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THE CANADA LUMBERMAN

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BRITISH COLUMBIA TIMBER WEALTH.

TO thousands who have no particular interest in lumbering British Columbia has become famed for the size and beauty of its forest products. The illustration that we give on this page is a familiar one to those who have made themselves acquainted with the natural resources of the province. Where to the traveller, and student of Canadian history, however, the giant cedars of the Pacific Coast are a thing of beauty and wonderment, at the same time, from a commercial point of view, they tell of a measure of wealth that finds few parallels in any other part of the Dominion.

The forest area of British Columbia is 285,000 square miles or 182,400,000 acres. This area is densely covered with some of the most valuable timbers that are known to the lumber world. The most prominent and valuable of these is Douglas fir, named after a noted botanist of that name. It is not local to any particular section, but is distributed generously throughout all parts of the coast. For many commercial purposes it fills a place, that bars out any competitor, because of its immense length, strength and straightness. Some of these trees grow to a height of 300 feet, and have a base circumference of 50 feet. The best averages, however, are 150 feet clear of limbs and 5 to 6 feet in diameter. Professor Macoun classifies it as standing midway between the spruce and balsam, and expresses the view that it would make a valuable paper-making tree. In a day when much value is attached to spruce for paper-making, if Professor Macoun is correct in his diagnosis of its properties the time cannot be far distant when Douglas fir will also be sought after for this purpose.

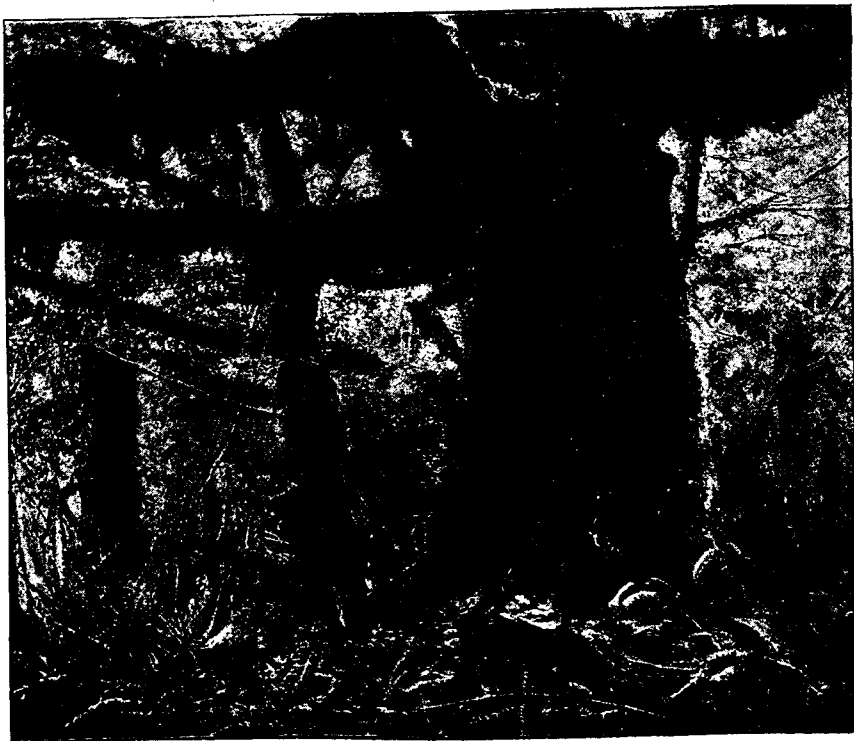
Both from the picturesque, as well as the commercial standpoint, the red cedar (*Thuja Gigantæ*) follows closely after Douglas fir. This tree is likewise well distributed throughout the province, though it reaches its greatest size and majesty on the coast, where it quite outgirths any other tree. As a general-purpose timber red cedar is the most valuable of the Pacific Coast woods. It grows to a height, sometimes, of 200 feet, and 20 feet in diameter. The settler on the coast finds it beside him when building his rude hut, whilst the resident who has reached the point where he has discarded the humble beginnings of his early struggles finds in red cedar a wood that gives beauty and finish to the finest mansion. For inside finish it takes a beautiful polish and is in popular demand for the interior finishing of residences, not alone at home, but to a wide extent, abroad. Just at the present time interest centers around this wood because of the hindrance that has been placed upon its export by the ruling of the United States custom authorities in placing it under the 25 per cent. duty list. It is expected, however, that this difficulty will be shortly overcome. A companion wood to red cedar is the yellow cedar, which is possessed of great durability and likewise grows to a great size.

On the coast is found a species of spruce, known as white spruce (*Picea Sitchensis*), which is found interspersing the forests where the other trees grow, and in swampy lands. In circumference it is almost the equal of Douglas fir, but does not grow to nearly the same height. It makes a beautiful lumber for doors, dressing, etc., and large quantities of it are used in making salmon boxes, fruit boxes, and to some extent, barrels. Other

woods of the coast are hemlock, white pine, (though this is in no way to be ranked along with the white pine of Ontario), cotton wood, balsam, and crab apple, which grows in swampy ground.

The area covered by timber in British Columbia is not the most remarkable feature of the province. Its density is so great that as high as 500,000 feet have been taken off a single acre, and it is recorded that on one acre in the Comox district 508,000 ft. have been found. This, of course, is exceptional, but a fair average would run as high as 75,000 feet.

With forest products in rich abundance, it is to be expected that the saw mill industry would take rank as one of the most important of the province. At present there are upwards of 60 saw mills in British Columbia, with a daily capacity of over 3,000,000 feet. The whole cut of the province last year was 65,000,000 feet.



PRIMEVAL FOREST GROWTH, BRITISH COLUMBIA—A GIANT CEDAR.

Speculation is indulged in there, as in other lumber producing countries, as to the possible longevity of its timber resources. Mr. R. E. Gosnell estimates that there are over 100,000,000,000 feet of good timber in sight, and that the present saw mills running, fully employed and making an average output, would take between 150 and 200 years to exhaust the present supply. Another authority has figured down the possibility in this respect as low as 60 years. One thing we may be certain of, taking other countries as an example, that British Columbia will come to the end of its timber resources much earlier than they anticipate. It seems a difficult matter in all new lumbering districts, whilst the virgin timber exists in great abundance, to impress lumbermen with the fact that, as steady droppings wear away the hardest stone, so will continuous, and too often prodigal, cutting wear away the wood products of a country, as rich even in their resources as British Columbia.

British Columbia will rise to its greatest importance as a lumber district after lumbermen have exhausted the province of Ontario and other provinces of the Dominion. Then they will flock to the coast, and as has been remarked, the men who possess large holdings of timber will find themselves quickly becoming millionaires. This pleasant experience has fallen to the lot of several in Ontario and Quebec, who years ago bought limits at

practically a nominal price, and in later years disposed of them at a figure to represent a handsome margin.

The lumbermen of British Columbia find a market for their products both at home and abroad. As the province itself has grown, and the adjacent northwest territories and Manitoba, they have been able to cultivate a domestic trade of fair volume, and one that will grow as the country grows. Large quantities of timber are exported to Great Britain, Australia, South Africa, South America and other foreign points. This trade will receive a great stimulus when the projected Nicaraguan Canal has been completed. Since the removal of the United States duty a fresh market has been found in California, and within the past four or five months some considerable shipments have gone into that territory, and the trade is growing rapidly. It may be expected that in time it will be found profitable to send these products a greater distance than simply the neighboring state of California.

The red cedar shingle industry has reached large proportions on the coast, and these shingles are well known, not only in their native province, but throughout Ontario, and to some extent they have been placed in different parts of the United States. Just at present this industry is in somewhat a depressed condition, suffering from that bane that comes to every business that seems to show great possibilities—over production.

Mr. J. R. Anderson, provincial statistician, is authority for the statement that the total extent of lumber leases in British Columbia is 524,573 acres and the principal owners or lessees are as follows:

	Acres.
British Columbia Mills, Timber and Trading Co., Ltd.	87,433
Toronto and British Columbia Co.	60,982
McLaren-Ross Lumber Co.	51,190
Vancouver Saw Mill Co.	36,306
Brunette Saw Mill Co.	22,331
Victoria Lumber and Manufacturing Co.	18,537
Andrew Haslem	17,934

Leases of surveyed, unpre-empted crown lands may be obtained for a period not exceeding 21 years by those tendering the strongest cash bonus subject to the pay-

ment of an annual rental of 10c. per acre and a royalty of 50c. per thousand feet on the scale measurement of the logs. The lessee, though not actually engaged in the manufacture of lumber, must, to retain his limits, erect a mill capable of cutting at least 1,000 feet a day for over 400 acres of land included in the lease, within two years, and give a guarantee equivalent to 10c. an acre that he will do so before obtaining his lease. A timber license may be granted for 1,000 acres for four years on payment of \$10 annually and 15c. for each tree (except hemlock), and no person not licensed may cut timber on crown lands except for farming and mining purposes. Only one license at one time is obtainable and is not transferable. A special license for 1,000 acres for one year may be obtained by application in the Official Gazette and the payment of \$50 to the chief commissioner of lands and works.

The Upper Ottawa Improvement Co. has commenced its operations for the season, when the first gang of men went to work on the booms and saw logs left from last fall in Thompson's Bay. The start this year is about two weeks later than last season, on account of the river not being clear of ice. There will be no rafts of square timber down for some months, as all of last year's timber passed down to Quebec before the winter closed in.

TRANSMISSION OF POWER BY BELTS.*

By GEO. FOWLER.

VENTURE to say that there are few appliances so much abused and neglected as the one under consideration, namely, the old and tried friend of all shops and factories, the belt. We find it stretched out of all resemblance to its former self. We see it laced in a slipshod manner with perhaps half the lace holes torn out, giving opportunity for the belt to catch against the fingers of the shifter and finally tear out and come down on somebody's head. When we go into a shop or factory and see the belts in the condition described, we are pretty sure to find a shop where the time of attending to the shafting, hot bearings and attendant ills would make a big item in the accounts if it was counted on the list of running expenses. But this kind of a shop never keeps much account anyway, and guesses at the charges to be made for work, with the result of losing money.

It is not idle capital to have belts running slack and doing less work than they might possibly be made to do, for it is much better to have the capital invested in this way than to have delays, cut boxes, and the annoyance that follows in the wake of all unsatisfactory machinery and parts in the whole establishment. It is a pleasure to see a nicely running belt, to go into an engine room and see the great driving belt that is running the whole of a great plant and doing it without apparent effort, the belt running so loose as to give a sag to the upper half, and the lower half running straight as a line. This is a sure sign that the journals are running cool and everything is going along nicely.

I do not wish it understood that everything in this paper is original with me; on the contrary, some of it is borrowed from the best engineering practice in the country. I have been very generously assisted by the several belt manufacturing companies, who gave me good hints on the use of belting. I have also studied such works as Morin's, Cooper's, Nicholson's, Thurston's, and out of these I have taken and adopted several valuable rules and formula.

