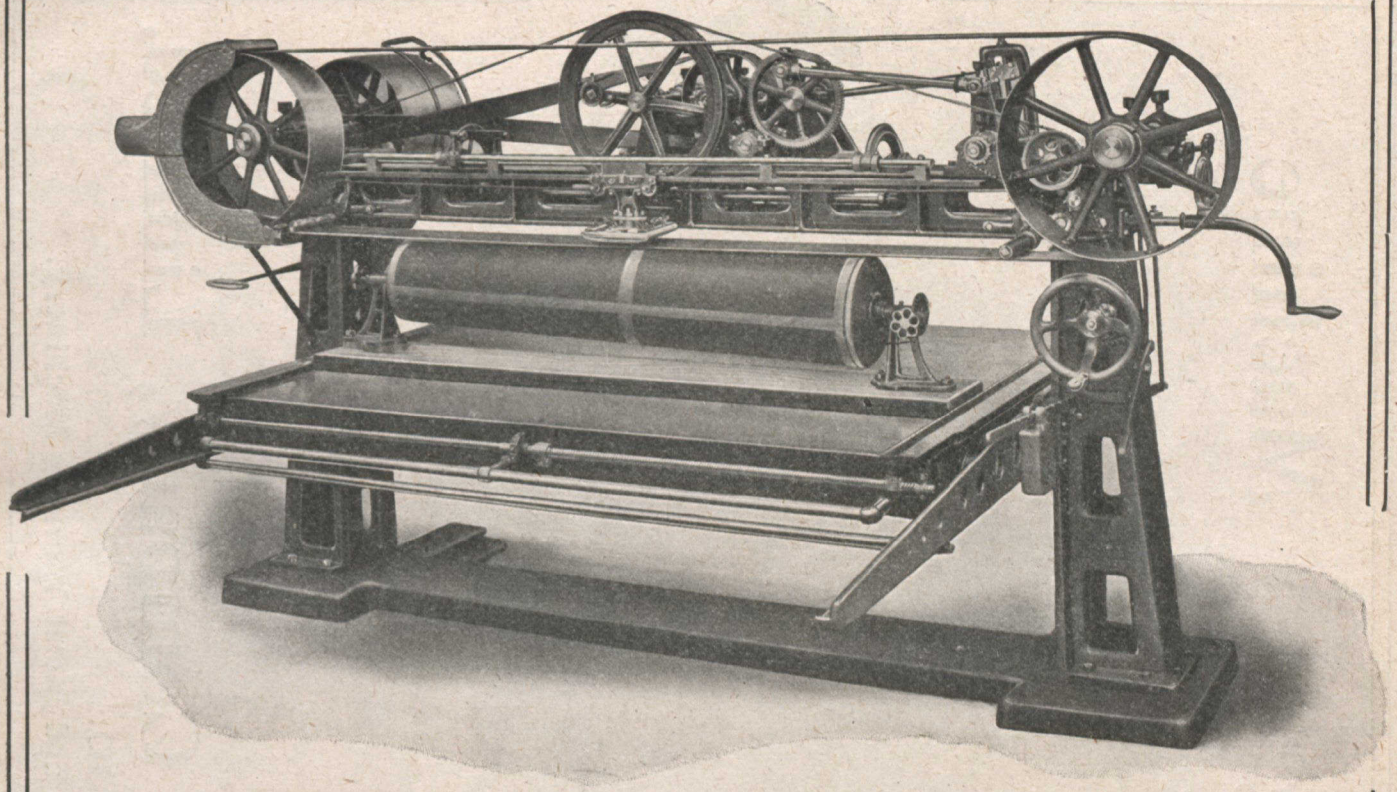


Our No. 2 Variable Self-Feeding Rip Saw. Feed varies from 0 to 200 feet per minute. Weight about 3,000 lbs.

WE BUILD A COMPLETE LINE OF

Surface Planers and Jointers, Planers and Matchers, Moulders, Band Saws, Band Re-Saws, Rip and Cut-off Saws, Boring, Mortising and Tenoning Machines, Gauge and Turning Laths, Shaping, Panelling and Dovetailing Machines, Knife Grinders, Sanders and a number of Special Machines.

WRITE FOR SPECIAL PRICES.



THIS is a cut of our PANEL BELT SANDER. It is the best Sanding Machine ever put upon the market and we would not say so unless we were certain of it. You may not believe that it will take veneered work direct from the press and cut off all the paper, glue, and everything else that has become attached to it, and the beauty of it all is that it leaves a better surface than can possibly be done by hand. Now it may surprise you to know that some large concerns in this country think well enough of this machine to have purchased eight of them. There are others who have bought four of them, and others two and three of them, and the manufacturers who have bought one are numbered by the score. Some people say that this machine saves from four to seven operators, working by hand. Others do not say how much work it saves, but simply say they could not do business without it. We have illustrated catalogues. We have testimonial letters; the best you ever read. All it needs for you to have them and enjoy them is to drop us a line asking for information. We erect the machine and instruct in the use of it. If you have anything rough that you wish made smooth, you cannot afford to leave us out of the calculation.

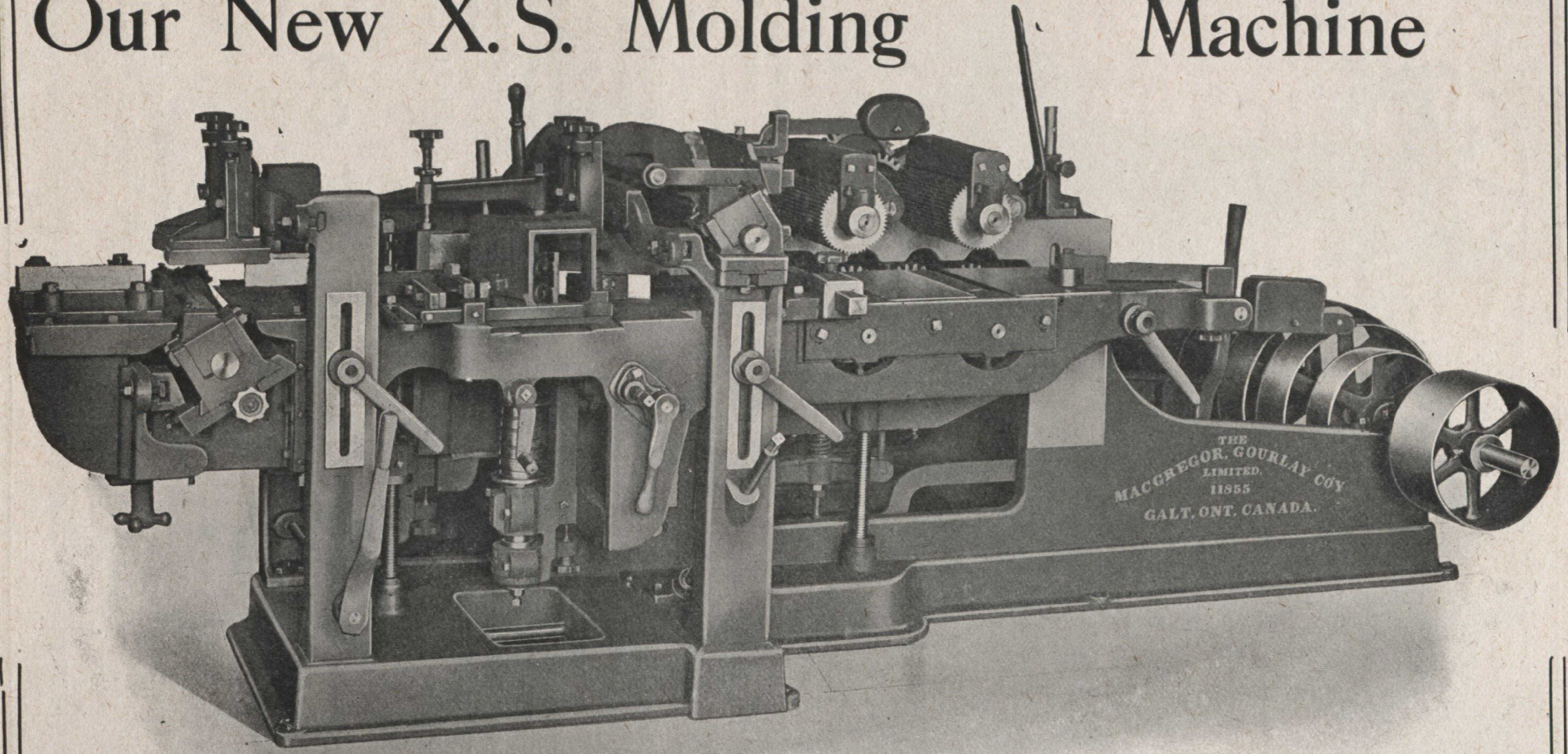
MOORE CARVING MACHINE CO.

MINNEAPOLIS, MINN., U. S. A.

Manufacturers of

Moore Carving Machines
Moore Panel Belt Sander
Lochman Carving Machines
Moore Belt Sanding Machines
Moore Universal Rubbing Machines
Carving Machine Cutters and Supplies

Our New X.S. Molding Machine



Front View

The MacGregor Gourlay Company, Limited.

GALT, ONTARIO.

Woodworking Machinery, Iron Machine Tools and Metal Working Machinery.

CLARK-DEMILL COMPANY, LTD.

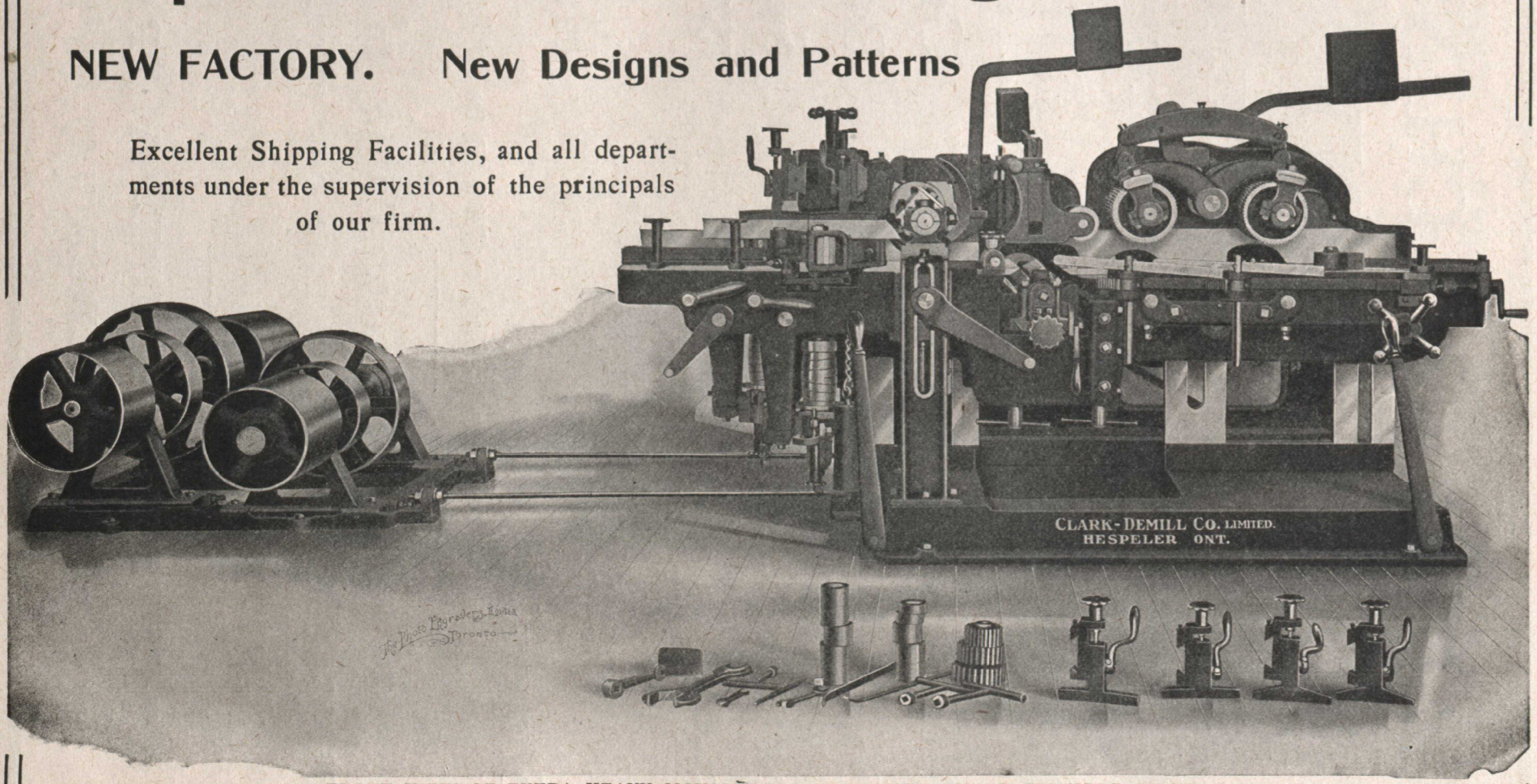
HESPELER, ONT., CANADA

MANUFACTURERS OF

Improved Woodworking Machinery

NEW FACTORY. **New Designs and Patterns**

Excellent Shipping Facilities, and all departments under the supervision of the principals of our firm.



FRONT VIEW OF EXTRA HEAVY MOULDER ON BASE WITH UNDER CYLINDER FIRST.

All journals machine-ground perfectly true. Planes 10," 12," 13" wide by 12" thick, with eight changes of feed 11, 15, 19, 22, 25, 34, 42, 50 running feet per minute. We use cut gearing on all our machines. Try them.

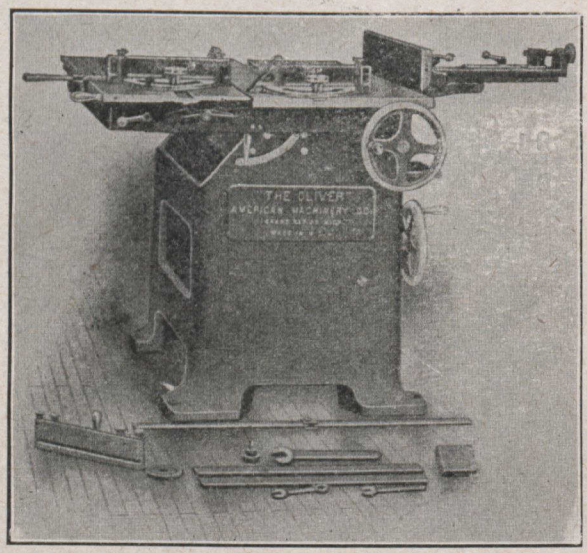
OLIVER MACHINERY COMPANY

GRAND RAPIDS, MICH., U.S.A.

Manufacturers of HIGH GRADE

WOODWORKING MACHINERY

Mortisers,
Borers,
Sanders,
Surfacers,
Tenoners,
Shapers,



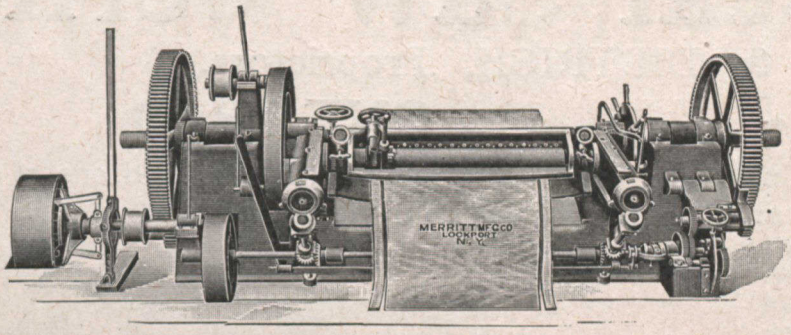
Oliver Universal Saw Bench, over 700 in Daily Use

Grinders,
BandSaws,
Swing Saws,
Wood Lathes,
Hand Jointers

We furnish complete Outfits in VISES, BENCHES, Etc. and confine our efforts strictly to High Grade Tools.

"EVERY MACHINE A PROFIT BUILDER"

THE "MERIT" VENEER LATHE.



ALL the "Merit" veneer lathes are built upon single-piece frames. Thus each machine carries its own foundation. The frame is a massive bed casting which contains the main spindle bearings, all shaft bearings, the feed gear box and practically everything in the nature of frame work except the heavy way castings for the knife carriage. When a machine of this style is being built, everything comes naturally in line and of necessity remains so. It is the right kind of machine to ship and move about. It is portable.

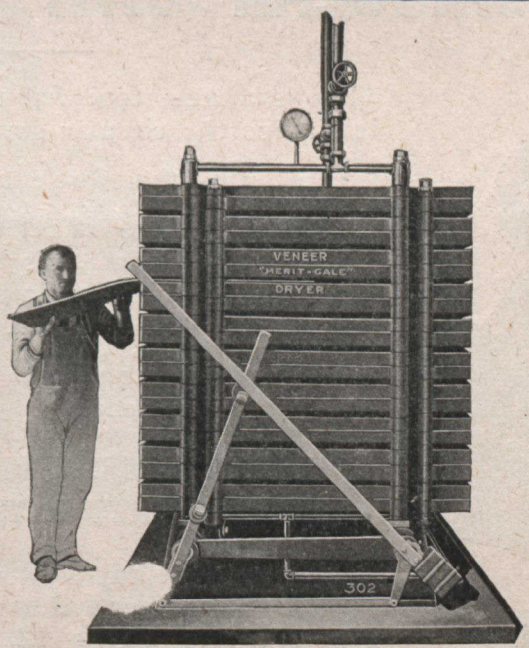
This machine is proof against torsion and twisting, and what machine is subject to greater twist than a veneer lathe? It takes a foundation bed to resist torsion and when the bed is massive enough to do that, what is the natural result? Just this: a bed strong enough to stand all of the end thrust of dogging a log without using an overhead tie rod. That means a frame open at top and sides with nothing in the way of getting in logs.

A good body of metal under the working parts accomplishes two results. It absorbs vibration and chatter, making a quiet running machine, and it makes the machine fire-proof. It has been demonstrated that "Merit" machines are not lost in fire. There is too much metal in the bed to get red hot and let go of "the works" supported by it.

MERRITT MFG. CO.
LOCKPORT, N. Y.

To Flatten And Re-Dry Veneer

We ask attention to the "Merit" Drier when used to flatten and re dry veneer that has been previously air-dried or partly dried in a machine. Every one gluing up veneer feels the necessity of such a machine. The beauty of this one is that it is built upon the sectional plan and can be installed with a single pair of plates, or two pairs, or three pairs, or whatever is needed now, and any time later on more plates can be added without inconvenience or extra expense beyond the actual cost of the plates. These plates take steam at boiler pressure and put the veneer into ideal condition for gluing, at the same time taking the place of the usual hot cauls. Don't pretend this machine does not interest you. It does, and it is well worth your while to learn all you can about it at the earliest opportunity. The illustration shows a machine with ten pairs of plates, each thirty inches wide by sixty inches long. We have other sizes.



Furniture Factories

find this a necessary machine because it saves loss due to gluing up moist veneer; and because it makes usuable veneer out of what would otherwise be wasted.

VENEER
Machinery.

Cutting.

The "Merit" Veneer lathe.

72 inch swing, 10 lengths.
60 " " 10 "
52 " " 10 "
42 " " 8 "
32 " " 8 "

Back roll machines in many sizes.

Dimensioning.

Clipper.

Type No. 258 with short table.
" " 277 " long feed table
" " 233 foot power.
" " 234 full automatic.

Drying.

"Merit-Gale" Veneer Dryer

4 feet x 3 feet.
4 feet x 4 feet.
4 " x 6 feet.
4 " x 7 feet.
4 " x 8 feet.

Panel and Crate Head Machinery.

Tenoner and Groover, Gang Rip Saw, (Pony Size.)

(Put your veneer cores into panel crate heads.)

New Machines in Stock.

Quick Delivery.

Veneer Lathes.

1—"Merit" 72 inch swing Veneer Lathe with 100 inch knife.
1—"Merit" 60 inch swing Veneer Lathe with 100 inch knife.
1—"Merit" 52 inch swing Veneer Lathe with 41 inch knife.
1—"Merit" 42 inch swing Veneer Lathe with 48 inch knife.

Clippers.

1—54 inch Direct Feed Clipper full automatic.
1—100 inch Type, 277.
1—100 inch Type, 258.
1— 66 inch Type, 258,

Hoop Machinery.

4—Trautmam Complete Patent Hoop Machines for sawn barrel hoops.

Table Leg Machines.

2—"Merit" Table Leg Machines for turning extension table legs.

Second-Hand List.

1—Coe Extra Heavy 52 inch knife, 52 inch swing, Veneer Lathe.
1—Coe 52 inch knife, 32 inch swing, Back Roll Veneer Lathe.
—Coe 52 inch knife, 42 inch swing, Veneer Lathe.
1—Coe 48 inch knife, light pattern, Veneer Lathe.
1—Grand Rapids, 88 inch knife, Veneer Lathe.
1—Pony Veneer Lathe, 10 inch knife.
1—Sawn Hoop Machine.

Maple Leaf Saw Works

SHURLY & DIETRICH, Proprietors.

GALT - - - ONTARIO

The largest manufacturers of high-class Saws under the British Flag, and one of the largest in the world. Finest facilities for manufacturing.