There are few engineers who have not been frequently in want of information or readily applicable formulæ, upon which they could place reliance, giving the power which, under given conditions and velocity, is transmitted by belts without unusual strain or wear, therefore I believe it is well to study the experiments which are given in the works of the different authors, and acknowledge and adopt formula therefrom, and apply it to daily use. But in doing so we must be careful, because, notwithstanding the existence of this mathematical and experimental information, the numerous tables that have been given by mechanical engineers appear to have had only that kind of a basis which has come from guessing that an engine, or a machine, either the driving or the driven, with a belt of given width, was producing or requiring some quantity of power which might be expressed in foot-pounds generally without any stated arc of pulley contact. For instance, one writer says that a single leather belt one inch wide, running 1000 feet per minute, will transmit .76 horse power; another asserts .93 horse power; another claims one horse power; another makes out 1.33, and still another figures it out to be $1\frac{3}{4}$, and so on, thus producing conflicting testimony.

The rule which I have acknowledged and adopted may be thus expressed: An ordinary single leather belt one inch wide, with a velocity of 600 feet per minute, will transmit one horse power. After an examination of different text books, I find that General Morin's data gives us the clue to the truth of this rule, and also that it is supported by other good authority. Morin says: "Belts which are designed for continuous service may be made to bear a tension of .551 lbs. per .00155 square inches of section, which enables us to determine the breadth according to the thickness." This is equal to 355 lbs. per square inch of belt leather, and is also equal to about one-tenth of the breaking strength of the same as given by Mr. Rankine and other good authorities. Cooper in his works says if we substitute 330 lbs. for 355 lbs. per square inch, we strike the component part of a horse-power and deduce the following: one square inch of belt leather at a velocity of 100 feet per minute will transmit one horse power with safety, and from these data get the rule: The denomination of the fraction which expresses the thickness of the belt in inches, gives the velocity in hundreds of feet per minute at which each inch of width will transmit one horse-power; and as the ordinary thickness of a single leather belt is generally about $\frac{1}{8}$ of an inch, we simply multiply the denominator of this fraction by 100 and get the 600 feet at which a single strap one inch wide should run to transmit one horse power.

No rules can be given that will apply to all cases—circumstances and conditions must and will modify them. Belts, for instance, for machines which are frequently stopped and started, and shifting belts, must be wider to stand the wear and tear

and to overcome the starting friction, than belts which run steadily and continuously. The breaking strength per inch width of belts when made from good ox hide, well tanned, has been determined as follows:

In the solid leather.....	675 lbs.
At the rivet holes of splices.....	362 "
At the lace holes.....	210 "

Engineers are often required by their employers to put up new shafting, pulleys and belts for the purpose of doing an additional amount of work which may be stated in horse power, and the matter of proper dimension of same, such as size of shaft, diameter and speed of pulley, width of belt, etc., are left to the judgment of the engineer. I have no doubt that a majority of the members of this association are perfectly competent to oversee such work, but to those whose practice along this line has not been very extended, and who may be called upon at any time to take such matters in hand, I offer the following information, which is taken from standard works and may be relied on for everyday use:

The safe working tension is assumed to be 55 lbs. per inch of width, which is equal to a velocity of about 50 square feet per minute per horse power, which is safe practice.

Now let C = circumference in inches of pulley,

D = diameter in inches of pulley,

R = revolutions per minute,

W = width of belt in inches,

H = horse power that can be transmitted by belt.

Then, to find the horse power that a single belt can transmit, the size and speed of pulley and width being given, the formula would be:

$$\frac{C \times R \times W}{144 \times 50} = H, \text{ or } \frac{C \times R \times W}{7200} = H,$$

or we may still further simplify the process by substituting D for C and divide the constant 7200 by 3.1416, which is the proportion of circumference to diameter. The formula would then be

$$\frac{D \times R \times W}{2300} = H.$$

The transmitting efficiency of double belts of average thickness is to that of single belts as 10 is to 7, therefore for double belts the formula would be

$$\frac{D \times R \times W}{1575} = H.$$

The horse power to be transmitted, and the size and speed of the pulley being given, to find the width of belt required:

$$\text{For single belts—} \frac{H \times 2300}{D \times R} = W.$$

$$\text{For double belts—} \frac{H \times 1575}{D \times R} = W.$$

The horse power, speed of pulley, and width of belt being given, to find the diameter of pulley required:

$$\text{For single belts—} \frac{H \times 2300}{R \times W} = D.$$

$$\text{For double belts—} \frac{H \times 1575}{R \times W} = D.$$

The horse power, diameter of pulley, and width of belt being given, to find the number of revolutions required:

$$\text{For single belts—} \frac{H \times 2300}{D \times W} = R.$$

$$\text{For double belts—} \frac{H \times 1575}{D \times W} = R.$$

In the rules I have assumed that the belts are open, the pulleys of equal diameters, and the arc of contact is the semi-circumference. If, however, the pulleys are of different diameters and the arc of contact is less than the semi-circumference, the rules must be modified accordingly. The width of a belt required for any work depends on three conditions: 1st, the tension of the belt; 2nd, the size of the smaller pulley and the proportion of the surface touched by the belt; 3rd, the speed of the belt. The average strain under which leather will break has been found by many experiments to be 33,200 lbs. per square inch of cross section. In use on pulleys, belts should not be subjected to a greater strain than one-tenth their tensile strength, or about 330 lbs. to the square inch of cross section. This will be 55 lbs. average strain for every inch in width of single belt $\frac{1}{8}$ of an inch thick. The strain allowed for all widths of belting (single or double) is in direct proportion to the thickness of the belt. This is the safe limit, for if a greater strain is attempted the belt is likely to be overworked, in which case the result will be an undue amount of stretching, tearing out at the lace holes, and damage to the joints.

The working adhesion of a belt to the pulley will be in proportion both to the number of square inches of belt contact with the surface of the smaller pulley, and also to the arc of the circumference of the pulley touched by the belt. This adhesion forms the basis of all right calculation in ascertaining the width of belt necessary to transmit a given horse power. A single belt $\frac{1}{8}$ of an inch thick, subjected to the strain which I have

given as a safe rule (55 lbs. per inch in width) when touching $\frac{1}{2}$ of the circumference of the pulley, will adhere $\frac{1}{2}$ lb. per square inch of the surface contact; or if the belt touches $\frac{1}{4}$ the circumference of the pulley, the adhesion will be $\frac{1}{4}$ lb. per square inch of contact, and so on.

Mr. Evan Leigh, C. E., of Manchester, Eng., gives the following rule for finding the horse power that any given width of double belt is capable of driving: Multiply the number of square inches of belt contact on the smaller pulley by one-half the velocity of the belt in feet per minute and divide the product by 33,000, and the quotient will be the horse power. Mr. Leigh also gives a rule for finding the proper width of double belt for any given horse power: Multiply 33,000 by the horse power required and divide the product, first by the length of contact in inches on the smaller pulley, and again by one-half the speed of the belt, the quotient will be proper width of belt.

Now, if these rules (which the author devised some 20 years ago) can be compared with the single straps as at present used in mills, it will be found that they considerably overshoot the mark; yet single belts, being so much weaker and more liable to stretch than double ones, ought to have less strain upon them. The secret of wide double driving belts running so mysteriously long without attention will at once be seen, when it is considered that single belts are generally made to do two or three times more than they ought to do for their width and speed.

For existing establishments where it is not convenient to alter the speed of shafting or size of drums, in driving machines with single straps, the following rule will come nearer to actual practice: Multiply 33,000 by the horse power required and divide the product, first by the length in inches covered by the belt on the smaller pulley, and again divide by the speed of the belt in feet per minute; the last quotient will be the proper width for a single belt.

This, and more than this, is what single belts are made to do when driving machinery. Comparatively, then, the strong double belts, working as per first rule, have exceedingly light work, which can be done with great ease while running in a slack state. Hence their durability, and the nearer a user of belts can approach the rule given for double belts, the longer his straps will last.

To determine the strength and size of a belt, find first the amount of labor to be performed by it. This labor is its tension with velocity. If a belt passes over a 3 foot pulley which makes 100 revolutions per minute, its velocity will be: $100 \times 3 \times 3.1416 = 942.48$ revolutions per minute. Now, if this belt is to transmit 2 horse power, its tension on the pulling side will be: $\frac{2 \times 33,000}{942.48} = 70$ lbs. In this case it is assumed that

one side of the belt is slack; if this is not the case (which in the average of practical instances may be depended on), the tension on the following side of the belt is subtracted from the above. We here see of how much more service the horizontal belt is than the vertical one, for it increases the tension by its own weight and also by the arc of contact. In most of these cases we may neglect the width of the pulley in the calculations of friction; for the strength of the belt, if sufficient to stand the tension, makes the belt wide enough for adhesion. In all cases it is advisable to make the belt sufficiently wide. No other loss arises from too wide a belt than that of first cost. If a belt is too narrow or the arc of contact too short, the tension must be increased in order to afford sufficient adhesion to the pulleys.

Short belts are very disadvantageous and so are vertical ones; they always require more tension than either long or horizontal ones. Those which are too narrow will stretch, in consequence of which tension and adhesion are diminished.

The adhesion of leather upon smooth surfaces is greater than upon rough surfaces, and for this reason pulleys ought to be made perfectly sound and smooth. Frequently we see the surface of pulleys convex in order to prevent the running off of the belt, but this convexity must be very small, or it will diminish the adhesion.

It is of great importance that a belt should be of such a length that it will adhere to the pulley enough to prevent it from slipping without the necessity of putting on the belt so tight as to wear the bearings. Every belt, to run easy and well, should be so slack when running that the slack side should run with a wavy, undulating motion, without any tension except on the working side; and when belts will so run without slipping on the pulleys, they wear for a great length of time, for although a belt may be heavily loaded, yet if at every revolution it can have an opportunity for relief from its tension so as to contract back to its natural texture, it will prevent it from breaking by the stress upon it. But if it be kept constantly strained to its greatest extent on both sides of the pulleys it will wear but a short time and will soon be destroyed.

*Paper read before Toronto No. 1, Canadian Association of Stationary Engineers, February 8th, 1895.

MCEACHREN'S PATENT DRY KILN.

THE accompanying illustration (Fig. 1) represents a double room progressive dry kiln as manufactured by the McEachren Heating and Ventilating Co., Galt, Ont., driven by independent engine. These kilns can be made of any length and any number of rooms from one to ten. The manufacturers claim that they differ from other kilns in use in the following particulars:

1. They will do from 50 to 100 per cent. more drying with a given amount of heating surface and a corresponding amount of steam.

2. They handle about three times the amount of air handled by any other dry kiln and with about 25 per cent of the power used by other blast kilns.

3. The air is not only blown through the lumber, but drawn through. There being as much exhaustive product at one end of the kiln as forcing power at the other, the air is worked like a continuous belt.

4. The moisture from the lumber is held in the circulating air until the thickest lumber in the kiln is heated through to the centre; then moisture is taken off gradually as it evaporates from the centre of every piece of lumber in the kiln. This process, it is

claimed, completely secures against checking, warping, etc. The air being driven through the centre of lumber piles with great rapidity, the moisture is taken away as soon as it evaporates from the timber, thus preventing all danger from discoloration.

5. Green lumber may be put into the kiln and dry taken out every day, the same hot air being kept in circulation, and yet the moisture coming from the green lumber at one end of the kiln does not come in contact with the dry at the other end.