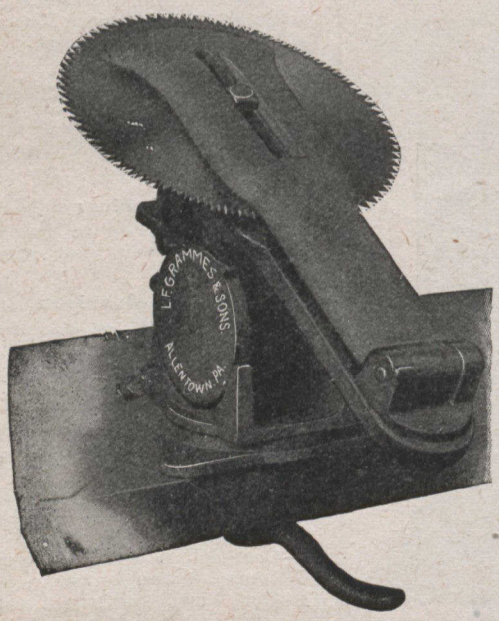
Circular Saws, Gang Saws, Mill Saws, Band Saws, Hand Saws, Crosscut Saws, Buck Saws, Saw Sets, etc.

This cut represents a new form of handle very popular with the trade.

"Maple Leaf" Saws are tempered by our "Secret Process," and are guaranteed the best tempered saws in the world.

We are the only manufacturers in the world who export saws in large quantities to the United States.

GRAMMES CIRCULAR SAW FILING VISE



This is a new tool for the circular saw operator. It clamps the circular saw while the filer is filing it.

It is all iron—therefore cannot warp out of shape.

It is adjustable to all positions because it swings on a swivel and on an axis. On the swivel it may be swung to any position in a circle. On its axis it may be set to any position in a 3-4 circle.

Guaranteed not to vibrate or dish the saw. Fastens on any table or bench. Weight 35 pounds.

THREE SIZES. PRICE EACH SIZE $7.50
THIRTY DAYS FREE TRIAL

No. 1 takes saws 4 to 9 inches diameter.
No. 2 takes saws 6 to 14 1-2 inches diameter.
No. 3 takes saws 12 to 20 inches diameter.

L.F. GRAMMES & SONS, Allentown, Pa., U.S.A.

ESTABLISHED 1855. INCORPORATED 1888.

R. H. Smith Co. Limited

ST. CATHARINES - - ONTARIO

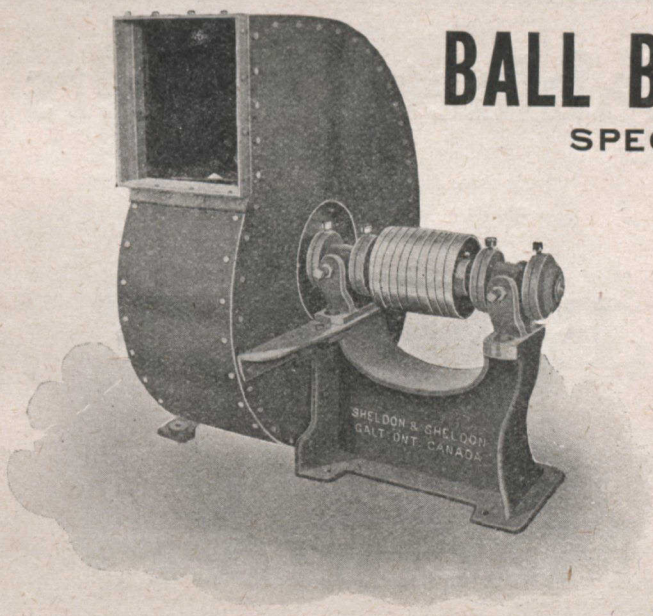
Sole Manufacturers of saws in Canada under the "GOLD COIN PROCESS." Nothing equal to it for tempering circular saws. We are the sole users of this process in Canada. Don't be deceived by others claiming to have it.

We make Inserted Tooth Saws, Shingle Saws, Crosscut Saws, Hand Saws, Etc., Etc.

Cut shows our gold coin hand Saw.

The quality of the "Gold Coin Shingle Saws is proven by the fact that the largest shingle and machine manufacturers in Canada are using them.

The Gold Coin temper and style of tooth make the "Leader" cross cut saws the fastest and easiest cutting saws manufactured. Write for prices for your saw requirments.



Shaving Exhauster with Chapman Ball Bearings.

BALL BEARING EXHAUSTERS

SPECIAL SLOW SPEED DESIGN

A reduction of speed ranging from 33⅓% to 50% less than standard machines guaranteed, and a considerable saving in power.

EXHAUST SYSTEMS INSTALLED COMPLETE

LUMBER DRY KILNS

of all kinds and for all classes of lumber.

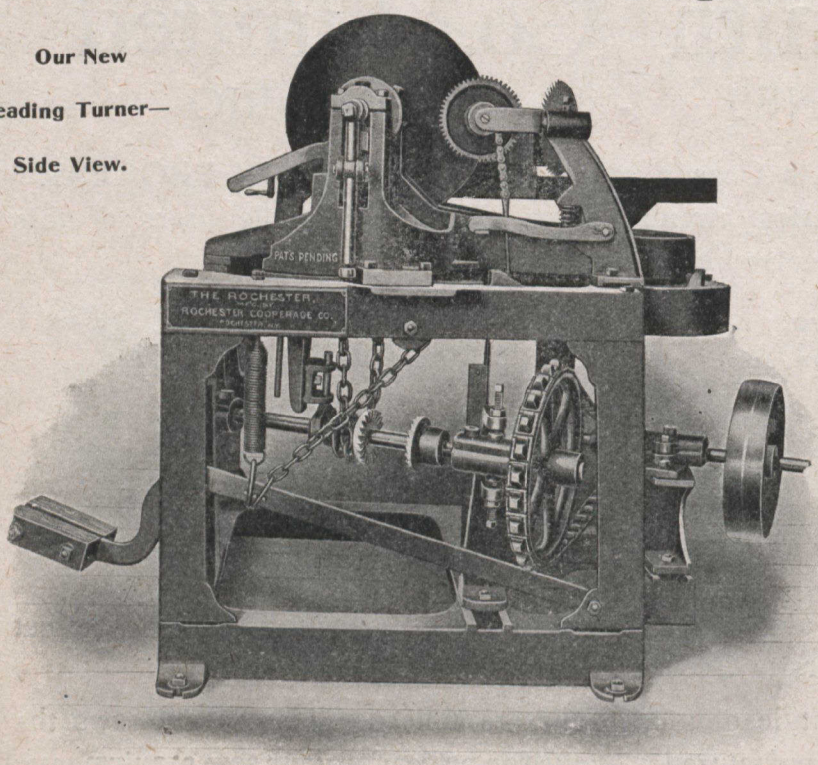
Write for particulars to

SHELDONS LIMITED

GALT - ONTARIO.

The Rochester Cooperage Company

Our New Heading Turner—Side View.



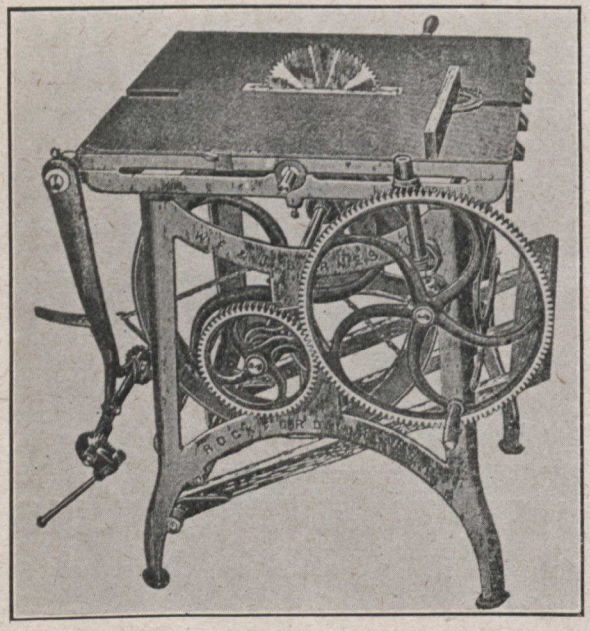
530 to 542 Child St., Rochester, N.Y.

Manufacturers of Machines for Slack Work that are the ACME of Inventive Genius.

Illustration shows the best slack barrel heading turner of its kind ever devised. Its capacity is limited only by the skill and activity of the operator, Our Turner has no gears or worms to wear out and cause annoyance, the operator stands closer to clamps and has easier access to same, which enables him to feed faster. Machine has **Greater Range** than any other, cutting from the small sizes up to 28 inches, it also has an automatic throw-off which works positively every time and the heading refuse drops down straight from clamp, thereby doing away with any possibility of machine clogging up.

Machines Sent on Thirty Days Trial.

Send for price.



Our New Hand and Foot Power Circular Saw No. 4
The strongest, most powerful, and in every way the best machine of its kind ever made, for ripping, cross-cutting, boring and grooving.

Cabinet Makers

In these days of close competition, need the best possible equipment, and this they can have in . . .

BARNES'

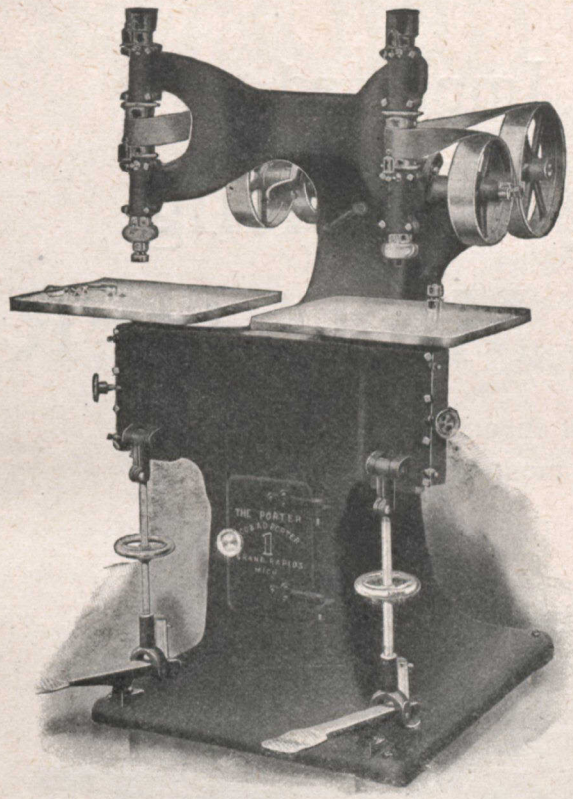
Hand and Foot
POWER

Machinery

Send for our New Catalogue.

W. F. & JOHN BARNES CO.

ROCKFORD, ILL. U S A.



No. 1. Yankee Whittler New Pattern.

C. O. & A. D. Porter

. . . Manufacturers of . . .

"THE PORTER"

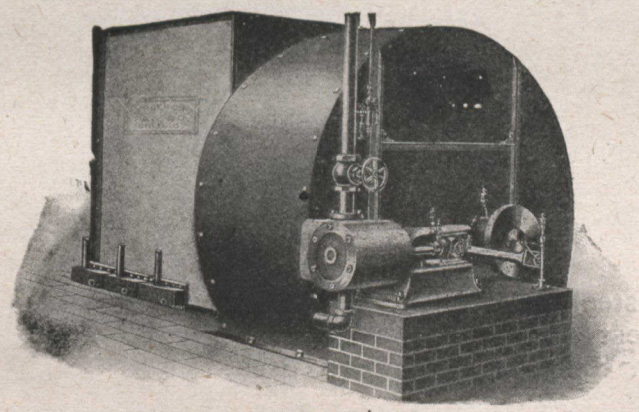
WOODWORKING MACHINES

Send for our new catalogue and prices of wood carving machinery.

Standard goods, prompt delivery, reasonable prices.

180-182 N. Front St.

GRAND RAPIDS - - - MICH., U.S.A.



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CUPOLA FANS
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EXHAUSTERS

LUMBER TRUCKS
TRANSFER CARS
BRICK CARS
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Steam Fans and Heaters

Our Heating and Drying System will interest you—write us.

Brick Dryers

These are of the latest improved type.

Moist Air Kilns

Both forced and natural Draft. No checking, warping and case-hardening.

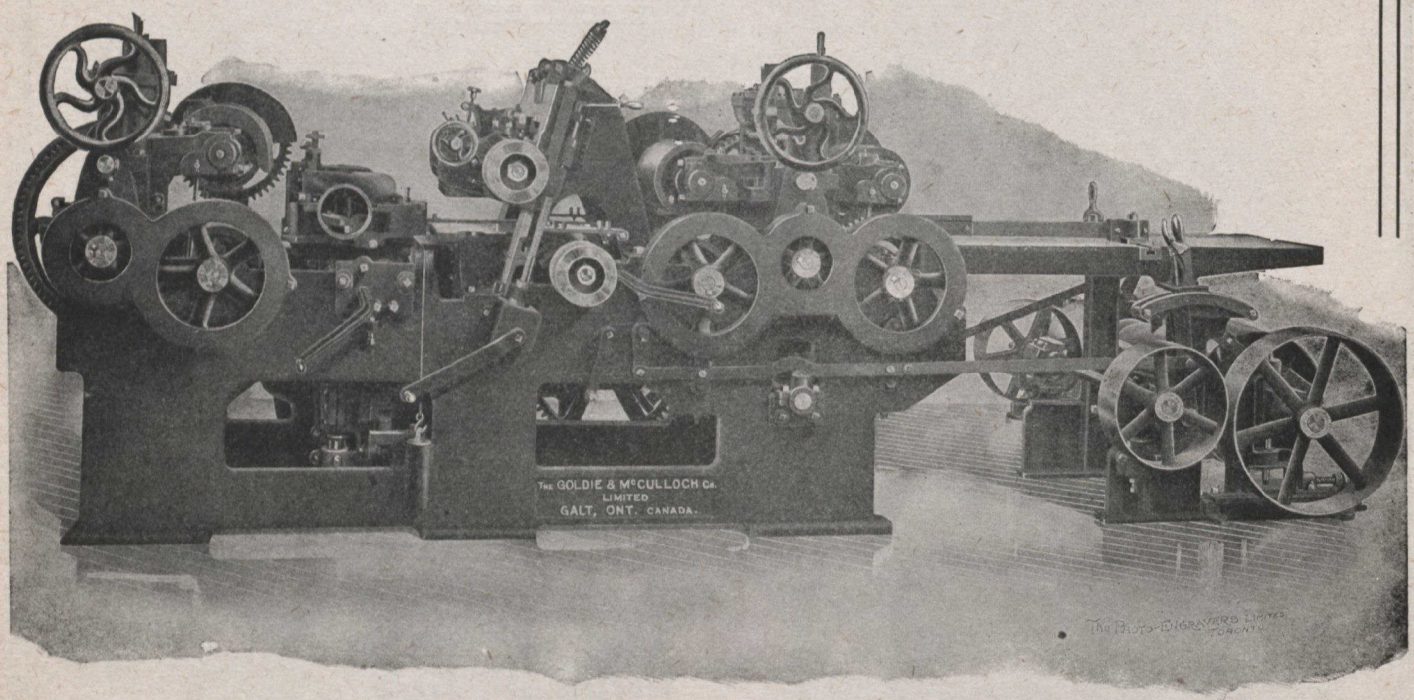
Dominion Heating & Ventilating Co., Ltd.

HESPELER, CANADA.

Successors to McEachren Heating and Ventilating Co.

Our New and Improved
No. 11 Heavy Flooring
PLANER AND MATCHER

Frame is heavily designed and cast in one piece, insuring the greatest possible rigidity and most perfect alignment.



Cylinders are solid crucible steel forgings, spindles are extra heavy and made of finest tool steel. The latest improved **Philbrick Matcher Heads** are used.

See complete description on Page 36

We shall be pleased to mail new illustrated bulletin describing the above machine, and complete catalogue of Woodworking machinery to any address.

The Goldie & McCulloch Company, Limited

Western Branch: 248 McDermott Ave., Winnipeg, Man. **GALT, ONTARIO, CANADA.** Quebec Agents: Ross & Greig, Montreal, Q. **B. C. Selling Agents:** Robt. Hamilton & Co., Vancouver, B.C.

WE MAKE Wheelock Engines, Corliss Engines, Ideal High Speed Engines, Boilers, Heaters, Pumps, Condensers, Flour Mill Machinery, Oatmeal Mill Machinery, Gyrators, Emery Choppers, Woodworking Machinery, Heading Machinery, Wood Rim Split Pulleys, Iron Pulleys, Shafting, Hangers, Friction Clutch Couplings, Friction Clutch Pulleys, Safes, Vaults, Vault Doors.

SEND FOR DESCRIPTIVE CATALOGUE AND PRICES.

Canadian Woodworker

A MONTHLY JOURNAL
FOR ALL CLASSES OF WOODWORKERS

Vol. 1 TORONTO, MARCH, 1908 No. 1

CANADIAN WOODWORKER

A Monthly Journal for all classes of Woodworkers.

Subscription: Canada, United States and Great Britain, $1.00 per year; Foreign, $1.25, payable in advance. Advertising rates on application.
SAMPLE COPIES FREE ON REQUEST.

BIGGAR-WILSON, Ltd., Publishers

Offices: 79-80 Confederation Life Building, Toronto. Ont.
Telephone, Main 6377.

Canadian Woodworker is published by the first of the month. All changes for advertisements, news items and other matter must be in hand by the 15th of the preceding month. Cuts should be sent by mail, not by express.

Practical men are invited to send to the Editor signed articles or paragraphs upon any subject of interest to their fellow woodworkers.

OUR FIELD.

It is an interesting fact that, although the use of steel, concrete, and cement has in the past twenty years enormously increased in building and structural work generally, the consumption of wood per head of population in Europe and America has also increased in the same period, and the demand for wood is now greater than at any time in the world's industrial history. While this is the age of steel, it is still more emphatically the age of wood. So true is this that the statesmen of Europe look upon the preservation of the forests as their greatest national problem, and even the United States, which was until recently supposed to have an inexhaustible supply of timber, has been startled to find that many varieties of its best timbers are no longer to be had for export, while even for home consumption some kinds are practically exhausted. Twenty-seven States of the American Union have found it necessary to introduce legislation designed to restore forests that have been unwisely destroyed, while in response to the appeal of President Roosevelt huge sums have been appropriated for the purchase by the Federal Government of lands for forest reserves, and many States have established schools of forestry designed to educate public opinion on the relation of the forests to rainfall, agriculture, etc. and on the vital importance of timber supply to the industrial prosperity of a country.

To restore that which is lost is a long and painful process in the case of forests, but Canada is in the happy position of possessing a greater supply of commercially valuable timber than any other country in the world, and it only needs a prudent forestry policy to maintain this supply for all time. Millions of acres of these forest lands are yet untouched, and when we consider that Canada has about forty per cent. of the water-powers of the whole world (hundreds of them being yet undeveloped), we realize the overwhelming advantage this country has in developing a woodworking industry. Anyone who comprehends the trend of modern manufactures will see that the wood products of Canada are destined for an expansion far surpassing any group of industries, because we have the raw material and the cheap powers in superabundance, and the intelligent skilled labor to utilize these advantages. In some lines Canadian manufactures of wood already find their way to every part of the world, and it only needs the introduction of the necessary machinery to expand this field of industry in manifold ways.

Excluding Newfoundland and the Labrador littoral, Canada has a forest area of over 1,350,000 square miles, or, say, 865,000,000 acres. Assuming only an average of 1,000 feet per acre, this would give 865,000,000,000 feet. The actual probable yield would be double this, or enough to keep cutting for fifty years on a scale equal to the present exhaustive annual cut of the whole United States. Under a rational forestry system, which, we believe, will be adopted, the woodworking industries of Canada can be developed beyond any present calculations, and yet without exceeding the reproductive powers of the forests.

The construction of two new transcontinental lines of railway and the rapid expansion of settlement and trade in every Province makes the present a favorable time for enterprising firms to obtain a foothold in this expanding market. In the decade ending 1903 the total trade of Canada increased 122 per cent., while that of the United States increased 51 per cent. and Great Britain 34 per cent. The total exports and imports of Canada have doubled within eight years. The aggregate trade per head of population in Canada is greater than that in the United States, Great Britain, or any other British colony, except New Zealand.

These bare facts show that no country in the world presents such a field for the sale of wood-working machinery and supplies. No special journal has yet appeared to develop this promising field, and those who have endeavored to get into touch with the woodworking industries of Canada have heretofore had to seek information through publications only partially covering the ground. That a paper published on the spot and in direct touch with Canadian conditions can render the best service to those cultivating Canadian trade only needs to be stated to be accepted.

That the "Canadian Woodworker" will be welcomed by those engaged in this industry, both in the shop and office, we have already proof of in the many subscriptions given before the paper itself has come into existence. We hope to fulfil the expectations our friends have formed, and we appreciate the confidence so many first-class firms have shown by beginning their advertisements with the first issue. It is this community of interest that will assure the advance of the woodworking industry of Canada and make the relations of reader, advertiser and publisher both profitable and happy.

We desire to produce a paper which shall be indispensable not only to the manufacturers of all kinds of woodwork, but also to the thousands of machine workers employed in their establishments. With these aims we propose making it a feature to show conditions as they actually are, and to point out opportunities for extension of the industry, as well as to present from month to month the best and most up-to-date points in practice for the benefit of the latter. Some of the best experts and most experienced practical men are contributing to our columns, and many more will do so as time goes on.

OPPORTUNITIES FOR EXPORT OF WOODWORK.

That the Canadian woodworking industries are not taking full advantage of the opportunities which exist in other countries for the disposal of their products is evidenced in many ways. Information comes to hand every week in Great Britain of chances for the sale of all kinds of wood products, which could well be supplied by Canada. Turned goods, stock for chairs and other furniture, axe and hoe handles are almost always in demand, while wood flour, pit props, excelsior, etc., are also often asked for. It is true that for many of these lines the prices offered by British dealers is comparatively small; not large enough, at any rate, to tempt Canadian manufacturers during a time of such brisk demand as has distinguished the last few years. The High Commissioner for Canada in London, however, speaking recently on this question of prices, said:—

There can be no doubt that opportunities in these markets lie mainly in goods for which an active demand exists owing to their not being produced in the United Kingdom, and this applies with particular force to manufactures of wood of all kinds. It is quite true that at times values have sunk to an unremunerative figure, and that firms here when quoting prices are prone to quote figures which are absurdly low. It should, however, be remembered that this market must draw its supplies from some source or other, and if Canadian manufacturers can produce what is wanted here and hold out for reasonable prices, they are pretty certain to obtain them in the long run, because the countries that formerly sent large supplies over here are either exhausting their raw materials or need the manufactured output more and more for their own market.

P. B. MacNamara, the Canadian agent in Manchester, is another authority who points out the large field presented by England for Canadian woodenware. Among the articles especially required are turned goods required in cabinet-making, small spindles, table and chair legs, sofa and dresser feet, curtain poles, broom and tool handles, towel-rails and rollers, rolling pins, etc. Dowels are also well worth consideration, and are mostly made from birch in diameters from ¼ inch up to 1 inch, with 1-16 multiples, and should be made in 36-inch lengths, but shorter and longer lengths are marketable in moderate quantities. Maple and oak dowels are purchased, but the trade prefers good birch. Pill boxes are largely handled, but at present are supplied by Sweden, Norway, and Finland; also round boxes for needles and pins.

Harrison Watson, Canadian Trade Agent in London, is struck by the apparent lack of interest on the part of Canadian manufacturers in the English market. "It is curious," he says, "considering the great natural facilities which Canada possesses for the production of so many lines of manufactures of wood, and in view of the great demand existing in almost all countries for such goods, there is not larger development in the Dominion in this industry. Almost daily we receive enquiries from firms here seeking manufactures of wood of some kind, and when we place them in touch with Canadian manufacturers the result is almost invariably that these latter are full of orders and cannot undertake fresh business."

An Australian correspondent states that in the new Commonwealth customs tariff, duties of .35 per cent. (really a net duty of 38½ per cent.) have been imposed upon casks, barrels and vats, full or empty, and 12s. ($2.92) each upon second-hand hogsheads, full or empty. If these duties are maintained, there will be a large demand for Canadian butts or oak staves.

THE HARDWOOD SUPPLY.

A circular recently issued by the United States Government (No. 116 of the Forest Service) is calculated to raise many points in the minds of those interested in conserving Canada's supplies of hardwood. At the present rate of output in some of the States the supply will be exhausted within a few years; indeed, of some kinds of hardwood the consumption has been so rapid that industries dependent on the same have already had to close down. According to the circular in question, great centres of supply, such as Ohio and Indiana, lost so heavily between 1899 and 1906 that they fell far back in rank, and are now permanently disabled. Together with Illinois, it adds, Ohio and Indiana produced 25 per cent. of the hardwood in 1899. In 1906 they produced only 14 per cent. They can never regain their lead, or even maintain the standing they have. Their many wood-using establishments, which are now hard pressed for supplies, will exhaust their remaining remnants within a few years. The manufactures affected are chiefly lumber, cooperage, furniture-making, musical instruments, car-building, railroad ties, telephone and other poles, and house finishings.

Canada has a vital interest in this question of keeping its hardwood supplies intact, though in this country the work of demolition has already, in many parts, gone much further than it should. Oak is already a rare commodity; and we have heard of cases in recent severe winters of rock maple being used for fuel. The rash devastation of the pulp-wood forests of the United States has left the work of meeting future needs largely in the hands of Canada; and to a smaller extent (for, of course, many hard woods have to be imported from other climates in any case) the same thing may come to be true of hard woods. It behooves Canadians to take a lesson from European countries which have learned the art of taking from their forests enough to carry on various woodworking industries without destroying the usefulness of those forests for future production.

Planing and Molding

DEVELOPMENT OF THE PLANING MILL.

By E. H. Newton.

In the modern planing mill, as in the sawmill, it is wonderful when we stop and look back and note the development of the past few years. "Wonderful!" hardly expresses it; it is nothing less than amazing, and we do not have to look back to the days of the jack plane and the old-time planes for matching by hand, either, to note the development, but we can see it within quite recent years. Machinery builders have been lying awake nights or working overtime trying to perfect machines for our use in planing mills and elsewhere, and to say that they have been successful is only putting it mildly, for to them and their seemingly untiring efforts is due much of the success which we are having to-day in turning out factory work which pleases the most exacting eye. I sometimes wonder what some of the factory people of a quarter of a century ago, many of whom have long since dropped out of the race, would think, or do think, should they walk in and see some of our fast machines working. It is little wonder when we stop and think of it, that so many of them have dropped out, for truly it has been a rapid stride, and if one fell down he was left behind and so far distanced before he could rise again that it seemed easier for him to turn aside to something else than to try to regain his position in the front ranks of our procession, and for this reason many have turned their attention to bringing along some one of the several side lines, which are in themselves a part, and, perhaps, just as essential as the planing mill end of it, but much easier handled.

It is not only the working of the machines in the planing mill and the rapidity with which they work that attracts our attention from the factory of a quarter of a century ago, but the placing of the machines. In those good old days (and they were good, for they were not nearly so strenuous as the present) there was not much thought given to the placing of machines, except that they might be belted, and the lumber taken to and from them without too much handling, and even the extra handling of lumber in many places was not considered very seriously at that time. To-day, with the higher cost of labor taken into consideration with the fact that handling lumber does not, as a rule, add to its value, but sometimes has the direct opposite effect, much thought is given in this direction in the laying out of a factory and the placing of the machines.

There is one thing which I am compelled to note, though it is with regret that I do so, and that is that the cheapest and most essential thing which the Great Creator of the universe ever gave us is not to be found in so many of our planing mills and factories, and that is light. This is a thing which is far too important to be overlooked when building a factory, and yet I know of cases where it has been entirely overlooked. Of course, in such cases they probably reason that they can use artificial light, and so they can; but, after all, there is no light that can quite take the place of sunshine for setting up a machine, and certainly there is nothing to compare with it for health and cheerfulness in the factory. Of course, those places where the sun is shut out of the factory, we are glad to say, are the exception rather than the rule, for we find that in other places much thought is given to this particular, and the contrast is so great that it is impossible not to notice it.

Then, in the modern planing mill the worries and perplexities of the man whose duty it is to look after the machinery generally and the loose pulley in particular, have been considered, and this nuisance, with all the losses incident thereto, has been labelled, "Not wanted," and is thrown overboard to drift behind, or be picked up by those who have time and patience to spare in the background. It is so much easier, so much better, more compact, easier on belts, and better in every way to set the machines in a row, so that the counters of the several machines come directly under the line shaft, and then use a tightener. When the tightener is pulled off the belt remains on the pulley on the line shaft and hangs straight down, running clear of the pulley on the counter shaft on the machine. To start the machine the tightener is dropped upon the belt, and the load is picked up with less trouble than in the old way by shipping the belt from the loose pulley, and without the resultant frayed edges caused by that process.

Assuming that the machines are suitable for the work (and in the planing mill of which we are writing they will be), and that they are properly kept up, the knives carefully set and kept sharp, then, if we have plenty of power and good shavings exhausters, with a correct system of piping, we think we are pretty well prepared to cope with the situation, and so we are if we are lucky enough to have the right men to handle the machines and look after them; but right here is where many fall down, and it is here that much encouragement is needed, for many of the people who are trying to fill these positions have been sleeping soundly nights while developments have been going on incessantly, and unless we can get them to read and study up a little they are going to hold the wheels of progress in our line to some extent, or be replaced by some others who have not slept during any discussion upon the subject, which latter is the more likely.

In the lumber business of this country we see a future which it does one good to contemplate. It is not something glittering in the brightness of our imagination, but a sure and unalterable future which, if properly taken care of, is of inestimable value to the people of our generation. But, nevertheless, there will be an end to our timber supply, just as there is to all good things, and the trouble with too many is, like the old song, "We never miss the water till the well runs dry." If I were upon this old terrestrial ball when our timber supply is exhausted, and could at that time be the possessor of as much lumber as will be wasted in bad manufacture and otherwise between now and then in this country, I know that if there should be a Rockfeller in existence he would envy me my position. Let us take care of it while it is going, boys, for we cannot grind with the water that is past.

TROUBLES WITH THE MOLDER.

A balky feed is often one of the first troubles to occur to the operator of a molder. When the lumber stops in the machine, look, first, to see if it has fed out from under the rolls, and is just waiting for another piece to push it along. Next, look and see if the feed-gear is stopped, which might occur from a slipping or broken belt, or the belt might run off the pulley, or the pulley might slip on the shaft. If the gear is running, ascertain if the side heads are both in motion, if both should run; and, indeed, the top head will sometimes choke down unnoticed when it is covered by a shavings hood. If these are all right, look for slivers next to the inside head and in front of the rear bed; also see that none of the movable guides has sloughed around and dug into the side of the molding.

Then examine the pressure bar and guides for proper tension, and see if the stock is of a gummy nature. In feeding fat yellow pine, the bed will sometimes gum up in streaks that nothing but a liberal supply of oil will dissolve. The under side of the pressurebar can be oiled while the machine is in motion, by pouring oil on the stock directly behind the chip-breaker. The knives carry it around and spread some of it on the top of the molding, from which it is communicated to the bar. Or the trouble may be caused by stock too crooked to pass between the stops. The only remedy is to loosen up a little and let it through. If the feed has a chronic hesitation, it may be from several causes, the principal ones being slipping belts, dull, corrugated rolls and insufficient weight on the pressure lever. The cures for these will suggest themselves.

The troubles indicated by waves in the molding surface are more than a dozen in number. One accustomed to the work, however, can tell at once the specific cause of rough or uneven knife work. Waves caused by too fast feeding are of an even depth and length. Those caused by the journals being loose in the boxes are uneven in length, depth and occurrence, and will be exaggerated by a heavy cut, while they will often entirely disappear when light work is done under a tight belt. The tension of the belt will hold the mandrel down to its bearing so long as the cut is not heavy enough for the reaction to lift the head up into the slack space.

When the babbitt gets loose in the housings it will cause waves which are characterized by a certain shallowness and a steady, though uneven, occurrence. These are the hardest to distinguish from those made by loose journals, and also the hardest to remedy. The loose babbitt may often be expanded by a liberal use of a small punch, which, by the way, should not be used between the babbitt and the housing, as this will not only soon loosen up, but will bind the journal at this place and cause excessive heating. Use the punch all over the inside of the bearing, striking hard enough to make an impression 1-32-inch deep. This will expand the babbitt uniformly, and the little unevenness caused by the punch may be scraped off, while the punch marks are of no damage to the bearing.

Another perplexing cause of waves is that of springing knives, and it is sometimes easier to discover than to remedy. The waves may be distinguished from the fact that they occur only on that part of the mold made by the springing knife, while the rest of the pattern may be quite smooth. The springing of a knife in the cut is nearly always accompanied by a peculiar snapping or cracking sound, and when the cut comes to an easy piece of wood the waves and sounds both cease. The causes may be that the knife is bent back before it is put on the head; the cut may be too hard for the knife extension, in which case the cap should be longer, and if no cap long enough is at hand, bolt on another knife for a cap. See that the cutters are sharp, for dull knives will spring in places where sharp ones will do nicely.

The waves caused by the oscillation of the mandrel are easily distinguishable by their occurrence on the sides of the depth cuts, while the surface cut may be perfectly smooth. With the ordinary mandrel this is even harder to remedy than the loose babbitt, for the boxes may be otherwise in perfect condition and only the sides of the ribs on the babbitt worn a little. The only satisfactory remedy is to have the V-grooves put in the full length of the journal, as they should have been in the first place, so that when the cap is tightened down it will take up the end slack as well as the side play. Another way that may be used when there is a chance to get a set collar on the mandrel is to cut the ridges off the babbitt and then take up the slack with the collar, but this should be used only as a makeshift until the other work could be done on the mandrel.

Another set of waves very perplexing to the beginner is caused by the chip-breaker riding on one edge of the lumber while the other edge is comparatively loose under the knives. And the chip-breaker may be riding on the spring-post, where it stopped as the bed was raised after running thick stock.

MOLDER KNIVES BURNING.

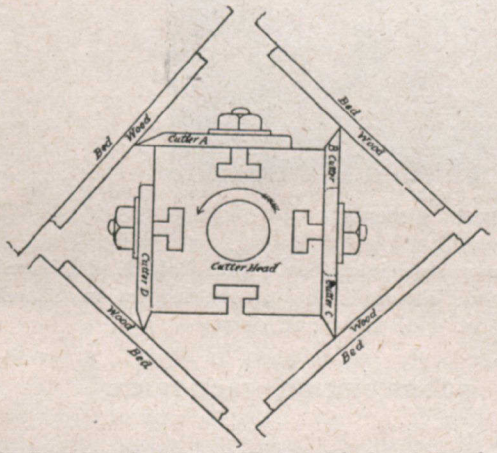
Some men have trouble from the above cause. One who is using two inside molders on kiln-dried oak and maple, cutting from ¼-inch to 1¼ inches deep, says he always tempers the knives in clear water, and makes them much harder than he actually needs them, and then draws them to a light straw color. He grinds them with a little bevel on the edge, so that they will be sure to clear and give a free cut. He makes no secret about the matter. He never uses oil to temper in, as he could never get a knife so hard but what he could file it, though perhaps it can be done. He uses clear, cold water, and has it free from soap. Soft water is best if one can get it. Have water enough so you can keep it the same heat until you get the job done.

There is lots to learn in tempering, and there is as mu h in heating a knife as in tempering. Some steel will stand lots more heat than others. Some will not stand a red heat, while others will stand almost white heat. It depends on the kind and grade of steel, and it is necessary to know them well in order to get good results.

METHODS FOR CUTTING DIFFERENT KINDS OF WOODS.

The accompanying sketch almost explains itself, but a few words may make it plainer to some readers. It shows four different methods employed to cut hard and soft woods. A is the ordinary cutter found in every factory where wood-cutting is done by machinery, and is about the simplest and best cutter yet devised for all kinds of work. The part below marked "wood" shows the position the cutter has while in the cut. One can readily see the amount of hook or pull this cutter has on the grain, which is very bad in some woods, tearing up the grain in such a manner as to put this cutter out of the question for economical use in good, smooth work in hard or cross-grained wood.

B is the same cutter turned on its back and the edge beveled slightly on the face, or that side which now is the back. This is done in order that the edge be stiffened sufficiently so it will not turn over or back as readily as if this were not done. This manner of using cutters is only a makeshift at best, and would never do for heavy work, but it is a very handy way to work when one has only a few pieces to run and it will not pay to make or buy better cutters with which to do the work. Note the position this cutter has in the wood while working. It is almost needless to say that a cutter used this way will not tear up the grain. This cutter takes about twice as much power to do a given piece of work as



Method for Cutting Different Kinds of Wood.

does the one marked A. Many milled cutters are used in this manner, to run moldings, the milling being done on that side which is now shown as the back, and the cutter ground straight on the bevel only. By this method the shape of the molding remains the same always.

C is the same cutter as A and B, but used in a different manner. As will be seen, this cutter is set the same as A, but on the opposite side of the head, thus giving it an entirely different and directly opposite cut when in the wood. This method is only good for a light cut and does very nice finish work where the grain is knotty and there is danger of pulling out otherwise. This method of fastening a cutter may be put to another use—that of a scraping machine. All that is necessary is to sharpen the cutter to a good edge with the whetstone, then take a round instrument and turn the edge inwardly, the same as a bench man would turn the edge of his hand-scraper, except in this case the cutting edge is only turned toward the face to form that hook so necessary in scraping. In scraping the head does not revolve, but is set at the desired angle, fastened in that position, and the material fed against the cutter in the same way a man at the bench draws his scraper against the wood, but in this case it is the wood going against the scraper.

D is a kind usually used for cross-grained, hard and knotty stock which is liable to tear out while dressing. Note the way this cutter is ground; the cutting edge is ground both ways. The effect of this is the edge has very little hook to pull the grain up while in the cut compared with that shown at A, hence it is better adapted for hard, knotty and cross-grained woods than A. Its good points over cutters B and C are that it has a very stiff edge, which can be changed to suit the nature of the stock being worked. The reader will readily see that this cutter is well adapted for ordinary use where the work is done in small quantities. The arrow indicates the direction in which the head revolves.—H. F. W. in Wood-Worker.

USING A LATHE.

A question of interest to many, especially in cabinet and pattern work, is, how can that important machine in a wood-working shop, the lathe, be made to produce the cleanest and neatest work?

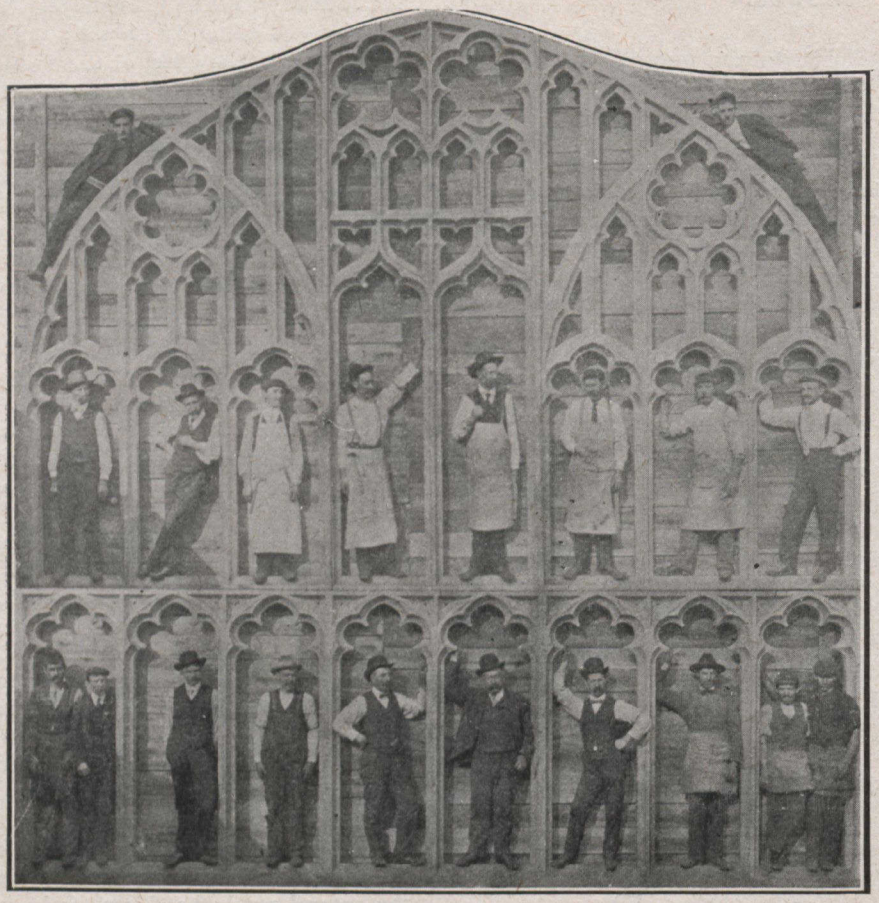
At the very outset a workman should see to it that the piece to be turned is firmly fastened in the lathe. The reasons for this precaution are so obvious as almost to render any explanation unnecessary. Still it may not be out of place to add that this is needful to obviate accident on the one hand, and on the other to prevent the piece from wabbling. For the lack of proper fastening the piece is liable to fly out of the lathe and do serious harm to limb and property. And if the wood is allowed to wabble the result is sure to be imperfect turning.

Then the tools used in turning should be kept sharp. Here is where many a workman fails to do his plain duty. He neglects to keep a keen edge on the tools he handles, with the natural result that his work is anything but smooth and finished in appearance. It goes without saying that a blunt tool never cuts—it only scrapes the wood. So the workman who persists in using tools in this dull condition can never succeed in producing a clean-cut job. Of course, some excuse themselves for this neglect on the ground that they cannot spare time to sharpen their tools. They feel they cannot afford to run often to the oilstone or, as it may sometimes happen, to the grindstone. The man who takes this stand, however, gains nothing in the end. A dull tool can never accomplish the same amount of work in a given length of time as a sharp one, to say nothing of the slovenliness of the result. The workman who would do creditable lathe work must keep his tools in tip-top trim, because a keen-edged tool alone can secure a clean and smooth cut of the wood. To claim that one can turn a piece roughly and then sandpaper all the roughness off is beside the mark.