6. The great rapidity with which these kilns dry lumber enables the lumberman to season a given quantity per day, thus effecting a saving of about fifty per cent. in space as compared with some other kinds of kilns. To secure even drying of lumber the air must circulate with equal freedom around all parts of every pile of lumber in the kiln, and in case of weather seasoned lumber the circulating air should be kept from the ends as much as possible. These are already too dry to correspond with the centre, and being weather beaten and checked, will season faster than the centre with the same heat and circulation. These are points which the manufacturers claim to have carefully guarded in the kilns under consideration.

It will be observed from the cut that a new system of sliding doors is employed. These are easily handled, and occupy no room above the kiln. They close, and when shut are screwed together by a simple device so that they are absolutely tight.

Fig. 2 illustrates a cabinet-maker's kiln. In this it will be observed any car in the kiln can be taken out and another put in without disturbing other cars, a feature particularly valuable to cabinet-makers, carpenters, carriage makers, manufacturers of musical instruments, etc., as in all these departments of manufacture a large variety of thicknesses are used, and some kinds of lumber require much more time in seasoning than others. The fan in this case is driven from the shafting of the factory, the power in some cases being transmitted by wire or rope cable, but the independent engine is the

best, as with it any desired amount of circulation can be given, and if it is required to run the kiln at night the engine and shafting of the factory do not have to be in operation.

These kilns are claimed to be particularly adapted to the use of exhaust steam, and cause no back pressure. Exhaust steam may be used in the whole or any part of the heater, and the balance heated with live steam and charged at will. They are further claimed to be absolutely safe from fire.

The company also manufacture apparatus for drying wool, cotton, yarn, cloth, hair, fruit, etc., and for heating and ventilating factories and public buildings. They state that they will gladly send to persons interested Canadian and American testimonials in proof of the efficiency of their apparatus.



FIG. 1—PROGRESSIVE DRY KILN.

THE SPRUCE FORESTS OF NEW BRUNSWICK.

THERE are two if not three kinds of spruce to be found in New Brunswick, writes Edward Jack, of Fredericton, in the Northeastern Lumberman. These are the white, black, and possibly red varieties. Whether the last of these is really a distinct species is yet undetermined. The white spruce (*abies alba michaux*) is larger and more slender than the black spruce, from which it is distinguished by the lighter color of its bark and leaves. Its cones, which are two inches long, are deciduous, the leaves being needle shaped and sharp pointed. On the Restigouche, upper St. John, and many other places it grows to a great height with but little taper. In 1873 Mr. J. A. McCallum, crown land surveyor, cut down one of these trees on the Restigouche, the diameter of which was 25 feet

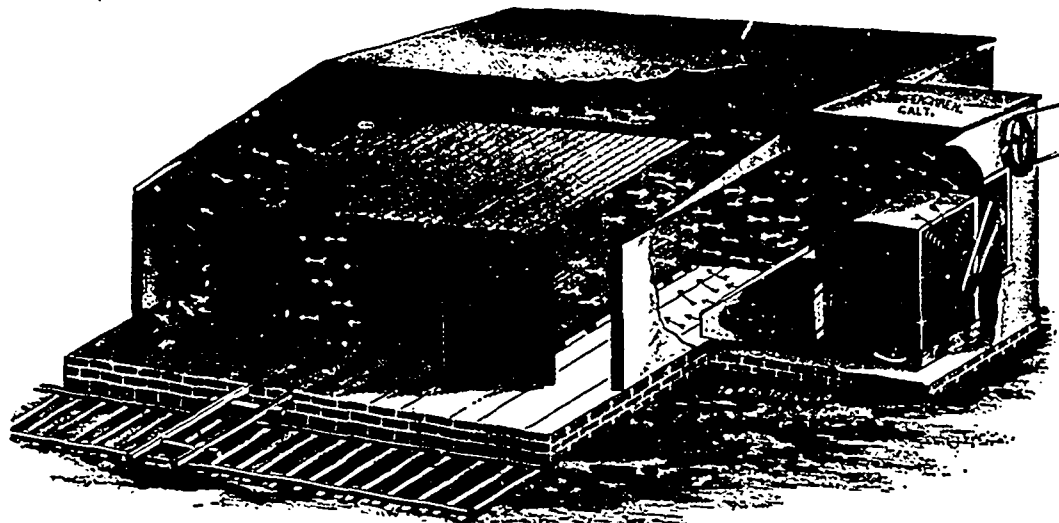


FIG. 2—CABINET MAKER'S KILN.

at the stump, and which made a log 64 feet long, measuring 10 inches in diameter at the top end. They are found growing in valleys, on the shores of rivers and streams and in small bunches on the sides of hills and mountains.

The yield of white spruce land will not compare with that of black spruce land, as the former tree is much more scattering in its growth than the latter. This very important distinction is one which is unknown to many land owners. The late Mr. McCrillis of Bangor did not know it until a few years before his death. The timber explorer who had been accustomed to the splendid forests of black spruce which once covered parts of New

Hampshire, or those which grew not far from the Maine seaboard, would be very apt to place a small value on the white spruce forests of the Upper St. John, and would almost be sure to underestimate the timber growing within their limits.

The wood of the white spruce is white and soft and freer from resin than that of the black spruce, on which account it would probably be better adapted for the manufacture of pulp than that of the latter. In fact, parties who for a long time have been using this wood for that purpose on the shores of the St. Lawrence state that such is the fact. The spruce deals exported from the Bay of Chaleur, as well as in New Brunswick, as in Quebec, are nearly all manufactured from the wood of this tree.

The black spruce (*abies nigra michaux*) as an article of export is the most valuable of all the trees of New Brunswick. Its leaves are about half an inch long, stiff, somewhat four sided, very dark green or whitish gray. Its cones, which are from one to one and a half inches long, have a color changing from dark purple to dull reddish brown. The bark of the tree is dark brown. The vast

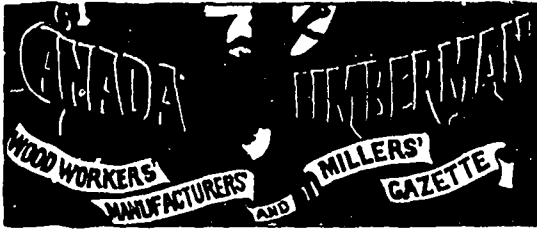
forests of this tree, which once covered New Brunswick, have been reduced by the effects of wind, fire and cutting to less than a quarter of their original extent.

This tree was found in greatest abundance in the southern part of New Brunswick. A line drawn from a point a short distance north off the head of the eastern grand lake on the St. Croix, extending thence northeasterly to the dividing ridge between the Southwest Miramichi and Nepisiguit rivers, would show nearly the boundary of the great black spruce forests of New Brunswick. South of this line vast forests of it extended from the St. Croix northeasterly, crossing the Nashwaak and Southwest Miramichi rivers, thence to the Northwest Miramichi. North of this line the forest growth is more generally of hard woods, which are largely mingled with firs.

Such spruce as occur north of this line are usually of the white variety; to this rule there are certain exceptions in the valleys of the Meduxnakik, Becaguimec, Presquisle, and lower Tobique, part of the Aroostook and certain other branches of the St. John below the Grand Falls. Above the Grand Falls the spruce usually met with is of the white variety, although there are exceptions even there, such as on the head of the Alleguash and certain other streams in the State of Maine and on the northwest and certain other branches of the St. John which take their rise in the Province of Quebec.

In laying out the holes in a belt for the lacing, do not get them too near together, for while this practice makes the finished lacing stronger, it makes the belt weaker on account of the large amount of material cut away in making the holes.

When setting a boiler, pieces of common steam pipe, say about one inch in diameter, should be built into the outside walls in such a way that they will allow the air in the space between the two walls to escape when the heat expands it, and also allows it to enter this space when the boiler cools off.



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—BY—

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THE CANADA LUMBERMAN is published in the interests of the lumber trade and of allied industries throughout the Dominion, being the only representative in Canada of this foremost branch of the commerce of this country. It aims at giving full and timely information on all subjects touching these interests, discussing these topics editorially and inviting free discussion by others.

Special pains are taken to secure the latest and most trustworthy market quotations from various points throughout the world, so as to afford to the trade in Canada information on which it can rely in its operations.

Special correspondents in localities of importance present an accurate report not only of prices and the condition of the market, but also of other matters specially interesting to our readers. But correspondence is not only welcome, but is invited from all who have any information to communicate or subjects to discuss relating to the trade or in any way affecting it. Even when we may not be able to agree with the writers we will give them a fair opportunity for free discussion as the best means of eliciting the truth. Any items of interest are particularly requested, for even if not of great importance individually they contribute to a fund of information from which general results are obtained.

Advertisers will receive careful attention and liberal treatment. We need not point out that for many the CANADA LUMBERMAN, with its special class of readers, is not only an exceptionally good medium for securing publicity, but is indispensable for those who would bring themselves before the notice of that class. Special attention is directed to "WANTED" and "FOR SALE" advertisements, which will be inserted in a conspicuous position at the uniform price of 25 cents per line for each insertion. Announcements of this character will be subject to a discount of 25 per cent. if ordered for four successive issues or longer.

Subscribers will find the small amount they pay for the CANADA LUMBERMAN quite insignificant as compared with its value to them. There is not an individual in the trade, or specially interested in it, who should not be on our list; thus obtaining the present benefit and aiding and encouraging us to render it even more complete.

CANADA'S TIMBER RESOURCES.

THE reference to Canada as a wooden country has not been without foundation. Our riches in this respect have been great. The pity is that we have not in the past valued these, as to-day we see they deserve to be valued. In a monograph on the "Forest Wealth of Canada," Mr. Geo. Johnson, statistician for the Dominion Government, tells us that commercially lumbering holds one of the first positions in Canada. In the various industries depending for their existence upon the supply of wood there is an invested capital that reaches closely to \$100,000,000, carrying with it an annual expenditure for wages of \$30,000,000, with an output valued close upon \$110,000,000. A number of the more important industries of the country depend for their raw material on the wood supply. Elsewhere we have commented on the possible consumption of wood for railway ties, a feature of strength to the lumber business this season being the amount of lumber that will be consumed in car building. Ship building, though less than in the past, yet consumes large quantities of timber, whilst the tanning and pulp industries are among its largest customers. With all the ingenuity of the present age, and the invention of substitutes for many of nature's supplies, it does not seem likely that a substitute will be found for wood in any of its more important directions.

The forests of Canada must ever rank among her greatest heritage, for, as Mr. Atkinson, the well-known economist has said: "The nations or states in which food, fuel, metal and timber may be produced at the highest relative rates of wages and at the least money-cost per unite of product will thereby be enabled to apply labor-saving machines to other branches of productive industry in the most effective manner." The importance, therefore, of preserving and maintaining our forests is plain.

The ownership of Canadian forests is mainly vested in the provincial governments, except in certain parts of Manitoba, the territories, and the railway belt of British Columbia, where the Dominion Government owns the

crown lands and attends to their administration. In Nova Scotia there is no system of timber license, nor yet in Prince Edward Island, the trees being sold with the land, and to-day, are largely out of the hands of the crown and in possession of private parties.

There was originally in eastern Canada one unbroken forest from Nova Scotia to the Lake of the Woods, a distance of 2,000 miles and covering an area of 315 million acres, but these were in the days before the enterprising lumbermen had learned to make the heavy cuts each winter as is the case in the present day. Large proportions of the original forest has suffered from the fire element to an extent that is lamentable.