Care should be taken, also, to use the highest speed possible in turning. It will not answer to have the lathe run on a low speed, for the simple reason that in such a case you can never secure a clean cut. Though your tool may have an edge as keen as a razor, if the piece of wood does not spin around fast enough the chances are that the turning done will be little better than a mere scrape. To obtain a smooth, finished result it helps materially to run the lathe at as high a rate of speed as is consistent with safety. The turner needs be very careful, however, to see to it that the machine does not run on too high a speed, otherwise he is liable to find his job flying in splinters around his head. A workman of ordinary discretion and experience can tell, as a rule, how high a speed can be safely used.

Close attention to these few suggestions, along with accuracy in measurement and skilful sandpapering, will tend to make any mechanic a first-class turner.

A FINE PIECE OF FRAME WORK



Framework of Central Methodist Church, Toronto.

The accompanying illustration shows the framework of the Central Methodist Church, Toronto, made at John C. Gilchrist's planing mill, under the foremanship of W. W. Abra, now superintendent of the Gold Medal Furniture Co. The frame shown is one of the largest in Canada, being 22 ft. 8 in. wide and 24 ft. deep.

MECHANICAL REMOVAL OF REFUSE FROM WOODWORKING FACTORIES.

By S. R. Sheldon.

In the modern woodworking plant the shavings and dust-collecting system is recognized as a very necessary part of the equipment, as the benefits derived therefrom warrant the expenditure of the money necessary to install such a system.

In mills and factories where these systems are generally installed a much cleaner factory is possible, and a material reduction is made in the danger from fire, a more healthy atmospheric condition is maintained, which, besides rendering the conditions more helpful for the employees, also permits of a considerable increase in the quantity of the output.

This shaving and dust-removing system mentioned consists of a fan placed in a suitable and central location in the factory. To the intake or suction side of this fan are connected galvanized iron ducts or flues, which are connected by means of specially designed hoods to the several cutting heads of the woodworking machines. From the outlet or discharge side of the fan a main discharge pipe is run to the cyclone, or dust-separator, which is usually placed immediately over the boiler-room, or shaving vault, and is so arranged as to feed the shavings either direct into the boiler or to the vault.

The fan used in these systems is usually of steel plate construction, with a heavy cast-iron pedestal placed at the side. This pedestal supports the two bearings in which the shaft of the fan revolves. The wheel of the fan is overhung on the end of this shaft inside a heavy steel jacket, which steel jacket is also firmly fastened to a cast-iron pedestal.

By revolving this fan at a comparatively high rate of speed the air in the wheel is thrown centrifugally outwards, thus creating a partial vacuum at the intake or centre of the wheel. As this partial vacuum can only be filled through the inlet of the fan, it naturally follows that if the inlet of the fan is connected up with a series of galvanized iron ducts or pipes, that the air must rush through these pipes to the centre of the fan. The fan must be properly designed and proportioned so as to give a maximum velocity of air with a minimum speed and a minimum consumption of power.

The galvanized iron ducts and piping must be made of heavy gauges of iron to withstand the abrasive action of the material handled with the air. All elbows and connections must be made of easy radius, and the hoods must be carefully designed and constructed, so that the natural

throw of the shavings from the cutting heads of the machines will tend to help the operating of the system as far as possible; that is, the hoods must be so designed that the shavings will be thrown into them by the cutting heads in practically the same direction as that in which the air has to convey the shavings.

The hoods, which are connected to the top heads of planers and matchers, surfacers and stickers, should be so fitted up by means of cords and counter-weights that, should the operator of the machine desire to get at the cutting head, he can, by loosening a few screws, throw the galvanized iron exhaust hood up out of the way.

The side heads on planers and matchers and stickers, which are moved to quite an extent when used in different sizes of work, should be fitted with special ball and socket joints of suitable design, so that the hood, cutting head and all can be moved without necessitating the disconnection of the suction pipe.

In many cases it is desired to deliver the shavings not only to the shaving vault, but to a refuse pile a considerable distance from the factory. In such cases a valve-box is used, and is so set in the discharge pipe that the engineer can, from the power plant, operate this valve and direct the shavings either to the separator or to the refuse pile.

The separator or cyclone is usually placed midway between the shaving vault and the boiler. This device is utilized to separate the particles of wood refuse from the air which is used to convey it, the results being obtained by discharging the mixture of air and refuse into a circular cone-shaped drum, and the refuse, being heavier than the air, travels in a spiral, downward path in the cone to the bottom outlet, from which it is conveyed to either the vault or the boiler.

The air escapes readily through a large opening at the top of the separator, this opening being so designed and proportioned that the quantity of air which enters the separator when passing through this opening is so reduced in velocity that it is incapable of carrying any refuse with it.

By means of a series of dampers and two or three-way valves at the bottom of the separator the refuse can be discharged into the shaving vault, or, if preferred, can be discharged direct to the boiler fires. By using two or more of these valves a system can be arranged to fit more than one boiler, providing there is a sufficient quantity of refuse to supply this amount of grate surface.

In many installations in woodworking plants it is absolutely necessary that a special wheel be used, so that very long shavings from wheel jointers, shingle machines, etc., will not in any way become fastened to the wheel and clog up the fan.

HOW TO PRESERVE WOOD.

The following is a French method for preserving wood: The pieces of wood, or posts, are dipped in a large tank of water, in which have been dissolved 10 per cent. of borax and 5 per cent. of rosin and carbonate of soda. Two electrodes are used, one on either side of the wood. The chemicals assist in the electrolysis and the water is a good conductor. The electricity is driven through the wood, forcing out before it all the sap and filling the pores of the wood with rosin and borax. The wood may then be dried and will be found to keep indefinitely.

WORKING MOLDINGS FACE DOWN.

There is a good deal of difference of opinion as to the best way of working moldings—face up or face down. In many cases there is undoubtedly very little or nothing to be gained by the latter method. Here is a case, however, given by a practical man, where the result was good.

Several years ago he was in a large planing mill where they had several molders of the improved type of that time. They had a large sale for rustic siding. One day the manager, himself a first-class planing mill man, suggested to him to work the rustic face side down, and after giving the matter careful attention, he considered it a good plan, as he could, with the top cylinder of machine, work off a considerable lot of the sap of the stock, leaving the heart side down, to be worked on the bottom cylinder. He also worked with the same success solid molded house base, getting much better results than if he had worked it on top cylinder face side up. As a consequence, all work of this character he now works face side down, which, with all conditions right, insures smooth work.

Not enough attention is always paid to the quality of the cutters, which are in the majority of cases made of steel-faced blanks. If the cut of the molding is any depth they will tremble and bend, producing poor work. All, or nearly all, molding cutters should be of solid steel.

WHY SAW CUTS "HOLLOW" IN WIDE STOCK.

Filers sometimes get the swage heavier on one side than the other. It is difficult for a beginner to understand why he cannot swage both sides alike, and nine times out of ten he will condemn the swage, when the fault is really his own. The trouble is, he has not filed square, but has filed on a slight bevel, and the swage will throw out the heaviest corner on the longest side, making a heavier swage or set on that side. This will cause the saw to lead the way, and, of course, it will cut "hollow" or concave, and will get worse every time it is swaged, unless corrected. If I should get a saw in this condition, I would file the heavy corner back leaving the opposite point on a bevel. Then I would swage and file square, then swage or grind again, when the teeth should be of a uniform spread, or swage. It is a mistake to attempt to swage a saw out full at one swaging.—G. L. M.

NO PESSIMISM HERE.

The report that the lumber mills of British Columbia are closing down owing to the gloomy financial aspect and that the coast lumber business in general has fallen temporarily flat, is scorned by A. B. Cowan, president of C. B. Cowan & Company, manufacturers of woodworking machinery, Galt, Ont., who was recently in Vancouver.

Mr. Cowan stated that his firm had disposed of $20,000 worth of woodworking machinery to lumber mills between Calgary and Vancouver during the past six weeks, and asked whether hard-headed mill owners had purchased the machinery to look at or to use. Five 25,000-pound timber planers had been purchased, besides a quantity of other machinery, from his firm alone which, he thinks, was ample evidence of the growth of the industry, despite the financial depression in the United States.

A FEW HELPS FOR THE YOUNG WOODWORKING MACHINIST.

The Tenoning Machine.

By R. Pearce.

This article will deal with the tenon machine, a very important tool in the sash and door shop. It is of the very greatest importance that this machine should be kept in the most perfect working condition, and the operator needs to thoroughly understand each and every part of it. He should also be able to work close to the measurements given him. Perhaps you are a young man, just put on this machine as a regular hand, and wish to turn out each day not only a large amount of work, but work well done, such as a good face-up, a clean shoulder, and a true tenon the entire length of cut.

You may find that you have stepped up to a machine altogether out of order. The knives are too thick to take an edge, as well as being out of line with the table. The shoulder cutters may be out too far and doing more work than is necessary, and when you set up to make a tenon you may find it measuring a half-inch at the shoulder, seven-sixteenths in the centre, and maybe nine-sixteenths at the end. I have seen machines work like that every day. This won't suit you. You can do better.

Now, to get to work to fix it up right. The following is a good way. It has also the merit of not only being a quick way, but will prove exact: Put out cutters, say, quarter of an inch beyond edge of cylinder; if out too far they have a tendency to spring. Get a piece of pine, say, four or five inches wide and about two feet six long. It must be true, and free of knots at one end at any rate. Lower bottom head and raise the top so that you can pass piece in beyond cutting part of knives. Fasten this down securely on table. This is to serve as a gauge. Now, run your heads close enough to this piece, so that shoulder cutters will cut in a thirty-second. Work the head backward and note carefully where your knives are out of true. Take them off and grind concave, grinding along bevel, sharpen up and put on, not too tight. Tap out until it just strikes your piece. Turn the head back, not forward, so as not to cut in to your piece, for, if you should do so, you destroy the surface of the gauge. Adjust them close to cutter, and be sure knife just scrapes the surface of the gauge. Tighten up. Set for a three-eighths or half-inch tenon. Start up, and you will find, that is if you have been careful, that you will have a tenon true from the shoulder to the extreme end. If you find in tenoning a rail tenon twelve inches wide that the shoulder burrs up or rubs hard, it is because the table is not travelling in a line with cylinder heads. This is easily remedied. Loosen screws that secure the guide or bed that the table runs on; tap in or out as the case requires. If cutters cut away, or cut on the bevels, rack out with thin cardboard.

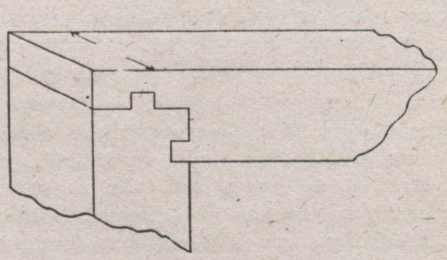
In squaring up to make sure that face will be the same length as the back of rail, tenon two pieces, setting your stop-gauge to do so. Put each piece back to face. You can feel the slightest difference better than a square will show it. Should you wish to make a jump shoulder or shoulder off the square, make a mark on the table, say, an inch from edge of cylinder. Now, move cylinder in or out any distance from your mark that you wish. You can quite easily set back to square if you follow the above rule.

In coping sash rails much time can be saved by following out a regular system. It is safe to say that 95 per cent. of the coping knives used are shop made. The 1⅜ knives and 1¾ knives should be of the same length and thickness so as to insure a correct balance, say that you have just run off a batch of 1¾s. and wish to set up 1⅜s. Before moving back the 1¾ knife measure the distance the cutting point is out from the head and move out 1⅜ knife same distance. If you find that you cannot get it close enough to tenon dont move the head. Note where it binds and file the slot free. Tip the knife up to the right position. When you have to set back 1¾, the other knife may remain in its place until it requires grinding. If it is a good temper this will not be needed until you have run off a set of four or five hundred rails. Keep your knives adjusted as suggested, and you will be surprised how quickly you can make the change. A lot of time is lost in the unnecessary moving up and down, or in and out, of the head when working sash rails only. But if it is part of your duty to tenon solid mold door rails, and you use the chimer head, you will very likely have to move the spindle. If you use the shop-made knives for all purposes try to arrange them to save the trouble of moving the head for the different setups.

At the commencement of this article I said that perhaps you are a young man just beginning to acquire knowledge in this particular branch of the business. You must, if you want to succeed, bring system to bear in all your attempts. Do a little thinking to find out where to improve methods. If you are employed in a shop that has been a going concern for some time, you will meet with many difficulties in trying to break away from old established rules and regulations. Try and meet the conditions as they appear and in a very short time you should get things in such shape that you will be enabled to do a large amount of work quickly and well.

A TONGUE AND GROOVE JOINT.

The accompanying sketch shows a tongue and groove joint, the strong point of which is that it can only be



Tongue and Groove Joint.

taken apart or put together by slipping in the direction of the arrow heads on top. It is on the same principle as an interlocking mitre joint.

WASTE AT THE CROSS-CUT.

It is a generally accepted fact that the best way to save waste in a factory is to prevent it, and the chances are that if we would spend a little more time trying to prevent waste that is being spent in devising ways and means to utilize it, we would come nearer to solving the problem.—G. L. M.

The following is said to be a good recipe for gluing emery to wood or metal: Melt together equal parts of shellac, white rosin, and carbolic acid (crystal), adding the carbolic acid after the shellac and rosin have been melted.

TEMPERING MACHINE CUTTERS.

There is a large number of methods for tempering cutters. We have found the following a very good one: Take one quart of fish oil and two ounces of bromide of potash, and mix them thoroughly. Heat the cutter evenly to a clear red and plunge it into the oil. Now heat a piece of flat iron and place the cutter on it, draw the color to a light violet and it will usually be found to stand well. Of course, different brands of steel often require more or less different treatment, and if any of our readers would send us their experiences in this connection it would be of much interest. It is very important that the cutter is drawn and the violet color appears quite evenly over the cutting edge, or it may break in working. It should be borne in mind that a plain cutter will stand a harder temper at its cutting edge than a molding iron with a varied outline.

POINTS ABOUT THE MOLDER.

In running a molder it is very handy to have a couple of shelves hung directly over the machine; not hung with ropes or strings, but with strips of wood or iron rods, and firmly braced, and with raised edges, say an inch high, so that things will not jar off and get tangled up with the heads or feed rolls. On these shelves can be kept all the wrenches, hammers and other tools which one always wants right in reach. The ability to lay the hand right on the right tool often saves a lot of time and trouble in running a molder.

Speaking of getting smooth work by setting the knives with the bevel in, results can be obtained from having the knives sharp and setting them to cut, rather than to scrape. Speed is a great factor in smooth cutting, and the best results may be had by setting the knives out far enough to give good clearance, keeping them sharp and thin and using high speed and slow feed.

Saw Mill Department

EDGE AND CENTER CRACKS IN BAND SAWS.

What is the best way to steer clear of both edge and center cracks? At one mill where I was employed they had four saws, two of which had not been run for some time. They were full of center cracks from ⅛-inch to ¾-inch long, and saws not worn down ¼-inch yet. The other two saws were practically new, but there were two brazes in one saw and four in the other. The first thing was to overhaul the machine and line up the wheels. I did not tip the upper wheel, as some filers do, but left it plumb with lower wheel. I think it bad practice to do so, and will try to make my reason clear. What is the sense of running a long-back saw and tipping upper wheel forward to take up the extra length in saw? There is nothing gained by that. You might better run a straight-back and leave the upper wheel alone. It takes some stretching to put the back in a saw, and if you tip upper wheel forward, the tooth edge of saw, while in the cut, will be the longer, which is the reverse of what you want to cut straight lumber. I always put up my saws with ⅛-inch back in 12 feet.

The next thing was the guide blocks. They were made of soft brass, and by the looks of the saws it seemed as if the sawyer had tried to hold the saws in the cut with the guides, as the saws were brass-plated where they run through the guides, and consequently crystallized. I substituted maple, not having lignum vitae on hand. I always have an extra set of guide blocks soaking in oil, and don't use dry end wood, as some filers do.

The next operation was to get the saws in shape to cut lumber. Looking them over, I found the saws with the center cracks had the least tension and the edge-cracked saws the most. Some filers blame all center cracks to too much tension. Admitting it, yet I have seen saws run with so much tension that when lying on the bench they were all wavy, yet they did not center crack. My opinion is that more saws are center cracked from rubbing on the guides and having cross lumps in them than from any other causes.

I prick-punched all the cracks I could find and fitted the saws up, then took off 600 pounds of straining weight, and was ready to make a run. I started the machine and watched all boxes, letting machine run light for a few minutes. Everything seemed right except a little vibration of machine, as there was no foundation under it, nor is there yet. There was about 10,000 feet of white pine to be resawed, and after I got started sawing there wasn't a man about the plant that did not come in to rubber, as I was feeding 105 feet of 1x12 pine. Getting another man to help take away, I finished the run, then looked over the saw and found I had a few new center cracks, but I expected that, as a saw that is crystallized will keep on cracking; the only way to stop it is to send it back to the factory and have it retempered. I made those saws go until I got four new ones. Since then the machine has made its two runs every working day and I have had but two cracks, and those in the braze. I attribute my success to never slighting my work and keeping my saws as nearly perfect as it is possible to have them.

In conclusion would say, don't use metal guides, but use wood well soaked in oil. Don't try to make the guides make up for poor saw filing, as a saw that is poorly put up won't stay in the cut, no matter how close the guides may be. Have the tension as even as possible, as a little tension evenly distributed is better than a lot unevenly put in. See that there are no "round corners" on the teeth. See that the box nearest lower wheel fits snugly, as any jump there will crack a saw every time. And, above all, don't have any cross-bars in your saws; they are easily found by wiping the saw with kerosene oil and drawing straightedge from tooth edge to back edge; every one will be marked. Take them out with long-face hammer. Don't try how quickly you can put up a saw, but how well. Go over your saws often; don't wait until they begin to dodge.

Use little clearance; a saw with little set will stand up better, cut smoother and use less power. Don't use the tilting device at all, and if you use the crossline, be careful; when you use that you are running your saw in a twist, and that is something to be avoided. I use neither crossline nor tilt, but put up all my saws alike, and when they begin to crowd back, I sharpen again. There are lots of saws broken by trying to make them cut five hours, whereas three would be better. I have found that saws will become crystallized on the back edge by bearing on the sharpener rest while sharpening, but that can be removed by holding a piece of emery wheel at back of saw while running.—"Z."

"THE ORIGIN OF THE SAW."

The above is the title of an attractive booklet issued by Shurly & Dietrich, proprietors of the Maple Leaf Saw Works, Galt, Ont., and the largest manufacturers of saws under the British flag. These interesting facts regarding the origin of the saw are given:

"Severance of material was doubtless among the first difficulties which confronted mankind: to meet this, the primal saw, as being at once simple and effective, whether it was the jawbone of a snake, the backbone of a fish, a jagged flint, or whatever else it may have been, was adopted, and furnished the idea for future development. The Greek story of the origin of the saw is, that Talus found the jawbone of a snake and, after discovering from it the properties of a saw, imitated it by notching a piece of metal, and was killed by his uncle through jealousy. Another Grecian myth says that Perdix used the backbone of a fish as a saw, and in consequence was changed into a partridge by the envious gods, and deified by his countrymen. But the Greeks were egregious wondermongers, as saws were used long before that people came before the eyes of the world. It was a common tool among the ancient Egyptians, and many specimens of their saws are yet preserved. Even among that people it had lost much of its primitiveness, and was made of bronze, with the teeth well cut or ground out, and was inserted into a handle like a modern table knife, or bound to the same with thongs; the teeth were pointed from the handle, and the cutting was done by a thrust movement as in modern saws.

"The Egyptians and Phoenicians used saws for cutting stone as well as wood, and the stones in the temple of Solomon were faced by saws. Samuel, 1033, B. C., mentions them casually. A two-handed saw has been found in the ruins of Nimrod, and many saws have been brought to light in Thebes. In the stone age, saws were made of flint, set into a back of wood, and secured by means of bitumen, and the early dwellers in Europe notched shells. As late as 1768, Captain Cook found the South Sea Islanders using saws made of sharks' teeth, lashed to a back by sinews. Saws made of obsidian were used in ancient Mexico, and specimens of these have been found under the deposits of sand and gravel in New Jersey, thus proving the existence of a pre-historic coast trade along the Atlantic, obsidian not being found nearer New Jersey than Mexico. Saws of the bronze age have been discovered in considerable numbers both in Germany and Denmark. Modern Oriental saws have the teeth pointed towards the handle, and are operated by the drag movement. This manner of sawing, and pointing the teeth, seems to be the most suitable to rapid sawing, but does not admit of as great accuracy as the thrust movement. The Japanese saw is shaped like a butcher's cleaver, the blade being very thin, with a flat, straight handle, to which the blade is attached by wrapping tightly with fine splint cane. The teeth are very narrow and long, and the sawyer works with short, rapid, upward strokes."