As an exporter of forest products, Canada holds the fourth place among the nations of the world. She is exceeded only by Sweden and Norway, with a net export of \$37,135,000, by Austria, with a net export of \$31,000,000, and by Russia with \$33,300,000. On a per head basis Canada stands second, her net export in 1891 having been \$24,564,869, equal to \$5.08 per head against Sweden and Norway's \$5.50, Austria's 75c and Russia's 34c per head.

THE CANADIAN MANUFACTURER HANDICAPPED.

IN conversation a short time since with a prominent lumber manufacturer of British Columbia, the information was gleaned that to no inconsiderable extent the machinery in the saw mills and wood-working establishments of the Coast is obtained from the United States. Knowing that the manufacture of this class of machinery in Canada has been developed to a high degree, and that the best in almost everything required for the equipment of saw mills or planing mills could be obtained from the home manufacturer, we were led to make an enquiry as to the causes of these conditions.

First, desiring to learn to what extent the practice prevailed, we placed ourselves in communication with a prominent manufacturer of wood-working machinery. So far as British Columbia was concerned, with excellent means for knowing the real position, the view was expressed that perhaps 25 per cent. of the machinery that came into that Province was of American manufacture. As good machinery, it is claimed, could be obtained at home, but mill men have their whims, and likes and dislikes, as other people, and this was considered to furnish, at least, a partial explanation for trade going abroad.

It has often been said that there is no sentiment in business, and when it is a matter of buying in the cheapest market it is useless to talk patriotism to a business man. But all other things being equal, it does seem that Canadian manufacturers might, with good effect, appeal to the patriotism of those within their own country who buy machinery; and when as good a piece of work can be obtained from the home manufacturer for the same price, there ought to be no question as to how the choice should go. It is poor business policy for Canadians who are looking for trade within their own country to discourage the cultivation of this trade by going outside of the country themselves for their supplies, when there is no business reason for doing so.

It was natural to seek for other causes of the trouble than those which have been here stated and combated, for, another manufacturer said, the same condition of affairs that exists in British Columbia finds a counterpart, to quite a large extent, in Ontario and Quebec. One reason of this arises from the fact, it is believed, that the timber limits of Canada are falling into the hands of Americans more largely each year, and these parties are accustomed to machinery manufactured in their own country. This feature of the lumber business was discussed at some length in these pages rather more than a year ago, when a valued correspondent pointed out that the changes in the ownership of limits in Ontario would not end with large quantities of logs being towed across the border to be cut in United States saw mills, but that this practice would in a short time be felt by manufacturers of machinery. And it would appear that this prophecy was coming true. Of course, there is another side to the question, especially since the removal of the duty on lumber, viz: that American owners of limits are building saw mills in Canada, and as the Commissioner of Crown Lands

points out in his current report, as a result of this policy over 100,000,000 ft. of logs, which, had the duty remained on lumber, would have been exported in the round to the United States, will this year be sawn in Ontario, and largely in such mills as that of the St. Anthony Lumber Co. and others, erected, or in course of erection, by United States lumbermen.

These conditions, however, are only of an incidental character. We believe, even in the case of manufacturers, who have been accustomed to using a particular class of machinery, that they would just as readily buy the outfit for their mills, in the country where they are building these mills if they could secure what they want and on as favorable conditions. Here the greater difficulty shows itself. Within the past few years a very great reduction in the cost of the raw material used in the manufacture of machinery has taken place in the States, making the present rate of duty on machinery practically less than the duty on the raw material. For instance, pig iron at present is delivered on cars in the States at from \$6.50 to \$7 a ton; the duty on this is \$4.48. Let this pig iron be put into the simplest form of castings and it comes into the country on a duty of say from 20 to 30 per cent., as it varies some. This means that the duty on \$4.48 a ton, on, say \$7, amounts to about 60 per cent., or double, and in some cases more than double, the duty on the manufactured article. The same with bar iron and steel; it is bought in the States on less than \$1 per hundred, and the duty coming into Canada is 50c a hundred. This comes in on the finished machines at 25 to 30 per cent. duty. A still greater discrepancy exists among other classes of material. This, of course, is caused by the very great reduction of the raw material, the specific duty being retained makes it a very heavy ad valorem duty. When applied by the government the specific duty then might have been considered a reasonable tariff, not excessive, but it will be readily seen at the present time that it operates seriously against the user of the material. The case affords an illustration of the necessity of existing circumstances being taken into account in the fixing of tariffs. It may be argued that it is impossible to arrange any tariff that would be movable with the changing conditions of the market. This is to be remarked then, that when this cannot be done it becomes a question what useful purpose a tariff fills, for, as in the present case, it really handicaps trade, where it had been intended it should be a protection and a help. A protective tariff that does not protect is surely an anomaly.

AUSTRALIAN TIMBER IN ENGLAND.

FOLLOWING up various efforts that have been made by the people of Australia to secure an enlarged market for their timber in Great Britain, Mr. Gaven Scott, representative of a large firm at Sydney, visited England about a year ago. He has now returned home and has been telling of the result of his business efforts. He spent considerable time in interviewing the principal railway companies, corporations, ship builders, dock companies and leading civil engineers and architects in England, Scotland and various parts of the continent. Particular attention was given to those hardwoods of Australia, that are believed to possess special qualities of durability that are not found in any other wood. These, it is claimed, are serviceable for railway sleepers, ship building, and wherever the timbers are put to severe tests of weather or water. In Great Britain hitherto the Baltic deals have been used to a considerable extent for railway sleepers, being preserved by creosote. Mr. Scott has returned home apparently very confident that for railway and marine work the Australian hardwoods will quickly take precedence over all other woods. Illustrating the consumption of such woods by the railway companies it may be said that the Great Western Railway carry regularly in stock £100,000 worth of sleepers. The timbers specially recommended for export to the United Kingdom are non bark, black butt, tallow wood, turpentine, red gum and mahogany. Wherever wood blocks are used for street paving those from Australian woods are considered the best. In New South Wales black butt is largely used for street paving purposes, and is said to wear at the rate of only one twenty-sixth of an inch per annum,

where the wear of soft wood under similar conditions is half an inch per annum. The Saw Miller's Association, of Melbourne, recently waited on the Victorian minister of lands to ask him to take certain steps calculated to aid in the development of export of wood blocks for street paving and the suggestion was made that blocks that had been down for a number of years in the streets of Melbourne should be taken up and sent to Europe and America as samples of the durability of this kind of paving. One great difficulty that will meet the Australians in the development of timber trade with Great Britain, wherever there is competition with America, will be the freight. Mr. Scott admits that it will hardly be possible to compete in freight to England with America. On another page we publish an article giving interesting particulars of the nature of Australian hardwoods.

WOOD PAVEMENTS.

WHERE wood paving is growing into large disfavor in Canadian cities the opposite is the case in many parts of Great Britain and on the continent. The methods adopted there in placing the blocks are no doubt of a more careful and scientific character, but the experiments that have been made with wood paving are from almost every standpoint of a satisfactory character. In Berlin investigations have been going on for a period of fifteen years to discover, if possible, the best paving wood for the most frequented streets, and especially those subject to a heavy teaming traffic. Granite blocks and asphalt have both been tried in these cases. Recent reports state that the authorities of Berlin, after these very thorough methods of investigation, have concluded to maintain the wood paving where there are horse car lines, and have already paved with wood 66,600 square metres, using 3,460,000 blocks, or 52 blocks to the square metre. These tests cover 42 streets, squares and bridges, and of the woods used 23,000 square metres were paved with German pine, 15,000 with Swedish pine, 14,700 with beech, 1,000 with American yellow pine, and 3,200 with American cypress. In Paris wood paving has been given the preference over asphalt for the boulevards and pleasure drives, and is also preferred on the streets subject to great waggon traffic. The greater part of the wood used for paving in Paris is spruce from the department of Landes. Some foreign woods have been used, including Jarrah and Karri from Australia. Commenting on these investigations Hardwood remarks: "The great enemy of wood pavements is the combination of owners of the great asphaltum beds in Trinidad and elsewhere, who have used every possible means to discredit the use of wood, for the purpose of advancing their own interests. The European authorities have submitted these questions to thoroughly educated and practical engineers, who, after tests covering a decade of years or more, have decided what is best. Their example might well be followed by the authorities of American cities (what of Canada?), where at present boodle seems to be the only test." City Engineer Keating, in a report presented to the Toronto Board of Works a few days since, has this to say of cedar blocks, in a municipality where the prejudice against this method of paving is strong: "I am aware that there is considerable opposition to cedar block pavements, on the ground that in a few years they become rough and uneven, but it cannot be denied that the existing cedar block pavements have done good service in their day, and that they are the cheapest class of pavement which can be laid in this city at present. If their assessment lifetime is limited to five years on gravel or boards and eight years on concrete, and the surface could be entirely renewed at the expiration of these periods, this class of pavement would probably be more popular with the public than it is to-day."

EDITORIAL NOTES.

LUMBERMEN of the Maritime Provinces are experiencing some trouble, owing to the rapid rising of a number of the streams, and also from ice jams that have taken place in some of the rivers. At Marysville, the home of Alex. Gibson, the water a few days since rose a foot and a half within an hour after the ice started, and the saw mill had to close down consequently. At Bedouque, P. E. I., the heavy freshets produced serious

trouble. Bridges and mill dams were washed away in short time. It is not anticipated, however, that the trouble will be at all general or continuous.

THE litigation that has been pending effecting the validity of the charter of the Ontario and Western Lumber Co., of Rat Portage, Ont., has found an ending in the Dominion Government announcing that the fiat that had been issued against the company had been withdrawn. This is considered tantamount to a decision that the charter has been sustained and the proceedings to annul the company's charter will not now be entertained. Large financial interests were at stake in the litigation, and it was feared that if the charter was annulled that it would open up questions far reaching and most serious in their results. For the sake of the lumber industries of this section of the province, the present news will be welcomed.

ONE of the leading hardwood points is Grand Rapids, Mich. Located there are a number of the best equipped and most extensive furniture factories of the States. Where at Saginaw, Bay City, and other points in this state industries for the manufacture of pine flourish, Grand Rapids gives its special attention to hardwoods. All indications point to a busy season this spring and summer. Never before, we are told, was so much hardwood lumber cut as last winter, and a prominent lumber dealer states that 350,000,000 feet would be cut in Grand Rapids before September next. The Grand Rapids Barrel Co. has banked 2,500,000 feet; The Grand Rapids Veneer Co., 7,000,000 feet; The Veneer Co., 5,000,000; Harrison Waggon Works, 2,000,000; Widdicomb Furniture Co., 5,000,000, and other firms have hardwood lumber banked to swell the sum to over 25,000,000 feet. The situation finds a measurable parallel at many other points, emphasizing what we have said in these columns before, that the hardwood trades will, more and more in the future, assume improved and larger conditions. Considering that there yet remains a considerable quantity of hardwoods in Canada, and especially in different points in Ontario, lumbermen here are interested in this growth of the hardwood industry.

CERTAIN privileges granted by the Ontario Government at the recent session of the Local Legislature to Edward V. Douglas, of Philadelphia, and Francis H. Clergue, of Bangor, Me., is an indication of the importance that is attached to the pulp industry of the province. These parties represent a syndicate, who have secured control of the large water power at Sault Ste. Marie, Ont. The proposal is to utilize this power for electric purposes and build up, if possible, a large manufacturing district. Pulp and paper mills will be among the leading industries. The syndicate in this agreement promises to erect a mill at a cost of \$200,000, and to expend further sums, which would amount, in addition to what they have already invested in the enterprise, to about \$200,000 more. The expectation is that 400 hands will be employed for ten months in the year. In consideration of the establishing of a factory on this basis the syndicate have been granted the privilege of 50 sq. miles of timber for their use, from which they could cut wood as they desired, paying to the government twenty cents a cord for spruce and ten cents for other varieties, for eight years, the price to be thereafter fixed by the Lieutenant-Governor-in-Council. They are also to be allowed to cut elsewhere, if necessary, wood sufficient to keep their mills running for the next twenty-one years, but the amount cut within the fifty-mile reserve in any year in which they cut elsewhere must never be less than one twenty-first part of the entire quantity required for the year. The present price charged by the government for the wood as named, is, spruce twenty-five cents a cord, and for other kinds twelve and one-half cents per cord. This will show the extent of the concession in this particular. The proposition, as explained by the Hon. Mr. Hardy, was favorably received by all parties in the House, though the opportunity was not lost by the Conservative leaders to have a little fun at the expense of a Reform Government ready to grant protection to Canadian industries. The pulp industry is reaching remarkable proportions in Canada. Senator Warner Miller, a prominent American manufacturer, interested

in pulp mills, when in Montreal recently, stated that Canadian spruce was about the best material in the world for the manufacture of pulp. Within ten years this industry in Canada has reached a point where nearly \$3,000,000 of capital is invested, and the annual output exceeds \$1,000,000. United States capitalists are undoubtedly looking to Canada for their supplies of pulp-wood, even almost to a greater extent than are Michigan lumbermen looking here for pine.

THE question whether Cypress is a hard wood or a soft wood has given rise to the larger question, whether hard woods and soft woods are properly classified by lumbermen. The fact is a number of woods as much entitled to be termed soft woods as white pine are always listed as hardwoods. The primary cause of the erroneous classification seems to have arisen from the fact that in the earlier days of lumbering pine was the wood chiefly considered. It was put down as a soft wood, and all other woods were hardwoods, and this classification has remained practically unchanged up to the present time. Even when wrong it is not a simple matter in business to disturb conditions that custom, if not right, has made law. This has been noticed in the changes in methods of weighing and measuring. And yet it is best always to have right prevail. The New York Lumber Trade Journal has taken the initiative in the classification of lumber, and enlisted the services of Mr. B. E. Fernow, chief of the division of forestry, for the United States. The woods are divided into two classes, viz: A, coniferous (non-porous) woods; B, broad leaf (porous) woods; and to make the classification more correct, class B is divided thus: A, hardwoods; B, soft woods. Under this classification red cedar (pencil cedar), red cedar (Pacific arbor vitae), white cedar, southern, (juniper), white pine, basswood, butternut, cottonwood, sycamore, white wood, (same as poplar, yellow poplar and tulip) are classified as soft woods, whilst long leaf pine, short leaf pine, eastern spruce, (black and white), Douglas (same as red and yellow fir), sitka (western spruce), ash, beech, birch, cherry, chestnut, elm, hickory, mahogany, maple, oak and walnut are classified as hardwoods.

WHAT the log supply will be is always a live question from the time the loggers leave the woods until the drives are all down. Necessarily a good deal of speculation is indulged in, for the reason that so many conditions exist to alter the situation before the season is finally over. The possibilities at present are bright enough in some sections, whilst in others there are complaints of low water, and it is not unlikely that considerable quantities of logs may be tied up at some points. Of the actual cut it may be said that in Ontario this will not differ very much from that of a year ago; if anything, it will likely run somewhat less. The big fires of last summer increased the cut in Minneapolis, Wisconsin and Michigan, it being generally stated that one concern alone, the Diamond Match Co., of Otonogon, Mich., has banked 180,000,000 feet of logs, perhaps the largest cut made by a single concern. In the Wisconsin Valley a reduction has been made, but this stands out as the one great exception on the Wisconsin river. Because of the fires the cut in Minneapolis is heavy, though at this point there is some question whether the logs will all come down. Michigan has reached the point where the cut does not figure with as much importance as in former years, and lumbermen from there rest, as has been usual for some time, on Canada for their supply. The Secretary of the Northeastern Lumbermen's Association, of Boston, has been figuring out that there will be a large shortage of spruce logs in New Brunswick and Nova Scotia, but, as will be noticed from our New Brunswick letter, lumbermen in those provinces are disposed to doubt the statement. So far as information comes to us, it would appear as though the cut will by no means be a small one. From some sections, certainly, a good many logs will be brought down the streams. British Columbia lumbermen are just now getting to work logging. The seasons there do not run parallel with those in the east.

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THE COMMERCIAL SIDE OF WOOD-WORKING.

IT is important in running a wood-working establishment that the closest attention should be given to the mechanical departments of the business. If the machinery in use is not the latest and best, the business will be handicapped, and losses will be sustained. The day has gone by when, with an ancient equipment, the owner of shop or mill can keep alongside, much less in front, of his competitors. And it is encouraging to observe that so much attention is given to this side of the business in mechanical and class journals.

We would not want to see any effort withdrawn from this branch of wood-working. Let Mr. J. H. Miner, and the many others who have made a study of these questions, give to their fellow-workmen their best thought and work. But has not too little attention been given to the counting-house? First-class machinery, properly handled, will help to increase the profits, or to hold, at least, a fair margin in days when competition is at its keenest. But what of wise buying of products? What of shrewd business management of details in the counting-house and workshop? What of a wide and intelligent study of the markets where wood-working products are sold, so that the stock turned out shall be of a class that will meet the largest demand of the consuming public? What of giving thought to the lines manufactured, so that trade may be anticipated and specialties manufactured for which a good sale can be secured?

These questions all suggest a wide field of discussion. The matter of wise buying may of itself settle the question of doing a profitable business or not. The axiom, "Goods well bought are half sold," though applied usually to the realm of the retail merchant, has just as fitting an application to the manufacturer. Practically, in the present day when the profits of the manufacturer are whittled down so fine, he cannot expect to do a paying business unless he buys at close figures the raw material used. It is not enough that the owner of the average planing mill shall be a first-class mechanic himself and know when the stock is turned out that no competitor can get ahead of him in point of perfectness of manufacture. He must also be a business man, and have learned the art of buying his stock right, and know where to place it to the best advantage.

We have simply touched the fringe of the question; said that which is suggestive, rather than discussed any particular point. We are convinced that the business side of wood-working has had too little attention in the past, and the intention is, in this department of the CANADA LUMBERMAN, to deal with various phases of the question. We want to help the men who have capital invested in wood-working plants in Canada to make money by their ventures.

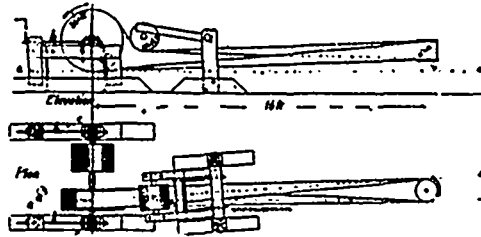
COUNTERSHAFT FOR DRIVING A SHINGLE MACHINE.

THE accompanying drawings illustrate a method of putting in a countershaft for driving a shingle machine with an endless belt, using a "live tightener," and is thus described by a writer in the Wood Worker: One of the hardest places in the mill on a belt is at this place because we are limited to width and weight on account of the quarter-twist and speed, and when the counter and the tightener are not properly put in (which is more often than otherwise) the case is worse.

In the drawings the dotted lines at *a* show where to line from. The two three-quarter inch iron rods *b* have eyes through which the bolts *c* project; the other end is

threaded about two feet, and with the crank-nut make it handy to pull the shaft back from the machine to take up the slack in belt while the machine is in motion. The bolts *c* have a shoulder just below the base of the box, which allows the nut to tighten on the eye of the pull-back bolts independent of the fastening of the box to the bridge tree, and makes the bolts rigid, so they will not catch in the slot cut in bridgetree for them to slide in. The two bolts in each box should be connected beneath the bridgetrees with a piece of $\frac{1}{2}$ x 2-inch iron, the nuts being run up only so far as not to require loosening in order to use the pull-backs.

My experience is, the best belt for this place is a light double-leather, provided it is not exposed to the weather in the least; in damp places, or where the belts are not



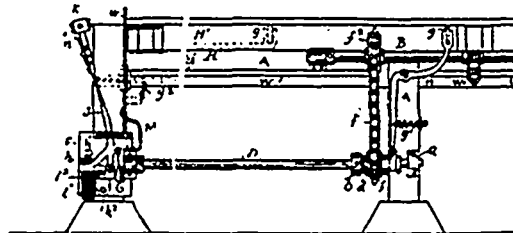
A Countershaft for Driving a Shingle Machine.

cared for properly, four-ply stitched gum or six-ply cotton (Gandy) may be used to better advantage, as with this method of taking up the slack at any time belts which have a tendency to stretch more or less are not such a serious objection.

The countershaft with the pulleys here illustrated should turn 600 revolutions per minute, giving a speed of 1,800 to the saw arbor with a twelve inch pulley, and a belt speed of 5,400 feet per minute, which is about the limit for good results. It is desired to drive the saw faster, I should advise a smaller driven pulley, so as to not exceed this travel. I know I'm treading on dangerous ground here, but actual results of experiments at this place lead me to this conclusion.

I would recommend a distance of sixteen feet between centers as about the right thing; longer belts than those required for this do not seem to give any better results, while shorter lengths are a positive detriment to the life of the belt.

NEW PATENTS IN WOODWORKING MACHINERY.



LUMBER STAMPING ATTACHMENT.

Patentee: John P. Reedy, Willamport, Pa., patented Ottawa, 6th February, 1895; 6 years.

Claim: 1st. The combination of a lumber sawing or trimming machine with an impact stamp located so as to swing in a plain at right angles to the line of feed of the planks and with mechanism for effecting a rapid vibration of said stamp whereby the marking of the ends of the successive planks can be effected without any stoppage in their forward movement, substantially as specified. 2nd. A controlling device for said me-

chanism having a portion projecting into the path of the forwardly moving plank. 3rd. With a lever carrying an impact stamp and located so as to swing in a plane at right angles to the line of feed, a cam acting upon said lever so as to carry its stamp away from the plank, a spring acting upon the lever so as to bring the stamp into contact with the end of the plank when said lever is released from the control of the cam and means for rotating said cam. 4th. A spring for bringing the stamp forcibly into contact with the end of the plank on its release and a recoil spring whereby the stamp is slightly retracted after giving its blow. 5th. A driving clutch for the shaft and a clutch controlling lever having a portion projecting into the path of the plank as the latter moves forward. 6th. A clutch controlling lever without a portion projecting into the path of the forwardly moving planks. 7th. Means for operating said cam and a structure carrying said lever and adjustable from and towards the face of the cam, so as to vary the extent of movement imparted by the latter to the stamp lever, all substantially as specified.

RUNNING THIN CIRCULARS.