Speaking of their own business and its wonderful growth Shurly & Dietrich say: "In modern times, saws of English or European make were cut from thin sheets of steel, and were supposed to possess points of excellence not found in the productions of American saw-makers; but, if such existed, they were more than negatived by their clumsy construction and non-adaptation to the wants of good mechanics. Saws of Canadian make are now found side by side with the best of English and American brands in all parts of the civilized world, and are preferred to the latter by first-class workmen. The adoption of our saws by foreigners, in preference to those made in Europe or the United States, is, perhaps, the best test of their superior qualities on the whole, as the stranger is not likely to be influenced by national prejudice when making a selection. As manufacturers, we have made a careful study of the saw, and the wants of mechanics, and have made many costly experiments in endeavoring to meet the demand for better saws than heretofore obtainable. These experiments have resulted in the discovery of our Secret Process of tempering, which is very much superior to any other process of tempering saws yet discovered, as by this process the steel is refined and toughened and produces a finer and keener cutting edge, and will hold it very much longer than by any other process. We have the finest facilities for manufacturing high-class saws and are the largest manufacturers of saws under the British flag, and one of the largest in the world. We are the only manufacturers in the world who export saws to the United States, where they are sold for a higher price than the best American made saws."

THE LONG BACK SAW.

"What is the sense of running a long-back saw and tipping upper wheel forward to take up the extra length of saw?" asks a filer.

You may either tilt the top of the wheel forward to take up the back or tilt both of the wheels, so that a line stretched on the face of them will clear the wheels the same distance at the bottom of the top wheel as it does at the top of the bottom wheel. It does not make any difference which way it is done, if you have the saw hanging plumb after it has been trained on the wheels and projects the same distance off of each. If the top of the saw hangs forward of the bottom part, the saw will not stand nearly so much feed as it would if it was plumb.

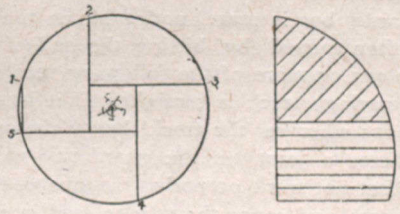
It is a fact, that a straight string is easier to push out of line sideways than a curved one, if each has the same strain on it. Now to prove that tilting the upper wheel forward will not make the back edge tightest or front longest. The writer's experience on band saws would prove that a saw crowned ⅛-inch in 12 feet would run back on the wheels farther than it could be run and saw lumber if the wheels were lined up straight without crossline or tilt. He has run wheels with a great amount of crown, so he thought, and still they would run back under above conditions.

You may let the wheels clear the line, as above stated, from 1-16 to ⅛-inch, and put a saw on with the back ⅛-inch long in 10 feet. If it runs in the proper place on the wheels and does not quiver on the back, let it run until time to change it. This time pull it out to 3-16-inch in 10 feet on the back, even the tension, sharpen, and put on mill. Train with tilt to proper place on the wheels; not over ½-inch besides the teeth is the way they are generally run. Watch the saw a short time, and you will see that it is not the back edge that is tightest, as the saw will rattle or vibrate on the back edge enough to prove this. Again, when the saw stops, before the strain is taken off, catch hold of it and see which edge is the easiest to push out of line. If your saws are 10 inches or under, there is no danger of this making them crack.

The writer never carries less than ⅛-inch crown in 10 feet, and sometimes more, and believes in carrying plenty of tension on flat wheels. Saws put up with the backs long will not crowd back like those put up straight. They are running on a wedge formed by the tilt in the wheels, which makes it harder for them to crowd back. Most centre cracks are formed by lack of tension and from saw being lumpy.

QUARTER-SAWING ON A SMALL SCALE.

Most methods of quarter-sawing which are advocated these days seem to be from parties identified with large mills. The following may interest the small mill man, who does not possess all sorts of tools, and must make out with what he has: Suppose we have a 50 or 52-inch single saw, and want to quarter-saw a log as large as, say, 33 to 35 inches. Some men might say they would not run such a plant; others, however, do. Referring to the sketch, line 1 is to take off a light slab. Line 2 is run in as near



Quarter-Sawing on Small Scale.

the heart as possible and not strike heart defects. It will be understood that the saw will cut but a few inches above centre. When these two lines are run, turn log one-quarter over, toward headblocks, until first line is level, or at right angle to saw. Now run line 3 near centre, like line 2, and flitch will drop out. Turn log one-quarter over again, until line 1 will lie flat against knees. Now run line 4, turn, and run line 5. The log will now be in five pieces, including heart. Rip up flitch the usual way. Most of the log will be quartered. The bark corners of flitch can be turned bark down and also quartered, like Fig. 2. Sometimes it is good to take off light slabs to save edging.

THE ARGUMENT FOR HIGH SPEED SAWS.

A saw will dull easily if run by a slack belt which allows it to slip. But this fact is not due to the mere slackness of the belt, but to the loss of velocity which ensues through said slipping. Let us glance for a moment at a comparison between the cutting methods of the saw and the chisel. In some respects the same principles underlie both.

A chisel is driven into wood by the force of a sudden and powerful blow; a slow, scraping motion will dull the chisel more than to pass through the wood with full and sufficient force. That is the principle we are seeking to investigate. Velocity gives penetrating power and lessens the destructive effect on the point. If also a saw tooth be driven with a velocity of three miles a minute (which is not too fast), it will have a greater penetrating power to cut through anything it touches, without harm to itself, than if driven at half that speed. A saw tooth is in fact a chisel, the kerf is the mortise, and the walls of the mortise and the walls of a saw kerf are alike. The philosophy of mortising with a chisel and sawing with a saw is much the same all the way through, and to consider the action of the chisel may help us to understand the action of a saw tooth in sawing; and, when we understand one saw tooth, we understand them all, and the chisel, too.

In the process of sawing, the saw passes through the wood, making way for itself as it goes by tearing away the wood, leaving a kerf in which the saw moves freely, and passes on through the cut, the walls of the kerf being trimmed more or less smooth, according to the condition of the working corners of the saw teeth. The saw passes through, leaving a board on one side and the log or block on the other side, the walls of the kerf making the face of a future board or piece of heading, as the case may be. In order to be able to consider the problem of the working corners of the saw teeth, we must consider what will help or hinder the process of cutting loose and casting away the wood to be removed and leave the walls of the kerf nice and smooth. This brings us to the fact that the working corners of the teeth must be dressed in such manner that they will not dodge, but continue on in a steady course, leaving a perfectly-walled kerf, so that the board or piece of heading will be perfect. If there be any flaw at the working corners of the teeth, or even a flaw on one corner, it will tend to make imperfect work to the exent of injury; a defect on the working corner of a tooth that is so small as to be mechanically inconsiderable, will work a hardship, and if very many teeth are injured by having the working corners knocked or worn off, although the defects may be so small as to be overlooked by the average unassisted eye, it causes a slight dodge and defective work, heating the saw.

HOW TO CLEAN A FILE.

What is the best way to clean files? One who has tried about all the methods, needle point, chemicals, file card, etc., says that the most convenient, and at the same time most efficient method is to take a piece of wood about the size of a man's finger, square it on the end and sides, then place one of these corners against the file and press as hard as you can, forcing the wood down between the file teeth, pushing the stick across the file in the direction of the length of the file teeth. In this way ¼-inch of the length of the file can be perfectly cleaned at every stroke. Any kind of wood will do to clean with. The aforesaid was troubled a great deal with this matter of cleaning files, and for a while bought everything that came along, until he found he could clean them with any kind of a stick by whittling a square corner on it.

HOW TO KEEP A CIRCULAR SAW COOL.

To keep a saw from heating, the saw teeth and gage should be suitable to the wood, and the saw should be well sharpened and run at the proper speed. The saw blade should be carefully packed, the feed not crowded and the cut opened out immediately it passes the saw. The saw guide is sometimes continued too far along the face of the saw, and thus crowds and heats the plate through not allowing sufficient room for the wood to open out as it is cut. If the fence extends say three inches beyond the roots of the teeth, it is usually enough. Heat is often communicated to a saw through the saw spindle, through the bearings being out of order or screwed up too tight. The saw should not fit too tightly on the saw spindle or bind the steady p'n. A saw when hung properly should in the horizontal line incline very slightly toward the timber, so that the teeth at the back of the saw may rise without scoring the wood. If the driving pulleys are too small or run at too short centers the bearings will heat.

RESAWING SPRUCE.

In regard to fitting saws for resawing spruce, when a saw is in first-class shape I don't think it necessary to change the fitting in order to cut spruce. One day we had got in two cars of spruce, and it all was to be resawed. All was pretty wide stock. I began to think I was up against the real thing, until we got to sawing it. When they got a load of it to the band saw I went down to start it off. I told the feeder to feed it very slowly, so that I could see how the resaw was going to act. We started the machine, and I have never seen a saw cut any nicer than this one did. Seeing the saw was going to work all right, I had him carry more feed. We run this spruce through at the rate of 100 feet per minute and the saw cut a perfect line. While we were sawing this spruce a gentleman came into the mill. He was a band saw filer, and said he liked the way my saw ran in spruce, and asked how I managed to keep the corners on my teeth in this wood. The resawyer happened to change saws on the machine while this filer was in the filing room. After he took the sharp saw out out, I placed the dull saw on the pulleys so this filer could examine the points of the teeth on this saw. He examined the teeth and couldn't find one corner that had crumbled. He said he never had any trouble with his teeth crumbling as long as he is sawing pine, but as soon as he gets on hemlock or norway the corners drop off. In regard to saw teeth crumbling, there are several things that cause this trouble—poor swaging, for one thing. The trouble with many filers is, they don't know how to adjust the swage to do good work. The result is the teeth are swaged so that nothing will keep them from crumbling. Another cause for saw teeth crumbling is that some filers do not side dress their teeth properly. There is only one method that I have ever found by which to side dress saw teeth perfectly, and that is to give the sides of the teeth a taper down and back from point, so as to give perfect clearance, and the only way to accomplish this is by the use of a good swage shaper.

HINTS FOR BAND-SAW FILERS.

The following suggestions are given by an expert filer who has taken many band-saw filing jobs in mills where the saws were far from satisfactory.

Many filers work without the light in the right place when looking at the tension. I like the stretcher 2 or 3 feet from the right-hand end of the bench, with a good light at the rear of machine, so when standing in position for putting on the pressure you have only to step back a few feet, and facing machine, to see just where your tension is out. Have the window by the leveling block darkened by a curtain when trying tension. I prefer a cast iron slab to a wooden one, as the work can be done in one-fourth the time and much easier, as you have to lift your hammer every blow you strike on the wooden slab. I have never used a steel slab. I carry a 30-foot tension in 10-inch 15-gage saws and crown the backs ⅛-inch in 10 feet. Just experimenting, I have had the backs drawn out 5-16-inch in 10 feet on 8-inch saws, and they cut hickory as straight as a string, and did not crack. I put the tension in evenly from one edge to the other, or practically so, but am careful to not let light show abruptly under the gage on the edges.

I seldom level my saws on the inside and do not have much leveling on the outside. A good stretcher is the main cause of this. I swage a 15-gage saw to a scant 9-gage, and seldom let the swage get smaller than 11-gage. Carry 6½-inch hook in a 10-inch saw, and cut oak, poplar, beech and hickory without saw going forward on the wheels. I never carry less than half hook, and when I did it was because the grinder would not grind more.

In adjusting a sharpener you should notice the feed finger or pawl when it comes against the stop, to see whether it slips up or down on the tooth; if it does, adjust the saw until it stays in the same place. The finger gets worn where it pushes against the saw, and needs trueing up occasionally.

When the dog board is thick at the front end for a short distance, the saw is said to be "bull-heading." The crook is in all the boards, but is more noticeable in the dog board. This is not often caused by hitting the end of the log too hard, but for one or more of the following reasons: We will suppose the carriage track is straight. If it is not, the saw will leave crooks wherever the track throws the carriage sidewise. Sometimes a joint on the guard rail will be out of line or the offset not work properly. Lumps get close to the roots of the teeth and cause the saw to lead one way or the other just as the saw enters the cut. If the mill is out of line it will cause bull-heading. It is easy to tell when the mill is out of line, as you will have to level the saws out or in to make them come out right on the rear end of the log. Saws have a tendency to bull-head if there is not enough tension near the front edge. A shaper will cause bull-heading if the dies are worn so they dull one corner of the tooth. If the teeth are longer on one side than the other, that is the way the saw will run—always to the long side, unless counteracted by something else; but you might level a saw so it would run into the blocks and it would not stop it from bull-heading if the fault was in the grinder.

The teeth may be ground in on the front and out on the back. This will not sound reasonable to some, but it is a fact nevertheless. The emery wheel end of the arbor would have its center on the inside of the center of the saw and the opposite end of the arbor would have its center on the outside of the center of the saw, and would cause the saw to lead out just as it entered the cut, and the saw would straighten up after the width of the blade was in the log. It makes no difference how easy the sawyer goes into the cut, they will bull-head just the same as when hit hard.

—The Henry S. Holden Veneer Company, Grand Rapids, Mich., are making a specialty of bird's eye maple for the furniture and piano trade, and expect to handle about 3,000,000 feet during the season of 1908, as they have over a half million feet new cut and ready for delivery. They are also making a specialty of rotary cut and segment sawed maple for the piano trade. They carry a large line of fancy figured woods in birch, mahogany, walnut and quarter-sawed oak, and can supply rotary cut stock in birch, maple, poplar, ash, elm gum and basswood on short notice. At present they have some bargains in quarter-sawed oak.

QUERY DEPARTMENT.

Subscribers to "Canadian Woodworker" are invited to forward to the Editor concisely-stated questions on any point of woodworking practice as to which they may be in doubt. These queries will be answered in an early number.

Furniture and Cabinet Making

FINISHING CHEAP FURNITURE.

In nine cases out of ten the failure to produce a good finish on the cheaper grades of furniture by the three-coat system is caused by the use of cheap varnish or other material. You may manage to turn out work that will look well for a short time, but let it stand in the factory or in the store of a dealer for a short time and the gloss is gone, and it looks as though it had never seen a coat of varnish. The fact is, it had been treated to a couple of coats of "rosin oil" and a coat of "stuff" disguised under the name of filler. It pays at all times to give a reasonable price for finishing material. It is better to apply a thin coat of good varnish than a heavy coat of inferior quality, for it will wear longer and look better.

The most important feature to be considered is the filling. Without a perfectly filled surface to begin on the result will be failure. Many are careless regarding this question. In many factories the filling is well done up to a certain point. It is properly applied and well rubbed into the pores, then, in order to save a little cheap labor, a stiff scrub or broom is used to clean around the carvings, etc. This is the most difficult part of the work to fill successfully and get a good finish. Then why spoil the whole job in order to save a little time?

The straight-grained variety of oak is used for cheap and medium furniture. Take from 12 to 14 pounds of paste filler to a gallon of thinner. Allow it to stand after being applied until it begins to turn white. Don't rub the filler off until it is well set. Right here is where most trouble comes in. The filler is not allowed sufficient time to settle into the pores. It is easy to wipe it off while in the wet condition, but the temptation should be resisted, otherwise the filler is wiped off the surface and not forced into the pores of the wood.

Use tow for rubbing the filler. Excelsior, shavings, etc., are too coarse. They take the filler off in streaks and do not press it into the pores. Tow will gather the filler as you work and soon forms a pad. The work should be allowed to stand from 24 to 48 hours. After it is thoroughly dry, sand lightly with paper that has been used on other work, and, being soft, will not cut the corners, etc. It is best to sand the filling coat a little, as it removes all grit, although some do not sand at all. The cleaner you start your work, the easier it will be to keep it clean.

The next important feature to be considered is that of first-coating. The best thing to use in order to produce a durable finish with three coats is one of the many good surfacers on the market. Having a mineral base, it binds well with the filler, and forms a hard, impervious surface, and "holds out" a coat of varnish better than any clear gum first-coating that can be applied. Surfacers are very easy to apply, dry hard, sand easy, and have superior covering qualities. Their great covering qualities make them cheap where the cost of finishing is a consideration. After the first coat is thoroughly dry, give the work a good, heavy coat of either coach or rubbing varnish.

In order to produce a "polish" finish on three-coat work it is necessary to have a good, clean varnish-room. This is lacking in many factories. Where it is possible to have the last coat free from dirt and grit, a fairly good, well-polished surface may be obtained without rubbing. Manufacturers of finishing supplies are selling polishing powders that are superior to rottenstone for quick polishing. They will cut almost as fast as fine pumice-stone, but at the same time will not scratch the work. They may be used in the following manner: Dampen the work with polish, sprinkle on some of the powder, then rub for a short time with a block of felt. This will remove all grit and specks. Then without cleaning off, take some good bottom waste, dampen it with polish and rub the work briskly for a short time. Clean and wipe dry with waste, and the result will be a fair job of polishing.

It is important to give the work time to dry thoroughly between the coats. Half the trouble along this line is caused by not allowing time for each coat to dry hard. Allow your filler 36 to 48 hours to dry, your first coat 36 hours, and the result will surprise you.

NOTES ABOUT GLUE.

There is nothing known, at present, which supersedes glue for the purpose of making wood joints adhere. Good glue should be translucent brown or dark brown in color, and tough to break. If very brittle it is unfit for joiner work.

When a quantity is to be stored it should be kept in a dry storeroom. If stored in a damp place it will deteriorate and become coated with mold or fungi. After the glue has been thoroughly melted by means of clean water in the glue pot, and has been at the boiling point for ten or fifteen minutes, it is ready for use.

If a large surface is to be glued, the glue should be applied somewhat thinner than for a smaller job, because if the glue is thick it will be difficult to spread and the superficial glue difficult to express. The spreading of the glue must be done as quickly as possible. It is important that the glue should be at the boiling point when applied, because the molecules are then vibrating at their maximum speed and so can penetrate better into the wood pores and thus make a good joint.

After gluing up hard or soft woods, it is very important that sufficient time should be allowed for drying; but the time required depends on the hydrometric state of the air. As a rule, longer time is required in winter than in summer; but, roughly, five or ten days should be allowed for soft and hard woods respectively. Before the final smoothing off is begun the work should be quite dry, and it is a great mistake to begin too soon. It is well known that wood is never absolutely dry, but it is quite right to conclude that all the water in the joint should be evaporated before smoothing off, because here the wood is expanded very much more than its normal dimensions. Should the work be finished off too soon, as is often the case, it will be noticed in a short time that the wood about the joint has sunk below the general surface of the framing, the result being a serious defect, and probably a serious loss to the person responsible.—Carpenter and Builder.

TENSION TESTS FOR SCROLL BAND SAWS.

Several plans are suggested for determining the right tension for a small scroll band saw. Some advocate the use of a weight, a method that came in use with the introduction of the band saw, and which is still in use by some builders of the machine. Others use a coil spring properly situated in the sliding head that carries the upper wheel for accomplishing the same object. Still other builders discard both the spring and the weight as being useless appendages that serve no good purpose, since the "cored" frame of the machine is so light as not to need a compensating cushion when the tension of the saw shrinks in cooling, after having been made taut while warm by use. The probability is that if saws were kept in proper condition and intelligently used there would be no need of any kind of cushioning device.

For instance, we find that if a pattern is made and molded, and cast steel melted and poured into the molds thus formed, the resultant casting will lack between ⅛ and 3-16-inch to the foot of being as large as the pattern. If this ingot of steel is rolled into sheets and allowed to cool, and if we were to note the shrinkage at different temperatures as the cooling progressed, we would find the shrinkage would at all times correspond to the degrees of heat—losing until the cooling was finished. It would, for sake of argument, be a curious spectacle to see a saw hot enough to assume a light straw color for its entire length—a state of affairs too unlikely to occur to be worthy of consideration. But if we have followed up the expansion of the saw while it is becoming heated, we must, of course, provide means for relieving while the cooling process and necessary shrinkage is taking place. We will say that a saw, in order to expand 1½ inches beyond natural length, has assumed a dull red color, which would require the upper wheel to be raised ¾-inch while the heating was going on, and to be correspondingly lowered while cooling, until normal conditions were again reached, in reaching which the various colors incident to the cooling process would appear in their proper order, the first color being difficult of description, followed by a dark blue, a pigeon blue, a dark straw color, a light straw color, and finally colorless, when shrinkage ceases.

In following these various changes we would likely find it difficult to note the shrinkage occurring between a light straw color and colorless, but it evidently would be so slight that the cushions of the two wheel tires of the machines of massive cored frames would be ample to relieve excessive tension and consequent danger of saw breakage, while with the cored frame as constructed to-day, the staying qualities seem too flimsy to offer resistance sufficient to cause the lightest of saws to break, even though no sort of arrangement be made for the difference between the length of the saw while changing from hot to cold, or in any other condition. In scroll band saws it is unnecessary, therefore, to make provision for their lengthening while becoming hot, or shortening while cooling, because the natural condition of the housing is such as to offer ample relief to the saw while the insignificant changes due to heat expansion and cold contraction are taking place.

The fewer the parts and the more accurately and intelligently these parts are prepared and placed, relative to the work required of them, the more efficient and satisfactory will be the working of the machine into which they enter. Take, for instance, the tires of the scroll band saw machine. They should be true, balanced, of pure, first-time-used (not some melted-over old rubber shoes) rubber, 3-16-inch thick, and so securely fastened to perfectly turned and balanced wheel rims (preferably of wood) as to preclude the possibility of there ever appearing any loose places at any point of their surfaces. With such construction and such material there would certainly be no need of employing springs, weights, or other cushioning devices for insuring the safety of the most delicate saw in use. There is no call, therefore, for knowing in pounds and ounces the exact tension being carried by the saw, for, in the first place, the operator must possess and exercise judgment sufficient to determine when his saw is strained to the proper tension required to perform its work. When using a band saw its action will soon make known its requirements, whether it be slack in tension, deficient in set, or dull; either condition becomes manifest in its own peculiar and unmistakable manner, and if not given immediate attention is liable to cause serious trouble.

Let us presume that the machine is in perfect condition —wheels true and in perfect alignment, so that the saw will run in its proper place. We should now proceed to examine the saw and judge, first, as to correctness of set, being governed in this direction by the work in contemplation as proportioned to the width, thickness and number of points to the inch of the saw, etc. See to it that the saw is sharp, and if the examination has proved everything to be correct, the work may proceed, with no fear that any heat will be generated sufficient in intensity to require attention from the adjusting screw, either to take up slack that an undue heat would cause, or to relieve the strain likely to ensue by reason of its shrinkage in cooling. Hence, a properly constructed band scroll saw machine, handled by a competent man, needs only intelligent usage to cause it to perform perfect work.

THE CLUING OF VENEER.

The future and even more extensive use of veneer is indicated in the planing mill than heretofore. One must study the glue business and veneering from end to end. There are some common faults that can be guarded against. One of these is to put the glue heaters and glue machines, presses, etc., in any of the main rooms of a planing mill. The only way to handle glue successfully is to have it free from cooling drafts and especially is this requisite during the process of spreading it out on lumber and getting it into the presses. When it is spread out thin with either a machine or brush on a board or sheet of veneer it does not take much of a cooling current of air to chill the glue and seriously hamper the holding qualities. Therefore when a planing mill starts to use veneer and puts in gluing appliances, these should be put in a room by themselves where the temperature can be kept even, and above all, where there are no cooling drafts. Just what temperature is advisable for the glue room is a matter of some debate, but within certain limits there is not much doubt but what the warmer it is the better. It should never be below 70 degrees and 90 is better. The main point is to have it warm enough so that the glue won't chill and not to have it so hot but what a man can work in there with some comfort. Handling glue is not the most inviting task in the world anyway, and when to the naturally offensive odors of the glue room is added an uncomfortable amount of heat the combination is not conducive to proper interest and care in the work. The main thing is to protect the room against drafts and then keep it warm but not too hot for work with comfort.

Another point that may be gathered is, that it's not the quantity of glue used that counts so much as the quality of the glue and the skill in spreading. It is not desirable to have any perceptible body of glue between the wood. All that is wanted is enough to stick the wood together without really filling up any space, generally the thinner you can spread your glue and be sure of having it spread all over the face of the stock the better. It not only saves glue and thus saves cost, but makes a better job. That's why it sometimes does not cost any more to use a high-priced glue than it does to use a cheap glue. Another point that may be gathered from watching the same work is that a good way to economize in the cost of the glue room is to have your stock trimmed as near as practical to the size you want the finished product so that you may not be wasting too much glue in the final trimming to size. Something must be allowed for trimming but where due thought has not been given to the subject the tendency is to leave too much. One is likely to think that the more surplus on the edges the more opportunity to trim to advantage. This is true in a measure, but don't follow that idea without counting the cost in the way of waste glue that is cut off in these trimmings.

SHRINKAGE IN FURNITURE WOODS.

In order to be successful in any line we must strive to become thoroughly acquainted with the nature and construction of whatever is used in that line of work. Just stop for a moment and think how many of the rank and file of woodworkers know how the extremes of heat or cold affect wood, and the different effects on the different kinds of wood. Probably more mechanics in the iron trade fully understand and take advantage of the effects of temperature upon iron, than the woodworkers do upon wood. For instance, notice that if they wish to fasten a band or pulley extremely tight upon a shaft, the ironworker heats the band and keeps the shaft cool, then slips the band a tight fit over the shaft, and when cooling the band shrinks, making it almost impossible to break the hold except by again heating the band and cooling the shaft. They use this feature of expansion and contraction to a great extent in all branches of iron work.

Now we have the same features in wood, only to a vastly greater extent, owing to its fibrous nature. Just as there is a grain and pores in iron, there is a great system of pores or cells in wood, varying largely in the different kinds of wood. For instance, clean, straight cork pine is very porous, and its cells, if properly dried, will keep their relative position and the stock retain its size probably better than any other kind of wood. The other varieties of pine, with resinous deposits, will not be affected by weather conditions after drying. Basswood is another variety not so easily affected, while hardwoods like maple, birch and oak will change with every change in the temperature, to a greater or less degree, as the texture of the woods varies, oak perhaps being subject to the greatest change because of its coarse grain, which makes it honeycomb and check in drying. In maple these are apt to be blind checks because of the closer grain.

To begin with, there is always a cause and effect, and to remove certain effects we must find the cause. In this case we find the cause of the shrinking of lumber, is drying. Then we must look there for a remedy. In other words, we must dry lumber without shrinkage, or the least degree of it, in order to insure holding the stock at that point through all conditions of temperature. The question arises, can this be done, and, if so, how?

First, let us understand how and why this shrinkage takes place. When the lumber is cut there is a natural condition of the tree, with cells for the feeding of sap and the nourishment of the tree. After being cut these cells are useless for that purpose and the sap must eventually evaporate or be driven from these cells, leaving thousands of hollow tubes which reach clear through the lumber endwise. If these cells can be kept free and open until the sap and moisture are gone, there will still remain the natural condition of the tree, but in the act of drying artificially the use of a high degree of heat has the effect of contracting the pores and drawing them together in proportion to the degree of heat used; the higher the heat the more the contraction. This varies also according to quality and texture of the lumber, as wherever there is a knot or burl in the board there will be a twist.

NOISE MADE BY CIRCULAR SAWS.

J. O. Barnwell writes to say how he remedied a loud singing noise caused by a small cut-off saw making about thirty-five hundred revolutions. At first it was thought the noise was caused by the air which the saw teeth fan through the narrow gap in the saw table, but on being informed by the chief of the department that it was a bell-effect from the disk itself, the above named devised a surprisingly successful preventative.

The saw table was of wood and the device was made so as to harmonize with the table as well as to prevent other discord. He took a piece of wood about 1 by 2 by 6 inches and bored a 9-16-inch hole 4 inches deep in one end. Into this hole he put a spiral compression spring 2 inches long and of such a diameter as would allow it to work freely in the hole. He next placed a piece of common arc light carbon about 2½ inches long on top of the spring, and nailed the block to the underside of the table in such a manner that the spring would press the exposed end of the carbon rod gently against the side of the saw. Care was taken to see that when the table was raised to its highest position, the carbon would not be beyond the circumference of the saw, or even so near the edge that the set of the teeth would interfere with it.

One difficulty was not foreseen. When the table was raised so that an operator could get at the working parts, the spring would shoot the carbon out of the hole like a pea out of a popgun. To prevent this, a longitudinal slot was cut in the wooden holder so that the short arm of a small lever could be inserted into a hole bored crosswise through the carbon. When it was desired to raise the table for any purpose, the lever was moved so that the carbon was held out of contact; the long lever arm being held in place simply by a loop of leather and a nail. When the table was again lowered, the loop was unhooked, and the carbon was, of course, sprung back into contact. The small amount of graphite in the carbon rod served as a lubricant, and the saw did not wear in the smallest degree. On a saw with an iron table the same device could be used with appropriate modifications.

—The consumption of Douglas fir has grown from 5 per cent. of the total lumber cut in 1900 to 13 per cent. in 1905.

Woodworking News from all Canada

Readers of the "Canadian Woodworker" are cordially invited to forward to the Editor items of interest to the trade, particularly those relating to the erection or extension of woodworking establishments.

The following is a summary of news in the Canadian woodworking field, being the happenings of the last few weeks of preparation for this initial number:—

New Mills, Extensions and General Improvements.

The Fraser River Sawmills, Millside, B.C., will be extensively improved.

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The Cascapedia Trading Co. will build a $100,000 sawmill at Dalhousie, N.B.

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The Edwards Planing Mill Co., High River, Alta., have commenced operations.

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Deseronto, Ont., has granted a bonus of $20,000 to the Deseronto Furniture Co.

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John P. Loftas, of Grand Forks, B.C., has purchased a new sawmill at Anaconda, B.C.

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A. Seguin and P. Gagnon have bought the Mageau Serre planing mill at North Bay, Ont.

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J. Broadway will erect a new carriage factory in Parkdale, Toronto, at a cost of $4,000.

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LeGrange, Hoffman & Roos, Grand Bend, Indiana, will erect a large go-cart factory in Berlin, Ont.

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Hon. Adam Beck has leased a large building in Hamilton, Ont., and intends starting a box factory.

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Mayor Lyle is building a new sawmill at Smith's Falls, Ont., to take the place of the one recently burned.

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Uxbridge, Ont., ratepayers have voted favorably on a by-law to loan the Palmer Piano and Organ Co. $25,000.

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A. & R. Loggie have built a box mill at Chatham, N.B., and have fitted it with machinery of the latest pattern.

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The Seamans-Kent Co., Meaford, Ont., are erecting a woodworking plant at Fort William, Ont., at a cost of $100,000.

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L. Christie is putting up a tie and sawmill at Fort Frances, Ont. He has a contract with the Canadian Northern Railway for 100,000 ties.

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The Southampton Furniture Co., Southampton, Ont., will probably be reorganized under leadership of C. M. Bowman, M.P.P.

John Letter has bought the furniture business of J. K. Shinn & Co. in Waterloo, Ont., and will add a picture-framing and upholstery department.

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Boyer & Swartz, of Indianapolis, manufacturers of step ladders, garden swings, etc., will erect a factory in Stratford, Ont.

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The Rathbun Company's sash and door factory at Deseronto, Ont., which was closed down for repairs, is now in full operation again.

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W. H. Smith has purchased premises on Dundas Street, Toronto, for a cabinet factory and wholesale warehouse. The building will be remodelled.

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J. & T. Jardine have sold their sawmill at Rexton, N.B., to A. J. Currie, of West Branch, and Frank Curran, of Bathurst, who will improve the equipment.

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Coleman, Spencer & Co., Milwaukee, Wis., are erecting a large sawmill at a cost of $500,000, on Emily Lagoon, Mackenzie Sound, B.C.

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M. McWhinney, shingle manufacturer, Eburne, B.C., whose dry kiln was destroyed by fire recently, is erecting a new building.

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The North American Timber Co., Minneapolis, Minn., have purchased a site on the west coast of Vancouver Island, B.C., and will erect a sawmill.

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The Canada Woodenware Co., whose factory at Hampton, N.B., was destroyed by fire recently, will build a new factory, probably at Chatham N.B.

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The Watson-Smith Manufacturing Co. have purchased the planing mills of Logie Bros., Toronto, and will double the size of the building.

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St. Mary's, Ont., will loan S. L. Doolittle, of that place, $6,000 to build a factory for the manufacture of wood specialties, and will exempt it from all taxes except for school purposes for ten years.

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The O. M. Edwards Co., manufacturers of window fixtures, shade rollers, trap doors, etc., Syracuse, N.Y., are considering removing their Canadian factory from St. Catharines, Ont., to Montreal.

Goderich Wheel Rigs, Limited, have built in Goderich, Ont., a factory for making baby carriages, go-carts, and toy vehicles of all kinds. The capital of the new concern is $250,000.

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The Universal Lumber Co., Limited, have been incorporated at Spokane, Wash., to carry on lumbering operations in British Columbia. They own 10,000 acres of timber lands between Rossland and Greenwood.

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Markdale, Ont., is seeking legislation empowering it to fix the assessment of the Markdale Furniture Co., Limited, at $1,000 for ten years; also to provide for the purchase of $10,000 worth of the Company's stock at par.

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W. Finch Page, Victoria, B.C., and others have purchased the plant of the British Columbia Manufacturing Co., and will manufacture fruit boxes, crates, and wood veneer of all kinds under the name of the British Columbia Veneer Manufacturing Co. Walter Ellis is manager.

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The first annual meeting of the Schierholtz Furniture Co., Limited, New Hamburg, Ont., was held recently, and the following officers elected: President, Emil Schierholtz; vice-president, T. Wenzel; secretary-treasurer, G. Rebelski; directors, V. Wenzel and L. Lieber. The buildings have been nicely fitted up, and the factory is now in operation.

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The Victor Woodworking Co., Amherst, N.S., which went into liquidation some months ago, has been purchased by a new company, composed of W. A. and J. F. Gilroy, A. H. Miner, and McLellan Bros., who will remove their present equipment from Springhill, N.S., to the above place. The new firm intend to spend a large sum in further equipment of the factory.

Newly Incorporated Companies.

Pacific Mine and Timber Co., Limited, Vancouver, B.C.; capital, $20,000. To operate sawmills.

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Rock Creek Lumber Co., Limited, Cranbrook, B.C.; capital, $20,000. To operate saw and planing mills, etc.

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Chase Lumber Co., Limited, Vancouver; capital, $10,000. To manufacture lumber, boxes, doors, sashes, etc.

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Scott Cove Timber Co., Limited, Vancouver; capital, $50,000. To manufacture lumber and articles composed of wood.

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Bell Furniture Co., Southampton, Ont.; capital, $150,000. To manufacture and deal in furniture. Thos., H. O. and C. M. Bell, of Wingham, provisional directors.

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Howard Cole Timber Investment Co., Vancouver, B.C.; capital, $50,000. To make and deal in logs, shingles, and other lumber.

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Piper Trading and Lumber Co., Vancouver, B.C.; capital, $60,000. To take over the business of the Britannia Trading and Lumber Co., and manufacture wood articles.

Terrano Flooring Co. of Canada, Limited, Montreal, capital, $100,000. To manufacture flooring materials. H. E. B. Smith and K. F. Lockhart, Montreal.

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Bathurst Lumber Co., Bathurst, N.B.; capital, $100,000. To manufacture furniture, doors, sashes, blinds, and other articles of wood.

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British Columbia Horticultural Estates, Limited, Vancouver; capital, $2,000,000. To manufacture crates, barrels, boxes, etc.

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Fleck Bros., Limited, Ottawa; capital, $49,500. To manufacture lumber, furniture, doors, sashes, blinds, etc. A. H. Fleck and Wentworth Greene, Ottawa.

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Fesserton Timber Co., Limited, Fesserton, Ont. To manufacture timber, woodenware, etc. W. W. Carter, of Tay, Ont.

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Shuswap Lumber Co., Limited, Vancouver, B.C.; capital, $50,000. To operate sawmills, manufacture articles of wood, etc.

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Swedish-Canadian Lumber Co., Nordin, N.B.; capital, $750,000. To manufacture lumber. O. W. Nordin and J. Ander, of Nordin, N.B.

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St. Lawrence Lumber Industrial Co.; capital, $300,000. To operate saw and planing mills, and deal in lumber, etc. Benj. C. Howard and Robert E. Ewing, of Sherbrooke, Que.

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E. Dufault Milling Co., Limited, Ste. Helene, Que.; capital, $20,000. To operate a sash and door factory. E. and G. E. Dufault, of the Parish of Ste. Helene, Que.

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Carriere Bros. Co., St. Louis, Que.; capital, $150,000. To make doors, sashes, shutters, carriages, cars, etc. L. A. and F. Carriere, St. Louis, Que.

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Alberni Mills and Timber Co., Limited, Vancouver, B.C.; capital, $250,000. To cut logs, manufacture bolts, shingles, lathes, sashes and doors, etc.

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New Westminster Logging Co., Limited, New Westminster, B.C.; capital, $10,000. To take over the business of John Hudson & Co., and to make wood products of all kinds.

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Watson Carriage Co., Limited, Ottawa; capital, $40,000. To manufacture vehicles and carry on a planing and woodworking business. Robert E. Watson and J. T. Moxley, Ottawa.

* * * *

North Star Lumber Co., Limited, Brandon, Man.; capital, $500,000. To grow timber, operate saw and planing mills, manufacture furniture and vehicles, etc. John Hanbury, Brandon, and W. J. Bettingew, Winnipeg.

Chas. T. White & Son, East Apple River, N.S.; capital, $100,000. To manufacture and deal in lumber, timber, vessels, scows, etc. M. G. White, East Apple River, N.S.; C. T. White and G. H. White, Sussex, N.B.

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Rugg Ball Manufacturing Co., Limited, Waterville, Que.; capital, $20,000. To manufacture and deal in rakes, snow shovels, scythes, snaths, crates, hoe, axe and other handles. J. R. Ball, Waterville, Que.; F. A. Rugg, Greenfield, Mass., and H. D. Lawrence, Sherbrooke, Que.

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A. E. Thomas, Limited, St. Thomas, Ont.; capital, $25,000. To carry on a wholesale woodenware business and act as manufacturers' agents. A. E. and H. C. Thomas, of St. Thomas, Ont.

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Carter Stevens Lumber Co., Limited, Toronto; capital, $40,000. To manufacture lumber and woodenware, operate saw and planing mills, etc. J. B. Bartram, 233 Ossington Avenue, Toronto.

* * * *

Seine River Lumber Co., Limited, Toronto; capital, $300,000. To manufacture wood products. J. S. Lovell, 119 Madison Avenue, Toronto, and Wm. Bain, 203 Spadina Avenue, Toronto.

* * * *

Nepisquit Lumber Co., Bathurst, N.B.; capital, $100,000. To manufacture lumber, timber, shingles, laths, boats, vessels, ties, etc. H. B. Curran, Bathurst; A. I. Trueman and F. E. Sayre, St. John.

Recent Fires.

The following is a record of fires which have occurred recently in sawmills, planing mills and other woodworking establishments, with the loss incurred, insurance, etc.:—

Craig & Austin's sawmill, Kinmount, Ont.

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T. A. Vaughan's planing mill, St. Martin's, N.B.

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Evans Co.'s planing mill, Sudbury, Ont. Loss, $50,000.

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Currie Lumber Co.'s shingle mills, Charlo, N.B. Loss, $30,000; insurance small.

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Rat Portage Lumber Co.'s sash and door factory, Winnipeg.

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Bleakney Manufacturing Co., manufacturers of axe handles, etc., Hull, Que. Loss, $7,500; not insured.

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A. Joncas' planing mill, Sherbrooke, Que. Loss, $6,000; insurance, $3,000.

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Rider & Kitchener's sawmill, Lindsay, Ont. Loss, $5,000; insurance slight.

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John Stormont's sawmill, West Lorne, Ont. Loss, $3,000.

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Kreutziger's planing mill, Waterloo, Ont. Loss, $6,000; insured.

Tudhope's carriage factory, Orillia, Ont. Damage slight.

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World Furnishing Co., Orillia. Loss, $2,500; partly insured.

* * * *

Canada Woodenware Co., Hampton, N.B. Loss, $30,000, including valuable machinery; partly insured.

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James White's planing mill, Carberry, Man. Loss, $5,000; insurance, $1,500.

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John Greenless Heading Co.'s stave and heading mill, Forest, Ont. Loss, $5,000; insurance, $3,000.

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R. Leeder & Son's planing mill, Dovercourt, near Toronto. Loss, $50,000, mostly insured.

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F. J. Moore & Son's planing mills, Lakefield, Ont. Loss, $10,000; insurance, $3,300.

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Tombyll Upholstering and Frame Manufacturing Co., Montreal. Loss, $60,000; insurance, $45,000. Most of the machinery escaped.

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Seaman Kent Co., manufacturers of hardwood flooring, Meaford, Ont. Loss heavy, covered by insurance. Mill is being rapidly rebuilt with double former capacity.

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Louison Lumber Co.'s sawmill at Jacquet River, N.B. Loss, $25,000, including valuable new machinery. Mostly covered by insurance. The mill, which was one of the most up-to-date in New Brunswick, will be rebuilt at once.

A GLUE INSOLUBLE IN WATER.

(1) Prepare a solution of glue in the usual way by soaking the glue and dissolving in a glue pot and then stir in a little tannic acid and use while hot.

(2) Make a solution of glue as above described, then add a small quantity of bichromate of potash, not too much, about a fiftieth of the amount of the glue used. Glue thus made will harden when exposed to the air and light, and becomes insoluble in water and moisture.

(3) Soak glue in water until soft but not swollen enough to lose its form, then drain from the water, and put the glue into a glue pot, with sufficient raw linseed oil to cover it, and dissolve the glue by heating it over a slow fire, until it is jellified.

(4) Mix a handful of quicklime with 4 oz. of raw linseed oil, and boil the mixture until quite thick, then mix this with a hot solution of glue made in the usual way.

(5) Soak glue in cold water until soft, then melt it in the usual way, then mix 10 parts of the glue with 5 parts of linseed oil varnish, then add 1 part of litharge, boil the whole for 10 minutes and use while hot.

PRESTON'S WOODWORKING INDUSTRIES

Preston has gained a continental reputation for its mineral springs, which yearly bring large numbers of health-seekers within its borders, and visitors to the Canadian Carlsbad cannot fail to be impressed with the substantial appearance of the town, both from a residential and a manufacturing standpoint. It is the centre of one of the best systems of electric roads in Canada, besides which it has shipping facilities over both the Grand Trunk and Canadian Pacific Railways, a distinct advantage from an industrial standpoint.

The numerous woodworking industries which have grown up and flourished there are to-day in a prosperous condition. The factories are working full time, and the "hard times" so common in the great industrial centres of the United States are unknown there.