FOR a number of years, writes a correspondent of the Tradesman, I have been actively experimenting to find out how to run thin circular saws, without diminishing the output of the mill nor lowering the standard of quality. These trials have resulted satisfactorily and the results are worthy of more than passing notice.

In my charge at present are two circulars 76 inches in diameter, 12-gage at periphery, 9-gage at eye; two 11-gage at periphery, 9-gage at eye, 72 inches in diameter, and several 10-gage. These saws were purchased to meet the demand for a reform in the waste of the saw kerf. An experience of a number of years trying to meet this demand has taught me the coming circular for all classes of work is of 11-gage and dressed to cut scant 3.15 inch. If the mill men will give the saw the proper attention it will surprise them and save them a great amount of money. The several things essential to make a thin saw run nicely are to give the saw plenty of teeth (not less than 90; in fact, for 72-inch saws, I run 100 teeth). The saw should be run not less than 600 revolutions, and should have plenty of power to back it up. It should be well opened close up to the teeth, leaving a rim of not less than four inches. The usual manufacturers' pamphlets should be avoided as far as to the proper manner in which to hammer saws, and as to the proper speed. The saw should be opened more at about 10 or 12 inches from the teeth than any other place, and good results will be obtained. Hammer the saw to the highest speed and do not be afraid to push it. I run a 11-gage saw as fast and crowd it as much as I can possibly do with an 8-gage.

I use the following rules: 100 teeth, with plenty of sawdust room, and line the front of teeth on a line just 10 inches from the collar, or close to it. I use a collar 14 inches diameter, with four lug pins close to the edge, and run the saw to its highest speed—600. I use a sawyer's governor and in hard wood or bad cuts slow the saw down so as to hold it straight. The saw is backed by a 16 x 20 engine, which runs nothing but this saw.

A board sawed properly with a circular will dress on less than band-sawed stock, and a circular will also cut faster than a band mill. To mill men I would suggest that they try a pair of thin circulars, giving them a little attention and experimenting to some extent with them. They will be surprised at the successful results obtained and also the amount of lumber sawed. Use a little judgment and avoid fake instructions given in "Sawyer's Guides," written by men who never operated a saw mill in their lives and who instruct others how to run their special brands of saws. Their ways may be all right in shops, but they do not saw lumber, and that is what saws must do. Recently we sent a saw to a well-known firm to be reground. The firm hammered the saw and returned it, with the instructions that it would not run if another gage was ground off. The saw was 12-gage and we only wanted it smoothed. How did this excited gentleman (who had never run a saw in his life) get such universal knowledge as to dictate to mill owners what they should run? It only shows how little they know whereof they speak.

COMBINED PLANING AND MOULDING MACHINE.

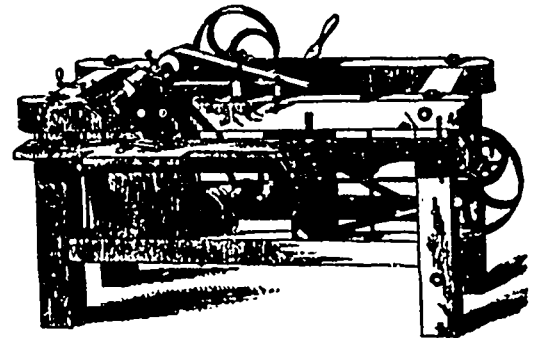
THE engraving herewith presented represents a planing and moulding machine, in the designing of which special care has been taken to combine every improvement and appliance necessary to produce the most perfect work at as fast a speed as is attainable without the aid of fixed knives. A recent improvement consists in the arrangement of the gear for driving the feed rollers, by which all wheels are placed outside the framing of the machine, thus materially reducing its width, and enabling the man working it to get more readily at the cutters. These machines are all fitted with top, bottom, and two side cutter-blocks, to work simultaneously on all four sides of the wood, thus enabling them to cut single or double mouldings of any pattern, or to plane, groove, tongue, edge, thickness, and bead match-boarding, etc., in one operation.

The adze blocks and their spindles are made in one forging of special steel, and run in improved self-lubricating bearings, thus enabling the cutters to be driven at a very high velocity, producing very perfect work at much higher speed than is generally attainable with machines of this class. The feed motion consists of four rollers, all of which are driven giving a great propelling power, which carries the largest stuff through the machine without any slip. The rate of feed can be readily varied from 10 to 50 feet a minute, according to the description of work, or quality and condition of the wood.

some time and it was in use here long before I saw it, and many a bill of supplies I could have cut down had I known of it before. If any one who has used it found any bad results, let him speak up; but don't theorize about it. I have results to go by and offer them. Save your old rubber belting, and when you want to pack your piston try this method: Cut rings of belting to fit easily on the piston and slip easily in the stuffing-box; cut them to slip over the piston and put them in the box to break joints, using the gland to ram them until the box is full; screw up lightly, so that the packing will leak for a time. As soon as it gets hot, the expansion is considerable and will quickly stop the leak, and you then have a packing that will stay with you, if you keep your cylinder properly lubricated. In cutting the rings you had better use a gasket-cutting tool and make an easy-fitting, smooth job of it, or you run the risk of a hot piston and then kick at my advice, when the fault will be your own. I have used many kinds of packing, but have never, often any that was any better nor had any to last as long as rubber belting.

There is another advantage about it: You don't have to put "packing" on your supply list. I will never forget the look of dismay I saw on a former employer's face when he saw an item of \$9 for packing in one supply bill. It was for nine pounds of packing—and did not last very long, either. I don't buy any more at that price, and am not likely to as long as the old belting

ments, tracer guide for sawing irregular forms, bevel and curvilinear sawing, grooving table, vertical adjustment of saws in benches, machine for grinding saw blades, tape gauge for sawing, T rebating machine, sectional cutters, pivoted table for mortising machine, forked or double mortising chisels, gauge lathe with slide rest, rotary cutters for forming screw threads on wooden



SASH AND MOULDING MACHINE OF 1856.

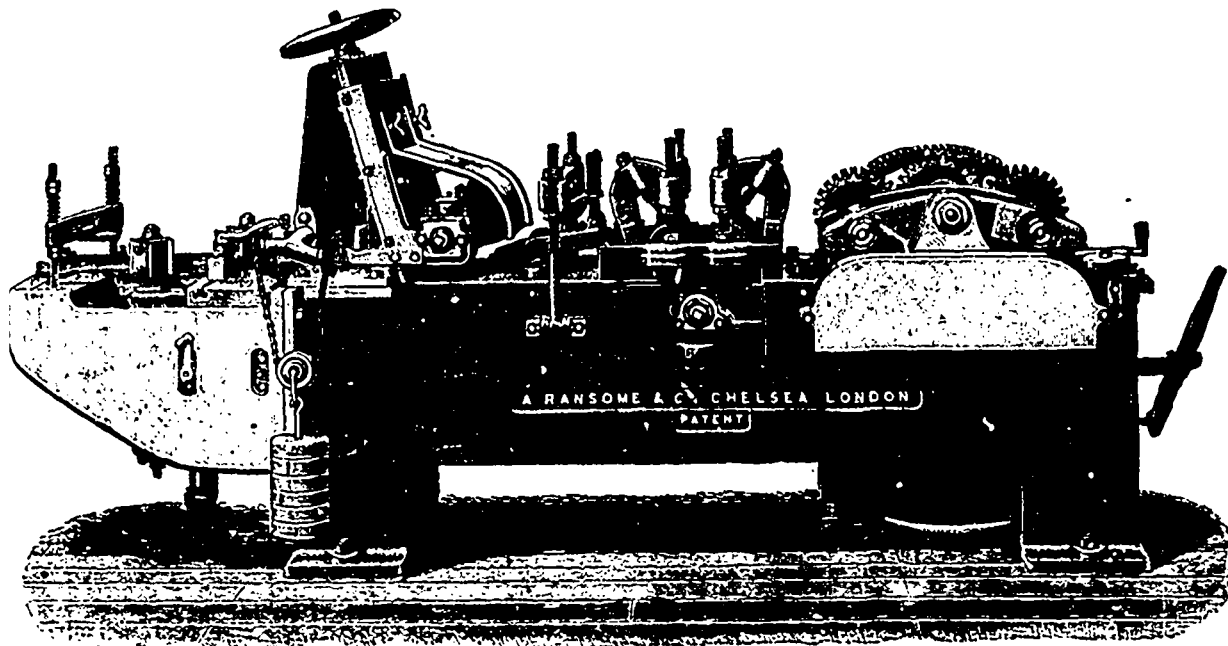
screws, double grooving saws, and each feed for planing machines.

From that day forward there has been a steady and continuous improvement in all the various machines that find a place in wood-working establishments. This progress continues, and within the past 50 years it has been most noticeable. Whilst from Benthams, an Englishman, came the incentive to better wood-working machinery, yet the larger developments of later years have doubtless been from the inventors of the newer continent. The trend of the age towards machinery that would lessen labor, and would add to a more ready production of stock, manifest in every department of mechanics, has been none the less so in wood-working. The wood-worker of to-day does not find it nearly so necessary to equip himself with a great stack of hand-tools, as did his predecessors. True the chisel and hammer and screw driver are still necessary articles of the carpenter's kit, yet in all our wood-working establishments machinery, driven by steam, or that more recent force of the day, electricity, is fast taking the place of many individual hand tools.

The cut of a sash and moulding machine of 1856, which we have given above, will illustrate, in a measure, as compared with the machinery of the present day, the progress that has been made in wood-working machinery in at least one direction.

PROTECTION FROM ACCIDENTS.

THIS device is an English invention and relates to a guard or cover for preventing accidents from machinery. The invention is shown in Fig. 1 applied to a surfacing and edging wood-working machine with revolving cutters. In Figs. 2 and 3 the guard is shown



COMBINED PLANING AND MOULDING MACHINE.

The pressure apparatus is arranged so as to hold the stuff down firmly to the table close to all the cutter-blocks, thus preventing any vibration in the piece when under the cutters. An advantage in these machines is the great facility with which the cutters can be adjusted, and as a large proportion of the time of a moulding machine is necessarily lost in setting the cutters, any arrangements which will facilitate this operation are of value. The low cutter-block is fitted into a planed iron drawer, which can be drawn out when it is required to adjust or change the cutters; and the side cutters are provided with a ready means of vertical adjustment.

PACKING.

It is often the case in planing mill and saw mill practice, says a writer in an exchange, that one has an engine, a pump or steam cylinder of some kind that gives a great deal of trouble, by leaking at the stuffing box or by cutting out the packing. This has been a great deal of trouble to me at times innumerable. I say "has been," because I don't think it is a subject that will bother me any more, and as the remedy is simple and easy of application, it may help out some other mill man who cannot keep his piston from leaking, either for want of good or proper packing, or from a scored rod, or from some cause he can not at once remedy.

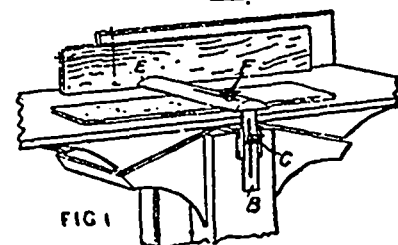
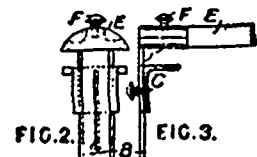
Now, I expect some engineer will rush in to offer some objection, but I have been using this packing for

holds out. If you conclude to try it, don't forget to make the rings an easy fit, break joints and screw up lightly at first. I heard an engineer say a few days ago that ninety per cent. of the ills that engines suffer from result from improper lubrication.