A brief description of some of the leading plants will be of interest to readers of the Canadian Woodworker

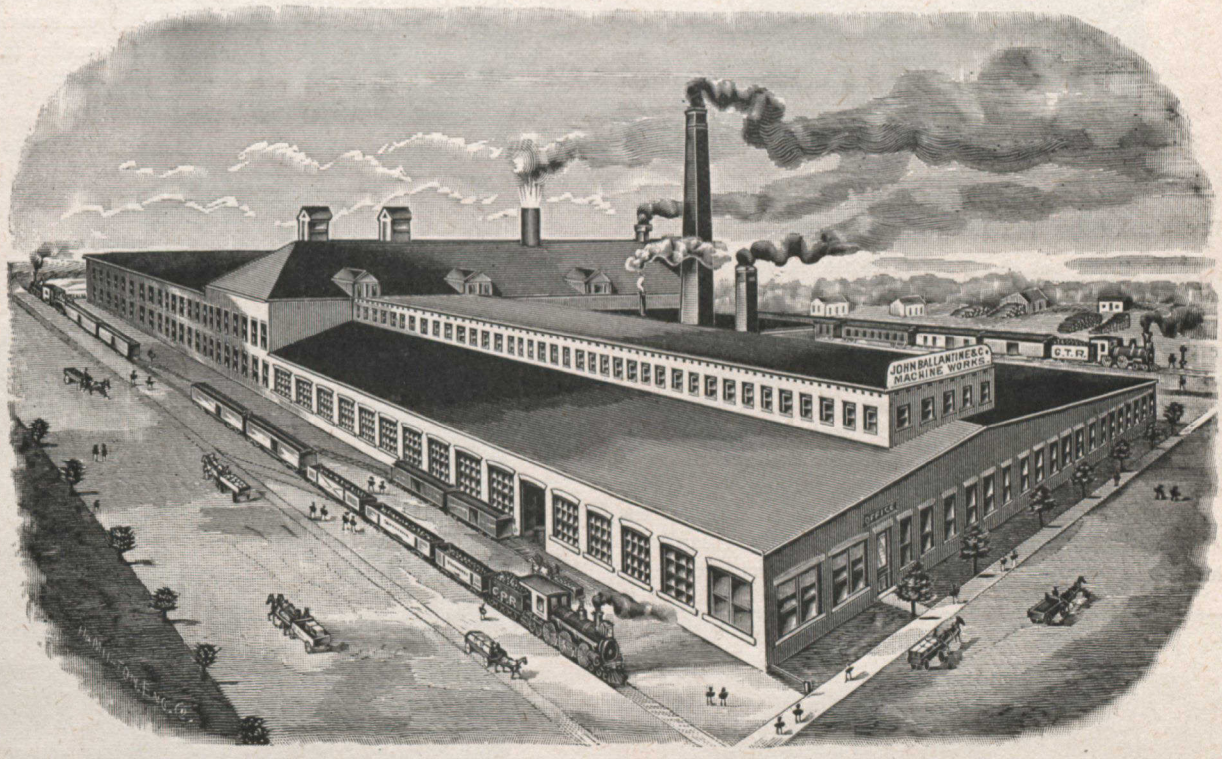
John Ballantine & Company, Limited.

The plant of John Ballantine & Company, Limited, manufacturers of high class woodworking machinery, is a commodious structure, 116 x 290 feet, situated in the heart of Preston's industrial section. It has immediate connection with both the Grand Trunk and Canadian Pacific Railways, thus affording excellent shipping facilities. John Ballantine, who founded the business in 1894 has had a life-long experience in the designing and manufacturing of woodworking machinery, and he has surrounded himself with a capable staff of mechanics. This firm was the first to introduce into Canada the use of cut-gearing on woodworking machinery, variable feed on rip saws, the independent down drive on moulders, and other improvements that have since been universally adopted. The same energy and enterprise still keep them abreast of the times, and they are constantly adding to their establishment all the best equipment. Many exclusive features of merit will be found on their machines, among which may be mentioned a self-locking side pressure shoe and chip breaker on their stickers, a device which has recently been patented, also a very convenient belt shifter for the same machines.

John Ballantine & Company, Limited, share with other Canadian manufacturers of woodworking machinery, a particular distinction, in that they not only supply the trade in Canada from Atlantic to Pacific, but they enjoy a large export trade, competing with the best British and American firms in the machinery markets of Europe and South Africa. They make quite a number of special machines, as well as a complete line of surface planers and jointers, planers, matchers, moulders, band saws, band re-saws, rip and cut-off saws, boring, mortising and tenoning machines, gauge and turning lathes, shaping, panelling and dove-tailing machines, knife grinders and sanders.

Werlich Bros. & Company.

In a section of the building occupied by the Crown Furniture Company, Werlich Bros. & Company carry on a busy industry, manufacturing the "Werlich" piano player, which has gained an enviable reputation in the musical world. This player contains new and original features and is extensively used by the largest Canadian makers of pianos, the firm's customers including the Mason & Risch Piano Company and Heintzman & Company.

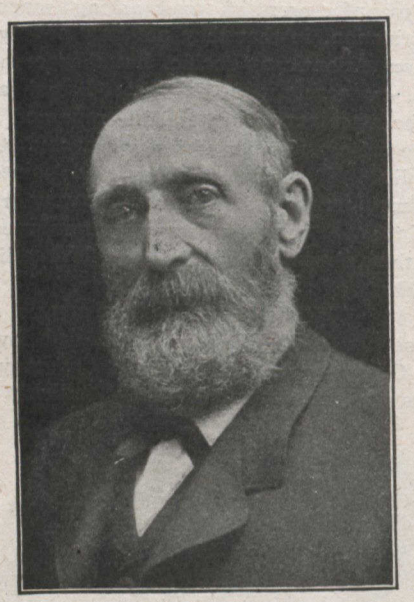


Plant of John Ballantine & Company, Limited.

Preston Furniture Company, Limited.

Picturesquely situated on the banks of the Speed stands the imposing and finely equipped plant of the Preston Furniture Company, Limited, an old and progressive business, which was incorporated with the above name nine years ago. A new building was erected in 1899 and the firm launched extensively into the manufacture of office desks, finding so ready a market for their lines that the size of the plant had to be doubled in 1906. Frank Moss, the president

and managing director of the company, is a man of few words, but his business capacity is marvellous. In re-equipping the plant in 1906 he installed the best Canadian and American woodworking machinery available and the work turned out by some of these machines is well worth a visit to the factory to see, especially the carving machinery, built by the Moore Carving Machine Company, of Minneapolis,



John Ballantine,
President, John Ballantine & Company, Limited.

Minn., which turns out the most intricate carved wood in a way that would almost appear to stamp it as human.

Preston Car and Coach Company, Limited.

Preston's newest industry is the Preston Car and Coach Company, Limited, which commenced operations in the fall of 1907. The plant shown in this issue is only a temporary affair, as large new buildings will be erected this year and the firm will engage extensively in the manufacture of steam cars, electric cars and automobile bodies. There is a great future for a business of this kind in Canada, as most of the plants now in the business are worked beyond their capacity.

The present plant, however, is well equipped and is do-

Plant of Preston Car and Coach Company.

ing excellent work, the firm having contracts on hand from the Temiscaming and Northern Ontario Railway and other roads. Some fine woodwork is turned out in this establishment, and it is a tribute to Preston that all the woodworking machinery was supplied by the local firm of John Ballant..e & Company, Limited. The officers of the company are:

President, M. N. Todd.
Vice-President, Fred. Clare.
General Manager, Don M. Campbell.
General Sales Manager, C. S. Wright.
Secretary-Treasurer, C. R. Haming.

Both Mr. Campbell and Mr. Wright were formerly connected with the Ottawa Car Company, the former as superintendent of the car department and the latter of the carriage department. Mr. Campbell also served for some years with the J. G. Brill Company, the large car manufacturers, of Philadelphia.

Smith Wagon and Carriage Works.

The Smith Wagon and Carriage Works is another flourishing young industry. Starting in a modest way six years ago C. M. B. Smith, the proprietor, has paid constant attention to business and has rapidly increased his trade, making all classes of heavy and light wagons, carriages and sleighs.

A Pioneer Implement Industry.

P. E. Shantz, manufacturer of farm implements and har-

P. E. Shantz,
Implement Manufacturer.

vesting machinery, is one of the pioneer manufacturers of Preston. His business was started thirty years ago and today he has a large trade, not only in Waterloo County, where he is widely known and highly esteemed, but also in the Cana-

dian West, El Dorado of the harvesting machinery manufacturer.

The Planing Mills.

Preston has two busy planing mills. The plant of James Gillies is situated opposite the Grand Trunk Railway station, and for the past thirteen years he has catered to the wants of the building trade, supplying lumber, sash, doors, and all classes of building material.

The Preston Lumber Company also operates a planing mill. This plant was operated by Eagle & Grove, but was recently acquired by W. A. Kribbs, who has large planing mill and lumber interests at Hespeler.

Atlas Table Company.

The Atlas Table Company is another valuable addition to Preston's woodworking industries, and under the management of Harry Hindson it is destined to grow to large proportions. Tables are the exclusive product of this plant.

Canadian Office and School Furniture Company, Limited.

The prosperous business of the Canadian Office and School Furniture Company, Limited, was founded in the fall of 1884 by William Stahlschmidt, who entered upon the manufacture of the school desks, which have since gained a world-wide prominence. The following year Mr. Stahlschmidt took Jacob E. Klotz into partnership, and the firm was known as W. Stahlschmidt & Company until 1889, when the business was strengthened by increased capital and merged into an incorporated company, bearing the name of the Canadian Office and School Furniture Company, Limited, of which the following are the present directors:

George A. Clare, M.P., President.
William Stahlschmidt, Vice-President.
William S. Hudson, Managing Director
George Fink, Secretary-Treasurer.

As noted above, the business was originally for the manufacture of school furniture and desks, and the name of Stahlschmidt became a bye-word with every Canadian school boy on account of the excellent qualities of these desks. As a tribute to this firm it may be stated that the desks made by this company were the only ones selected by the Canadian Government for the Canadian exhibit at the Paris Exposition, where they were awarded a silver medal,—the highest award granted for school desks. In the matter of awards at the leading exhibitions, this company takes a high rank, the medals and diplomas won by them making an interesting showing.

The big end of the business to-day, however, is in the manufacture of bank and office fittings in which noted successes have been achieved. William S. Hudson, the enterprising managing director, informs the "Canadian Woodworker" that the firm has fitted up 1,000 bank offices in all parts of Canada, as well as some especially fine outfits for South Africa. The Canadian business to date has been so large that little attention has been given to the export trade, only large and select orders being filled. In addition to the bank business a large trade is done in store, office, church, and lodge furnishings, as well as for libraries, court houses, and other public buildings, many handsome and original designs being executed.

Canadian Office and School Furniture Company, Limited.

The Crown Furniture Company, Limited.

Another of Preston's busy woodworking industries is the Crown Furniture Company, Limited, founded some eight years ago. This company enjoys a fine trade in oak and mahogany bedroom furniture of various styles and designs, and in the select line of dining-room furniture which they turn out. The factory is especially busy and knows nothing of the "quiet times" which exist in some parts of the country. Enterprise is the keystone of their success, coupled with the fact that they have young and experienced business men at the helm. R. A. McGillivray, the general manager, was brought

R. A. McGillivray,

Manaaging Director Crown Furniture Company, Limited.

up in the furniture business and has a thorough knowledge not only of manufacturing but also of the retail end, his experience in the latter having taught him just what the public wants. The secretary-treasurer of the company, Edward Menzies, is another hustler in the furniture world. He gained his manufacturing experience in the large plant of Burr Bros. at Guelph, now the property of the Canada Furniture Company, Limited, and also with the Hespeler Furniture Company. This firm is also fortunate to have the services of D. W. Albright as vice-president. Mr. Albright was formerly manager of the company, and has been assigned the important post of sales manager, where his fourteen years' experience in the business insures the success of this important department. The present officers of the company are:

Hon. Senator Merner, President.
D. W. Albright, Vice-President.
Edward Menzies, Secretary-Treasurer.
R. A. McGillivray, managing director.

Preston Brush Works.

A little hive of industry is the Preston Brush Works, where the busy manager, E. B. Salyerds, works overtime at this season, supplying rush orders of the famous "Salyerds' Special" hockey sticks. In fact, so great is the demand for hockey sticks that the brush business has been somewhat side-tracked. Mr. Salyerds sends his hockey sticks to all parts of Canada, and to the leading hockey centres of the United States, including New York, Pittsburg, and St. Louis.

THE SUCCESSFUL MANUFACTURER.

It takes a peculiar temperament for a man to be a successful manufacturer. A man may be able to run a factory all right, and may make money all right, and not be a success from my view-point. A man, to be a success, must not only make money, but must enjoy life while he is doing it—must be satisfied with his work. Too many men are simply holding down positions. The successful manufacturer must know all about merchandising his product, the organization of his selling force, the organization of his buying force and the organization of his entire factory. He must, in order to be a success, be a master of detail. He must know the capacity of his machine room, for instance, and must know if the product of that room is reaching the capacity. If not, why not. He must know if his office force is doing its work properly and getting a full return for the money expended. Above all, he must understand merchandising his product. There are men who can market their stuff right, but cannot manufacture it right, and, on the other hand, there are men who can manufacture successfully, but cannot sell their product.

In order to be successful, character cuts a very important point in any business. There must be character in the goods manufactured, character in the men conducting the business, character behind the goods, and the men on the road selling the product must have character. The motto of every successful firm should be: goods honestly made and honestly sold. We should not for an instant tolerate any misrepresentation. We should discharge a man for that quicker than for almost anything else. Good salesmanship consists in the ability to introduce goods to the prospective customer. Then the house must back up the saleman's representations. A factory cannot get duplicate orders unless the goods merit it. One thing that every factory should demand of its salesmen is loyalty. At a recent banquet one of the speakers, in talking to a party of salesmen, said:—"Don't condemn the office until you have heard the office side of the question." We find it a pretty good way to have the salesman ask the dealer to see all the correspondence. If he can't do this, then wait until he can see it from our files, and, above all, he must support the office until he finds out the office is in the wrong. Too many salesmen make the mistake of falling in with the dealer without knowing both sides of the controversy. No up-to-date business to-day can succeed unless complaints are promptly looked into, and, if a wrong has been done a customer, have it quickly righted.

THE CLARK-DEMILL CO.

The Clark-Demill Co., Limited, started three years ago in Hespeler, Ont., as manufacturers of woodworking machinery, and in that period have fairly established themselves in the confidence of the trade. They are now making machinery for planing mills, sash and door factories, piano and organ factories, carriage works and other woodworking establishments, and these machines have stood the test of hard work to such an extent as to prove the ability of the makers. Mr. Demill, of this company, was for years foreman for Cowan & Co., Galt, and Mr. Clark was foreman at MacGregor, Gourlay & Co.'s, Galt, both good schools to graduate from. The company has just turned out a new style of molding machine, which they claim is a step in advance of any machine in simplicity and adaptability, and has all the attachments desirable for any kind of planing or for moldings, with ample belt power for cutting-heads and feed. A cut of this machine is presented in our advertising pages, and a full description will be sent upon application to the makers. The Clark-Demill Co., are now at work on a new flooring machine, in which are embodied many points of novelty. We hope to describe this machine in detail when it is ready for the market a couple of months hence. Messrs. Clark and Demill are both young men, who are working hard to build up a good reputation.

—A good thing to have around a saw or planing mill is a few barrels of salt, or better, salt water. For quenching an incipient blaze there are few things better than a few pailfuls of brine or salt water.

Boxes and Cooperage

HINTS FOR THE BOX MAKER.

In making lock-corners of dovetail boxes, both ends of the board must be clear, or nearly so, yet one sometimes sees large knots cut in half, leaving part of the knot in the end of each board. The result is seen when the board passes the locker—it goes to the waste pile. Another error quite frequent with cutters is that of cutting pointed boards for narrow sides. How can one work up boards 38 inches or 40 inches long, 3 inches at one end and 12 inches at the other? I say that is well enough for wide bottoms, say 18 or 20 inches, but for narrow sides it is all wrong. Better cut off a short board for some other size and get the long one of a more uniform width. In regard to squaring off shooks, there is no need of allowing from 1 to 2 inches; 1½ to ¾-inch is plenty, if the boards are laid up properly.

Some shops have a different way from others of making boxes. Some fit to a head block and square off. Some fit to a head block and don't square off. Some fit to a dog and must square off. Some nail the bottom on first, then the sides, which overlap the bottom. Speaking of fitting to a dog, if the boards are free from hard or tight spots, all well and good, but if not, then look out, for you are facing danger and there is no signal set. It was simply a kick of the board which nearly put me out one day, besides breaking the table and nearly breaking my hand. Since then I have no use for dogs on my fitting table, and I need all the breath I have for future use.

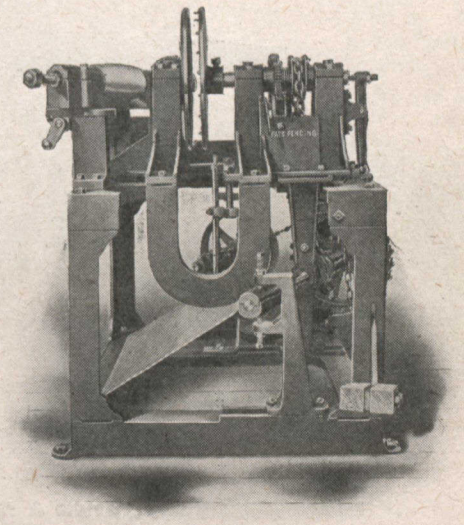
There are a few sawyers who do not seem to understand how to taper boards and lay them up so as to make even ends and save stock. They won't take the trouble to learn, for it puts them out, besides they say it looks bad. Well, they are good enough for bottoms, anyway; nobody finds fault with the bottom if it is strong enough. The covers must be good, however, as they are marked, nailed on and taken off again. Some sawyers have a habit of splitting up wide boards instead of putting them in whole when they can. There is waste in that, also unnecessary labor. There are sawyers who are forever making strips to work up, and it takes wider boards to piece them out. There is no need of it at all, if one uses his brains more and his hands less. A fitter may rip stock all day, and yet not put up over 1,500 feet, while another will scarcely split a board, but his average day's work figures up 2,000 feet or more. After the trick is learned, it comes easy.

There is another way of causing much waste, and that is by leaving large or loose knots on the edge of shooks. Passing through the matcher or planer they generally fly out, and it does not take long to make a big pile of the broken shooks, which pile is generally in the way some time before being worked over into some other order. It is expected that more or less waste will occur in every box shop in the country, but at the present prices of lumber there should be practised care and economy in working up box boards. Time need not be sacrificed in order to save a few inches of lumber, for time is more valuable sometimes than the waste made. A first-class man never wastes either time or lumber.

SLACK BARREL HEADING TURNER.

The Rochester Cooperage Company, 530-542 Child Street, Rochester, N.Y., have placed on the American market a slack barrel heading turner which has proved a complete success both from a point of increased capacity, and because of the marked saving of power used in operating.

This machine, designed on new principles, built of the best material, simplest in operation, greatest in production, best in quality of work, commends itself to our consideration. There have been marvelous changes in the process of barrel making. Coopers who have been most successful have kept abreast with the times, always studying the details of their work and improving their facilities. All our energies and all our experience were concentrated in the endeavor to produce a Barrel Heading Turner that will excell all others on the market.



Slack Barrel Heading Turner.

From the accompanying illustration, which presents the front view of the machine, it will be seen that it is compact in design and embodies all of the following important features, viz.:—

Capacity, durability, simplicity and ease of operation.

Once familiar with the details of this machine, its underlying principles are seen to be very simple. These machines will cut any size heading up to twenty-eight inches, either bevel or square.

The patent chain drive and clutch is a new departure and users of this machine will be relieved of the continual annoyance and delay caused by gears and worms so common in other machines.

It clamps the head before reaching the saw and automatically releases and drops the finished head, thereby giving the operator free use of both hands in feeding.

The capacity of this machine is practically limited only by the skill of the operator.

Its simplicity of action, its accuracy and ease of manipulation for the different styles and sizes of headings, make it a machine in a class by itself. Further particulars regarding these machines will be found on page 10 of this issue.

Machinery and Mill Equipment

NEW PLANER AND MATCHER.

The Goldie & McCulloch Company, Limited, of Galt, Canada, have recently put on the market a new planer and matcher to meet the modern requirements of the trade. This machine is intended for all kinds of planing and matching from 2 to 14 inches wide and 6 inches thick. It is strongly built, neat and compact. The frame being cast in one piece insures rigidity and constant alignment. The cylinders carry four knives and are driven by two belts, the lower one being placed in front of the upper, truing the stock before reaching the top head platon. This feature is especially valuable for hardwood flooring or band sawn stock.