IMPROVEMENTS IN WOOD-WORKING MACHINERY.

IN an age when the inventive genius is abroad it is to be expected that marked progress would be made in the realm of wood-working machinery since the days of the crude planing machine invented in 1879 by Sir Samuel Benthams. Samuel Benthams was a brother of the famous English political economist, Jeremy Benthams. The latter was interested in the study of industrial prisons in England, and the talents of Sir Samuel were used to devise machines that would enable the government to secure a profit from the labor of convicts. In a treatise on wood-working machinery, of ancient date, the complete list of Benthams's inventions is given as follows:

Machines for planing and forming mouldings, improved planing and moulding machinery (rotary), wedging guard for circular saws, segmental circular saw, conical cutter for dovetail grooves, undulating carriage to form wave mouldings, compound cutter heads to work two or more sides at once, the slide rest, tubular boring implements, crown saws, reciprocating mortise machine, rotary mortising machine, radius arm for sawing seg-



separately. The protecting bar E can be raised or lowered by sliding the slotted bar B up or down and clamping it in position by the set screw C. The bar E may be adjusted horizontally by sliding on the boss E and fixing by the set screw F. When it is desired on occasions to turn the guard aside, the vertical bar B is made circular and fits in a circular socket.



WHEN the millenium is finally ushered in we may expect, possibly, to learn that railroad freight rates are framed on something like an equitable basis, and shippers will no longer have cause to complain. It seems to be one constant fight to come anywhere nearly keeping the railroads up to their printed contracts, much less an unwritten law of fairness and decency that ought to influence business corporations of all kinds, even railroads. Dropping into the office of J. G. Cane & Co., a few days ago, I enquired if there were any disturbing elements in the trade these days, and was glad to learn that, on the whole, peace and quietness reigned. The lumber shark was still abroad, but even he was keeping under cover at present. "But it is hard work for us," said a representative of this concern, "to keep the railways in tow. We have just had to foot a bill of \$23, excess in charges of two cars of lumber we shipped a few days ago to a customer. A clause in the lumber freight schedule reads: "Minimum weight 30,000 pounds per car, unless the marked capacity of car be less, in which case the marked capacity, (but not less than 24,000 lbs.) will be charged, and must not be exceeded. Should it be impracticable to load certain descriptions of light lumber up to 30,000 pounds to the car, then the actual weight only will be charged for, but not less than 24,000 pounds." The shipment under complaint was basswood, and we lived up to the strict letter of the words I have quoted, but it did not save us from the excess in charges that I tell of. Of course we made our complaint, but the only satisfaction we could get was a case of play-off by the agent here on some local agent. The blame was shifted from one to another. In the meantime our bank account was \$23 less, the profit on that shipment of lumber was \$23 short, and I am free to tell you that profits on lumber these days will not stand any such a shaving as that."

x x x x

When I called upon Mr. J. H. Eyer, lumberman, the other day, I learned that he had returned a short time since from Fenelon Falls and that district. He had been inspecting some of the stock of Howry & Sons, this concern, like mill men generally, being quite ready to find a wholesaler who would help to place their stock this season. Mr. Eyer expressed himself as much pleased with the splendid mill that the Howry people have erected at that point, or rather the substantial improvements that they have made in the plant this year. They have put in some of the very best saw mill machinery and calculate on cutting some 200,000 feet per day. They have also erected and are fitting up in fine style a planing mill, and will not only ship lumber, but also dressed stock. This firm are large operators, and are evidently going to make the most possible out of the timber limits that they control in Canada. It was pleasing to learn of this enterprise, especially the development in the line of the planing mill business. I have been interested in watching how free trade in lumber would effect this department of lumbering. There seemed to be little doubt but that we might expect a growth in saw mill business, for even with lumbermen who own mills in Saginaw, it was apparent that to many of them it would be an advantage to cut their stock on the spot and ship the sawn lumber, rather than the logs. No one was sure, however, just how far the trade in dressed stock would shape. I am free to confess that it has not grown as it seems to me it might grow, and yet this step by Howry & Sons may be a straw showing which way the wind blows. A number of large United States concerns are now operating mills, and it only needs to be demonstrated to them, as probably Howry & Sons may demonstrate, that a well-equipped planing mill will prove a valuable adjunct to a saw mill, to make sure of a number being erected. At any rate, lumbermen, I know, will watch this innovation, if I may so call it.

The other day I came across an item in a local paper telling the story of a Maine man, who had eyes on what might be termed some scrub maple, in York County, N. B. He believed there was money in this rag end of the forest, and it is now stated that inside of two years he got out of that piece of territory 2,000,000 maple last blocks and made \$12,000. I hear also of some cute Yankees who have made a fair amount of money out of some discarded hemlock logs. And I think the story has been told before in these columns, of the old lumberman, who bought up a lot of walnut stumps in a section of the United States, converted them into lumber, and with walnut a valuable commodity, he was well rewarded for his foresight and labor. There are lots of such opportunities, I am convinced, all over the country, to the man who uses his eyes, and knows something of the conditions of the lumber market. And the time is coming when we will be glad to place a market value on these remnants of the forest. I am always interested in facts of this kind also, as illustrating the wisdom of being careful of little things. In the primitive days of lumbering, all one had to do was to get into the forest and pick the choice timbers, and money was easily made, but those days have gone by. As I have been going over lately some of the government blue books, telling of the patches of timber that are to be found scattered, and scattered widely I must admit, in various parts of the province, I feel like saying to readers of these pages, keep your eyes skinned. There is money in these corners of the lumber vineyard. Away up in our northern country, and to some extent through some of the counties that to-day are pretty well settled, there is money to be made out of lumber by the man who will go about it in a thrifty, prudent, persistent manner, and is not afraid of work. I am not making any charge for this pointer, save the publisher's one of \$1 a year for the LUMBERMAN, weekly and monthly editions at that, but a pointer it is, and worth a good deal to somebody.

x x x x

So large a quantity of lumber is used in car building it is a matter of importance to learn that in the United States, at least, there is likely to be an active season in that department of manufacture. The National Car and Locomotive Builder, in one item, records an order for 9,100 freight cars, box, platform and tank. And the New York Central has itself given an order for 3,000 box cars. Take the possibilities in Canada. Including sidings and double tracks, there are about 18,590 miles of railway. Mr. Geo. Johnson, government statistician, figures out the possibilities of lumber consumption in this one direction, as follows: At 3,000 ties to the mile, the ties required number 55,770,000. Assuming the life of a tie to be seven years, the number needed every year is about 8,000,000 for renewals, and allowing 300 miles for new roads every year a million more for this purpose, or about 9,000,000 ties a year. Supposing that 50 cubic feet of ties can be obtained from an acre of forest then 3,340,000 acres will be required to supply the consumption of young and thrifty trees needed for the 18,590 miles, and 530,000 acres for each year's demands. With various parts of the country pushing for the particular class of lumber indigenous to their section, it seems likely that woods that have not hitherto been used in car construction, will, in the future, be given a place. Three hundred refrigerator cars are to be built by a Chicago establishment and the statement is made that these will be constructed entirely of Douglas fir and Washington spruce, except the bunkers, draw heads, and break beams. The object of this is said to be because of the lighter weight of these woods for an equal strength. Where cars are pulled a long distance, and over roads where extra motive power is required the matter of weight becomes an important consideration. If Douglas fir should be largely used for car building it will mean a good deal to the lumber interests of British Columbia.

J. R. Booth's mill at the Chaudiere, has commenced work with a full gang of men to operate saws.

The Bronson & Weston Lumber Co., Ottawa, Ont., has voluntarily adopted the ten-hour day for their mills when work is commenced, without reduction of wages, and the other lumber concerns, it is expected, will follow suit.

INTERNATIONAL LUMBER MATTERS.

(Special correspondence CANADA LUMBERMAN.)

IT was quite generally conceded by lumber handlers, both in this country and Canada, that the abolition of the duty on manufactured lumber from the Dominion would almost, if not entirely, do away with the export of logs into the United States. This assumption, however, does not appear to be in keeping with reports recently to hand from different points throughout the State of Michigan. The shipments of lumber to United States ports, especially from the Georgian Bay district of Ontario, since the introduction of the Wilson bill, have not been by any means equal to expectations; and if the information we have on the subject be correct, very large quantities of logs will be rafted the present season from Canadian limits. It is said that Alger, Smith & Co. will raft 50,000,000 feet of logs to Detroit and Ecorse, and probably 20,000,000 feet from Georgian Bay to their Cheboygan mills. Brownlee & Co. will take over 3,000,000 feet from Georgian Bay and 2,000,000 feet from Cheboygan to their mills at River Rouge. The Delta Lumber Co. has purchased the Moffatt mill and will raft 4,000,000 feet from Georgian Bay and vicinity and 12,000,000 feet from Manistique.

These are only a few instances of what may be expected in the way of log export across the border, all of which goes to show that free lumber is not sufficient incentive for the Michigan lumber kings, either to keep their mills idle or to remove them to the log, in place of the log to the mill.

Dealers throughout New York State seem to be pretty generally of the opinion that free lumber is to their interest, but much dissatisfaction is expressed with that section of the Wilson bill which permits planed and grooved lumber to be admitted free. In both Buffalo and Tonawanda, for instance, the trade of the planing mills is stagnant, and several mills are shut down entirely. While this state of affairs would appear to open a field for Canadian lumbermen to put in planing machinery and ship their stocks dressed, the uncertainty as to how long the present privileges will be granted them would, of necessity, make the expenditure a risky one. It looks very much as if the next Presidential election will place the reins of power in other hands, and in such an event it is pretty safe to conjecture that a duty will again be placed on lumber in a manufactured state.

The National Wholesale Lumber Dealers' Association is the title of a new organization, with headquarters in New York. The object of this Association is to endeavor to carry into effect an organized effort to keep each department or branch of the lumber trade in its proper channel. It is contended that to properly, legitimately and profitably pass lumber from the log into the hands of the consumer, there should be but four divisions of the trade—manufacturer, wholesaler, retailer and consumer. Best results are experienced by all when trade is kept in its proper channels, and this condition is accomplished only in the ratio in which each division of trade recognizes and protects the rights and legitimate markets of the divisions other than its own. The wholesale trade, which seems to be honorably striving to protect the retailer, has the right to ask of all manufacturers that they refrain from selling to or soliciting the trade of any retail dealer or consumer. It is contended, and justly so, that the manufacturers' legitimate trade is with the wholesaler. When they sell to the retailer they are disturbing the natural conditions of trade and taking away from the wholesaler that much trade which is legitimately his.

That both the manufacturer in the United States and Canada has been too often guilty of doing business in the manner referred to is a well-known fact and the wholesale trade has been aroused to concerted action to do away with an evil which they claim is jeopardizing their business interests.

Brief interviews with representative lumbermen in Buffalo seem to indicate a steadily improving state of trade. Building operations in business localities will be on a more extensive scale than for years past.