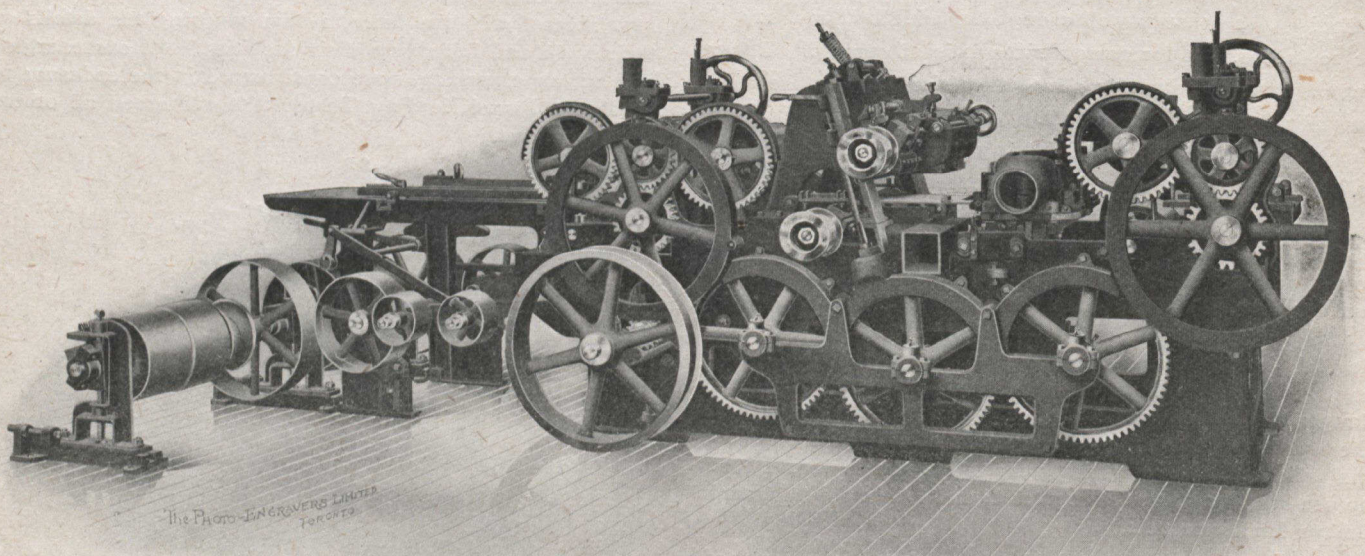
The side heads are of the new and improved Philbrick pattern, with inserted cutters specially designed for this work. They are carried on strong brackets with the latest and best adjustments. The spindles run in long self-oiling bearings. When repairs are necessary the brackets are easily detached and lifted clear of machine. All pressure bars are bolted to the brackets, thus insuring a uniform pressure.

All feed rolls are 10 inches in diameter, of easy alignment in case of unequal wear. The upper ones are carried in hinged yokes which allow a lift of about 3 inches.

The lower feeding in rolls are under control of the operator in front of machine.

All rolls are driven by machine cut gear and are well protected.

Pressure bars about all cutters are adjustable to and from the work, that above the lower cylinder being sectional to allow for irregularity in rough lumber.



New No. 11 Goldie & McCulloch Heavy Flooring Planer and Matcher.

Countershafts are separate from machine and all run in substantial self-oiling bearings. The cylinders should run 4,000 revolutions, the ratio of feed varying from 46 to 120 feet per minute.

Those who are in need of a machine of this description or who wish to add to their present capacity, would do well to personally acquaint themselves with the merits of this new planer and matcher. All information and illustrated booklet will be sent upon request.

ABOUT BELTS AND PULLEYS.

A narrower belt than that shown by the generally accepted formula is often imperative; but in the absence of any such condition it is questionable economy to part materially from it. The following may be regarded as an axiom: To use a belt of ample width and thickness for the required work is to secure long life and satisfaction.

Following are some data useful to remember in connection with belts.

To calculate the width of belts required for transmitting different numbers of horse-power:—Multiply 33,000 by the number of horse-power to be transmitted; divide the amount by the number of feet the belt is to run per minute; divide the quotient by the number of feet or parts of a foot in length of belt contact with smaller drum or pulley; divide the last quotient by 6, and the result is the width of a tanned leather belt, in inches, required. The figure 33,000 represents the number of pounds a horse is reckoned to be able to raise one foot high in one minute. To obtain the number of feet a belt runs in a minute, find the number of revolutions per minute of the driving shaft and multiply by the circumference of the drum, which is always 3.1416 its diameter. The final division by 6 is because half a pound raised one foot high per minute is allowed to each square inch of belting in contact with the pulley; a pound must, therefore, be allowed to two square

inches, or 6 pounds to a piece of belt 1 foot long and 1 inch wide.

For example:—Required, the width of a single belt, the velocity of which is to be 1,500 feet per minute; it has to transmit 10-horse-power; the diameter of the smaller pulley or drum being 4 feet, with 5 feet of its circumference in contact with the belt: 33,000 multiplied by 10 equals 330,000, divided by 1,500 equals 220, divided by 5 equals 44, divided by 6 equals 7⅓ inches, the required width of the belt.

To calculate the number of horse-power which a belt will transmit:—Divide the number of square inches of belt in contact with the pulley or drum, by 2. Multiply this quotient by the velocity of the belt in feet per minute. Again we divide the total by 33,000, and the quotient is the number of horse-power. The first division by 2 is to obtain the number of pounds raised one foot high per minute, half a pound being allowed to each square inch of belting in contact with the pulley or drum. Example:—A 6-inch single belt is being moved with a velocity of 1,200 feet per minute, with 4 feet of its length in contact with a 3-foot pulley or drum; required, the horse-power: 6 times 48 equals 288, divided by 2 equals 144, multiplied by 1,200 equals 172,800, divided by 33,000 equals, say, 5¼ horse-power. It is safe to reckon that a double belt will do half as much again work as a single belt.

Horizontal, inclined and long belts give a much better service than vertical and short belts. Short belts require to be tighter than long ones, hence the idler. A long belt working horizontally increases the grip by its own weight. If there is too great a distance between the pulleys, the weight of the belt will produce a heavy sag, drawing so hard on the shaft as to cause great friction at the bearings, while at the same time the belt will have an unsteady motion, injurious to itself and to the machinery. One had better put in a set of idle pulleys to carry the extra load.

Be careful to let belts run free and easy, to prevent the tearing out of the fastenings at the joint; it also prevents the rapid wear of the metal bearings. It is an established fact (although disputed by some) that the grain or hair side of a belt run next to the pulley will drive thirty per cent. more than the flesh side. To obtain a greater amount of power from the belts the pulleys may be covered with leather. This will allow the belts to run very slack and give twenty-five per cent. more service. Leather belts should be well protected against water, steam, heat and any kind of moisture.

In putting a belt on the pulleys, be sure that the laps run with the pulleys and not against them, as this will cause the laps to open up and come apart. In punching a belt for lacing it is best to use an oval punch, the larger diameter of the punch being parallel with the belt, so as to cut as little of the effective section of the leather as possible. When lacing a belt, begin in the centre and take care to keep the ends exactly in line, and lace both sides with equal tightness. The lacing should not be crossed on the side of the belt that runs next to the pulley. Thin but strong lacing only should be used. It is desirable to locate the shafting and machines so that belts will run off from each other in opposite directions, as this arrangement will relieve the bearings from the friction that would result were the belts to all pull one way on the shaft. If possible, the machines should be so planned that the direction of the belt motion shall be from the top of the driving to the top of the driven pulley, which condition brings the sag on top, insuring a perfect drive.

Never overload a belt. Careful attention will make it last many years, which, otherwise, might not last one year. Beware of soap, resin, or any dressing that sticks to the pulley, for it is a disadvantage rather than an advantage to belts.

Some overlook the fact that large pulleys enable a machine to do more work and do it easier and with much better results. To a practical man a large pulley is, or should be, as much of a recommendation to the machine as a large spindle or journal. If the builders of the heavy, massive machines of to-day were to put a little less metal in their frames and a little more in the pulleys that go with the machine, the results would be far better and the mill man benefited. Pulleys oftentimes are too small. Take, for instance, the heavy dimension planer that dresses a timber 18 x 24 inches on all four sides at one operation. The pulleys are generally 6 x 6 on the cylinders, and not over 5 x 6 on the spindles or matcher heads. The machine would do the work easier if the pulleys were at least three-fourths larger, not only in diameter, but on the face? Take the four, five or six saw edgers; if the pulleys were 24-inch diameter instead of 16-inch, would they not do the work better? Would it not be easier on the belts?

Some may say, where is the advantage and economy of the large pulley over the small one? Philosophically speaking, the pulley bears the relation to the machine of a lever, and the larger the diameter of the pulley the greater the leverage. The longer the lever, the easier to turn over the weight. Take a pulley 12 inches in diameter. One-half its circumference is 18 inches, which represents the surface to be gripped by the belt. Take another pulley 24 inches in diameter. One-half its circumference is 36 inches, which represents the surface to be gripped by the belt. Does it require much work to see that the belt will slip less on the big pulley than it will on the small one? And, slipping less, will not the belt last longer?

The belt is benefited in three ways by the large pulley. First, it will slip less, can be run more slack, and less weight is needed on the tightener, where one is used, to make the belt hug the pulley. The saving in belting alone is enough to recommend the large pulleys. The saving in time, by belts not breaking, and the saving of vexation of spirit are also obtained in this way.

We have heard of cases where belting bills have been cut down one-third by having extra-large pulleys put on all machines before leaving the factory where they were made, and also by adopting them all through the factory at the original installation.

If planers were fitted with pulleys on the spindles, say 7 inches in diameter by 8-inch face, will anyone say the belts would not last longer? True, you will have more belt travel; but a belt, like an engine, will travel at a high rate of speed under proper conditions better than it will at a slow speed under improper conditions.

The use of the large pulleys over the small is based on all the rules of theory and practice. Of course, there are chances of carrying the idea too far and getting the pulleys too large, thus getting equally as bad results as by the use of the small pulley. But there is moderation in all things, including large pulleys.

X. S. MOLDING MACHINE.

On page 4 of this issue there is an illustration of the new X. S. Molding Machine, built by MacGregor, Gourlay & Co., Limited, of Galt, Ont. It is made 10-in., 12-in. and 13-in. wide. Bed will drop 10 in. The frame is constructed on a heavy, substantial base, which supports three columns, the frame itself making the fourth column. The main frame extends to the two columns supporting the rear end of the bed, carrying the bottom cutter head, and are connected or tied together with a large bolt passing through the bed, making the latter perfectly rigid.

A circular, illustrating both the front and end views and fully describing the machine, will be sent upon request.

Condensed Advertising

Advertisements under this head 10 cents per count line for single issue, contract rates on application Black face headings and names in caps count 2 lines each. Advertisements for "Help Wanted" or "Positions Wanted" given two free insertions for any subscriber to the paper, and replies may be addressed to a box care "Canadian Woodworker."

For Sale—Lumber and Veneers

15,000 ft. Hungarian Ash Veneers.
2,500 ft. Rosewood Veneers.
47,000 ft. Bird's Eye Veneers.
750,000 ft, Mahogany Veneers.
65,000 ft. Mahogany Crutch Veneers.
15,000 ft. Cedar Crotch Veneers
40,000 ft, Long Figd. Walnut Veneers.
30,000 ft. Figd. Walnut Butt Veneers.
63,000 ft. Curly Birch Veneers.
475,000 ft. Qtd. Sawn Oak Veneers.
43,000 ft. Qtd. Sliced Oak Veneers.
35,000 ft. Circassian Walnut Veneers.
5,000 ft. White Mahog. Lumber 5/8 in. & up
150,000 ft. L.R. Cuban Mahog. 1 in. to 4 in.
375,000 ft, Afr. & Mex. Mahog. 1 in. to 4 in.

RICE VENEER & LUMBER CO.
Grand Rapids, Mich.

MAPLE LEAF
STITCHED COTTON DUCK
BELTING
DOMINION BELTING CO. LTD.
HAMILTON CANADA

For Sale—Second-hand List

1 Coe, Extra Heavy, 52 inch Knife, 52 inch Swing, Veneer Lathe.
1 Coe, inch Knife, 32 inch Swing, Back Roll, Veneer Lathe.
1 Coe, 52 inch Knife, 42 inch Swing, Veneer Lathe,
1 Coe, 48 inch Knife, light pattern, Veneer Lathe.
1 Grand Rapids 88 inch Knife, Veneer Lathe.
1 Pony, Veneer Lathe, 10 inch Knife.
1 Sawn Harp Machine.

MERRITT MFG. CO.
Lockport, N Y.

VENEER, OLD AND NEW.

At first a piece of veneer was understood to be a very thin sheet of wood overlaid upon a heavy backing, says L. G. Merritt in Hardwood Record. Usually the backing was some kind of cheap timber and the veneer was of a more rare and expensive quality, the object of the overlay being to save the cost of a solid piece of high-priced wood. Hence, to this day, the word veneer in many minds implies imitation and a vulgar attempt to misrepresent. As these thin sheets of wood began to be used for baskets and cheese boxes and were made from the commoner sorts of wood, it lost its original significance, but continued to be known as veneer. With the growing demand for it in many new fields it increased in thickness, and may now be had in any gage to ½-inch. Still it is styled veneer, but there is no longer a very clear distinction between it and any other thin lumber, such as resawed stock, box shooks, staves, heading and shingles. It may mean the material out of which a potato crate is made, or it may mean the highly-polished surface of a grand piano. And if it has as wide an application, what shall we say of the many different ways of producing it? We have sawed veneer and cut veneer, sliced veneer and rotary cut veneer. There is no difference in principle between a heading or shingle saw and a veneer sawing machine, so called. Nor is there much in principle to distinguish a stave-cutter or a shingle-chopper from a veneer-slicer

WOODWORKER BRIEFS.

The best time to lace a belt is in the evening of the day before it needs it.

* * * *

The monkeywrench is one of the best tools ever invented and the most sadly abused one of the lot.

* * *

A dull bit in the boring machine is as much of a nuisance as a dull knife on the planer; it is also a time and power killer in its way.

* * *

Spend all the time necessary in improving yourself, but every minute you spend in excuses for yourself is that much time wasted.

* * * *

There are times when a lace string is worth saving, and there are other times when to save a string is to waste valuable time.

* * * *

A short answer stirreth up wrath, but a careful explanation satisfieth the customer. Smooth things over before they get set too hard.

ADVERTISERS' INDEX

Comfortable surroundings are a great factor in both work and workmanship, till a man gets to thinking more of his comfort than he does of his work, and then it is the workman and not the surroundings that needs attention.

* * * *

When you buy a planer, get one that it does not take a half an hour to uncover the top cylinder to get at the knives to sharpen them. A few minutes saved here is as good as a few saved anywhere else. Every planer should be so arranged that both cylinders can be uncovered quickly and easily. The shavings bonnet should either telescope or turn back on a hinge, for to sharpen a planer properly the operator must have plenty of arm room and a free hand. No person can sharpen knives properly when he is all doubled up, standing tiptoe or half standing and half lying.

* * * *

The tendency of the times is towards simpler, cleaner and better furniture all the time. Elaborate carvings except in show pieces are out of place. Owners of homes of culture and refinement are asking for the simple, graceful, well fitting and well made stuff; and do not think for a moment that the designing of furniture of simple lines is easy. A lot of embellishments and detail work may be thrown on to a piece with quite a free hand, but the graceful flow of simple easy lines in a plain piece of furniture requires the highest art.—Furniture Journal Daily.

D. G. COURTNEY

MANUFACTURER OF

Car and Railroad Timbers

Yellow Poplar, Oak, Chestnut & Basswood

Oak Cooperage

CHARLESTON, WEST VIRGINIA

Modern Mills and Perfect Manufacture

We make a specialty of getting out high grade Soft West Virginia Panel Poplar, and are in position to ship either straight or mixed cars of lumber. We also get out a Sound Wormy grade of Chestnut, suitable for veneer purposes. We will load cars to suit the requirements of our customers. We seek the trade of woodworking factories who want a dependable lumber supply and fair treatment.

Write us for Prices on Chestnut—all grades.

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LIMITS AND LOGGING CAMPS IN WEST AFRICA, MEXICO, AND BRITISH HONDURAS

Carving Departments made Superfluous

We have educated furniture manufacturers to the fact that it is a waste of time and money to run their own carving departments. We can furnish you carvings of every kind, from the plainest to the most artistic, at prices very much lower than what you can produce them for yourself. It is our specialty! Send us your samples and let us submit our figures.

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Manufacturers of every variety of Furniture Ornamentation, Extension Table, Cylinders, Veneered Rolls, Etc.

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Oak, Ash, Poplar, Hickory, Gum, Sycamore, Walnut, Cherry, Poplar, Gum and Lynn Siding, Turned Poplar Columns, Dressed Stock, Etc.

Lumber of all kinds is being cut every day at our city and country mills, and with stock constantly coming in from many other points, we are likely to have supplies meeting your wants.

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Prompt shipments — Let us sample you.

HENRY S. HOLDEN VENEER COMPANY. **GRAND RAPIDS, Mich., U. S. A.**

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We want to move at once 3 cars 1¼ in. No. 1 Common Poplar; 2 cars 1¼ in. No. 1 Common Quarter Sawed White Oak; 2 cars 1½ in. No. 1 Common Quarter Sawed White Oak; 1 car 1½ in. 1st and 2nd Quarter Sawed Red Oak; 5 cars 1 in. No. 1 Common Plain Sawed White Oak.

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Adjustable and automatic stops.

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Hardwood Rail, making continuous straight edge, doubly marked in feet and inches from saw with rule maker's dies. Handy to use for cutting odd lengths for which it is not worth while to change the stops.

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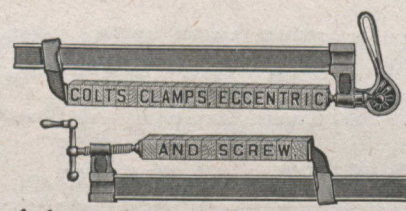

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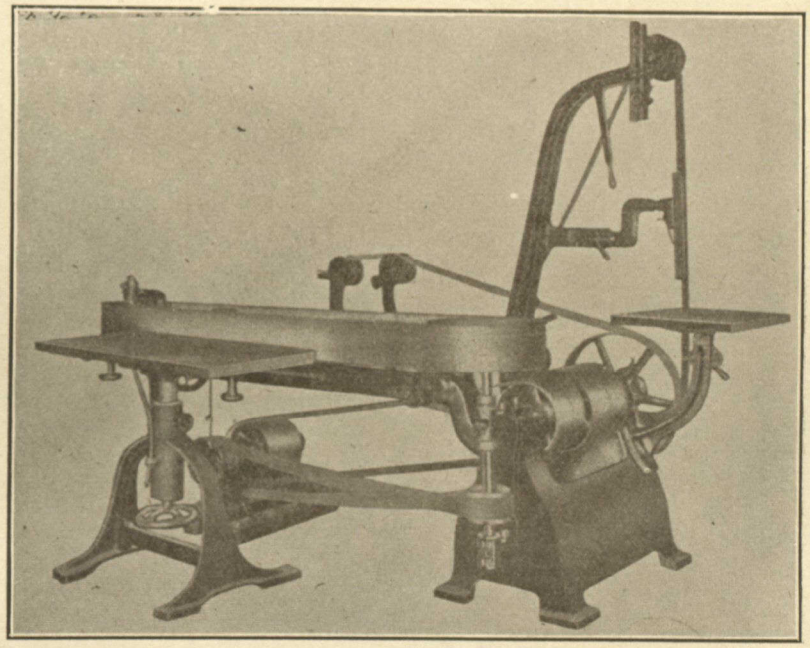
Notwithstanding the money stringency we are still selling machinery as rapidly as ever, and we direct your attention to the following statements regarding our



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We are not attempting to tell you of the good points of our Sanders in this advertisement.

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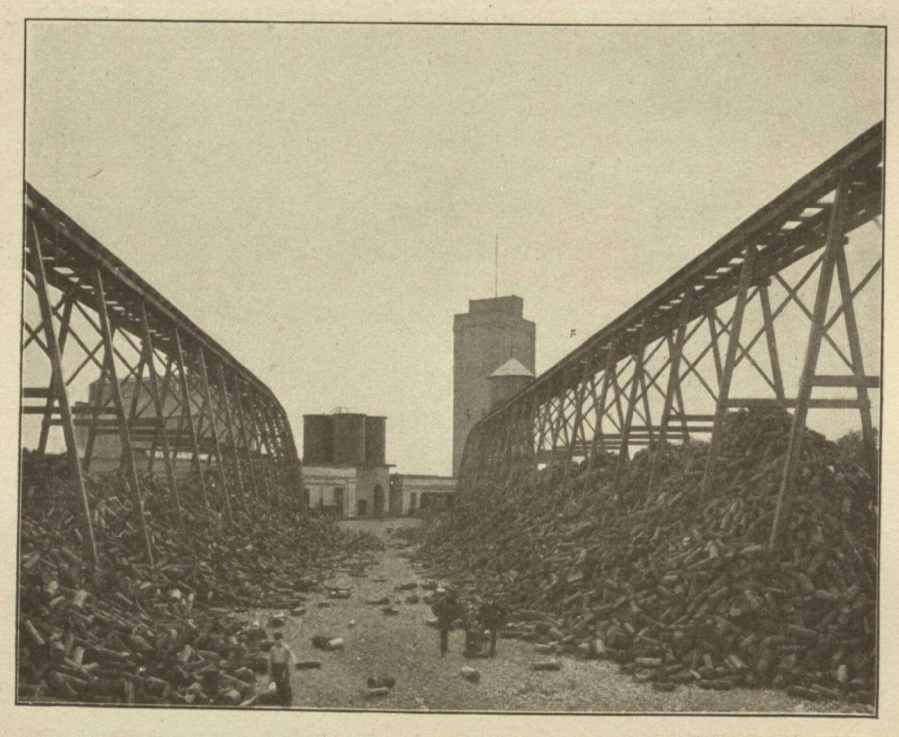

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