In reply to an enquiry touching the hardwood market, the President of the Buffalo Hardwood Lumber Co. made the statement that their volume of business for the month of March this year exceeded that of any one month during eight years. There was an apparent shortage of red oak and quartered white oak, and the demand for these woods was on the increase. Canadian manufacturers holding such stocks will find it to their interest to note the fact.

A.

Place Bros., Stoney Creek, Ont., are building a new sash, blind and door factory at that place.

Ward & Steele, contractors, of Prescott, Ont., contemplate building a new planing mill this spring.

The Ontario Steam Logger Co., Toronto, Ont., are applying for incorporation with a capital stock of \$250,000 to manufacture snow traction engines for the hauling of saw-logs, etc.

THE NEWS.

—Mr. Barker, of Burford, Ont., has commenced the erection of a saw mill.

—C. Anderson has purchased a new engine and boiler for his saw mill at Little Current, Ont.

—Mickle, Dymont & Co. are putting a new lumber carriage in their mill at Severn Bridge, Ont.

—Mr. Rees' new stave mill at South Wodsee, Ont., is nearing completion, and will shortly commence operations.

—Mr. Avory, of Sharbot Lake, Ont., states that his two mills will turn out 50,000 pieces of timber this summer.

—In lieu of a bonus of \$500 from the town, Mr. Babcock, of Odessa, offers to build a saw and grist mill at Bath, Ont.

—Jas. I. Armstrong is opening up in the lumber business at Belmont, Man., and will handle only United States lumber.

—Detective Malo, of the Canadian Secret Service, recently arrested three Indians at Caughnawaga, Que., for cutting Government timber.

—J. M. Taylor, of Portage la Prairie, has started his planing factory for the season. He had the machinery overhauled before starting the season's work.

—Mr. Whitney, President of the St. Anthony Lumber Co., intends to erect about 400 houses at Whitney, Ont., to accommodate the men working in his large saw mill.

—Nash's new sawmill at South Edmonton, Man., has been completed and put in operation. Walters & Humberstone's mill at the same place will be finished at an early date.

—The Disney & Delvin Mfg. Co., Hanover, Ont., are applying for incorporation, with a capital stock of \$24,000, to operate a planing mill and sash and door factory at that place.

—Hammond Bros' steam saw mill at Gorrie, Ont., was completely wrecked by the overflowing of the Maitland river on the 8th ultimo. Lumber and logs were swept away in large quantities.

—The Collins Bay Rafting Co., Collins Bay, Ont., have built a marine railway to enable them to haul their boats out of the water to be repaired. They will also erect a sawmill to manufacture lumber, etc.

—Marks & Co., of Thessalon, Ont., have taken out for the Perry Lumber Co. during the past winter 16,000 cords of pulpwood, which piled in a continuous line 4 feet high, would extend a distance of 24 miles.

—A petition is in circulation in East Kent asking the Legislative Assembly of the Province of Ontario to appoint a special committee to inquire into the destruction of 150,000 feet of mercantile timber being cut under the authority of the Commissioner of Crown Lands by his agent at Rondeau Park.

CASUALTIES.

—Robert Carruthers, of Carling, had one of his legs broken a fortnight ago, while chopping down a tree.

—P. Bilodeau, recently fell from a lumber pile in Archer's yard, Quebec, and received injuries from which he died.

—A few days ago Hubert Villeneuve, a settler at St. Prime, Que., was accidentally killed by the fall of a tree at Mistassini.

—B. L. Larne had his arm broken above and below the elbow while working in a stave mill at Mountain Station, Ont., a few days ago.

—George Dufresne, aged 27 years, while felling a tree recently in woods at Deschambault, Que., was killed by the tree falling upon him.

—At the Brunette saw mills, New Westminster, B. C., a sawyer named Dickson was injured by the falling of a pile of lumber. His face was cut and one of his legs badly bruised.

—A young man who was engaged in cutting cordwood with a buzz saw at St. Francois de Beauce, Que., recently had his arm cut off while attempting to remove an obstacle from the saw.

—John Webb, while working in Lewis & Williams' mill, near Cottam, Ont., was struck by a chain on a shaft and had his face battered up in a terrible manner. He was taken to the hospital.

—A young man named Eugene Lacroix, of St. Raphael, Que., accidentally stumbled against a circular saw in the mill of Mr. Morin, at St. Valier, and had his leg instantly cut off. He died shortly after.

—A boy named Frederick Rowe had his left arm caught in the machinery of Ackland's planing mill at Point Douglas, Man., and received injuries which necessitated the amputation of the arm above the wrist.

—On the 12th of April, George Betts, proprietor of a saw mill at the lake, about two miles from Chatham, Ont., com-

mitted suicide by shooting himself. Financial trouble is supposed to be the cause of the deed.

—George Salsbury, of Huntingdon, who was operating a portable saw mill near Sheffield Station, on the 11th ultimo, had his leg caught between two logs, breaking it above the ankle and otherwise badly bruising it.

—While attempting to throw off a belt from a revolving wheel, John Odrieve, who runs a saw mill at Glencoe, Ont., was caught by the belt and thrown over the shaft. One arm was broken, which had to be amputated.

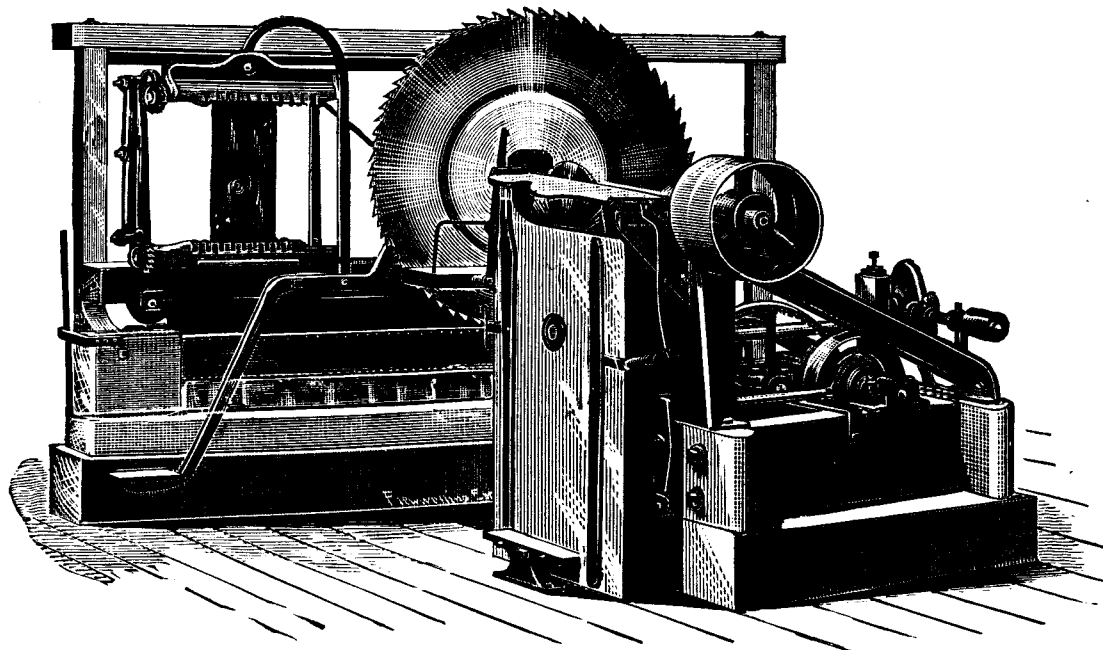
—A fatal accident occurred on the 16th April, in Lockwood's sawmill at Enterprise, Ont., whereby Hector Wagar was almost instantly killed. A board, coming in contact with a circular saw, was thrown with terrible force, striking him on the neck, resulting in his death within two hours.

—The first saw mill accident of the season at J. R. Booth's mill at the Chaudiere, occurred on the 16th inst. Robert Hughes was struck by a slab flying from an edger, from which he received a blow in the side and severe internal injury. An operation was performed at the hospital and he is recovering.

AN IMPROVED SHINGLE MACHINE.

THE accompanying illustration represents an improved patent shingle machine manufactured by the Small & Fisher Co., Ltd., Woodstock, N. B. The makers lay claim to the following points of superiority in this machine:

1. That it will make better and more even shingles than any other, for the reason that the belt is set forward



AN IMPROVED SHINGLE MACHINE.

while the carriage is advancing slowly towards the saw, consequently there is no jar while the bolt is being set.

2. The bolt being set after the quick return stroke is completed, there is no friction, or pressing of the bolt against the saw, as is the case in machines that set the bolt during the return stroke.

3. The carriage carrying the block passes the saw opposite to the side on which the arbor is attached, by so doing a larger shingle can be cut with a smaller saw than can be done when the carriage runs on the same side as the arbor.

4. The machine is self contained, no extra counter shaft being required to drive the jointer.

In their advertisement appearing in the present number of the LUMBERMAN, the Small & Fisher Co. print strong testimonials, (one from a well-known Ontario firm), in support of their claims for the efficiency of this shingle machine.

EXPERIMENTS WITH SUPER-HEATED STEAM.

IN giving the results of their protracted experiments with saturated and super-heated steam, the Alsace Union of Boiler Owners say that, theoretically, it has never been denied that super-heated steam should give a higher efficiency than saturated, yet no experiments were undertaken with super-heated steam. Subsequently, however, after numerous trials, the oldest engine even was found capable of being safely used with super-heated

steam, and not only without injury, but more economically than with saturated. It is also declared by the union that in installing a super-heater care is essential that the advantages gained are not lost either by less perfect combustion or by greater radiation losses—the cost of the super-heater not to exceed, of course, the saving obtained in coal consumption; the super-heater to be connected with the boiler, so that both can be fired from the same furnace; and after leaving the super-heater, the gases should come in contact with the heating surface of the boiler, and, lastly, with the heating surface of the economizer. Further, these experiments showed that the use of super-heated steam does not exclude the use of steam jacket. Though both super-heating and steam jackets were used, yet condensation in the high-pressure cylinder occurred. The use of low-pressure, seven and one-half atmospheres, did not give such good results as the use of high pressure, eleven and one-half atmospheres.

A GERMAN COUNTERFEIT WOOD.

AMERICAN inventors have devised a method of "woodizing" glass, and now the Germans are turning still other substances into counterfeit presentments of wood. A peculiar material named "Kuntsfournier," or artificial veneer, is made in Germany, under the patents of Herr Karl Koester, of Cologne. This material is composed principally of infusorial earth, which is fixed with various binding and coloring materials and

spread in layers over a wooden core. When the mass is dry, it is cut into sheets or blocks, and if the layers have been differently colored, their irregular section prevents an effect resembling that of figured wood.

In the manufactory a machine is arranged by which two wooden posts, 13 feet high and set about five feet apart, are made to revolve about a vertical axis. Each post has 24 horizontal branches radiating from it, and the branches as well as the posts revolve around their own axes. In the process of manufacture, the horizontal branches are first covered with paper, to prevent the composition from sticking to them, and then painted with a mixture of infusorial earth, coloring matter and gum. The branches attached to one of the posts are painted with one coat, and the machine is then revolved so as to bring the other post near the operator. By the time the branches of the second post are coated, these of the first are dry and ready to be revolved into position for a second coat. In this way the painting goes on continuously, until the branches are loaded with a coat of composition nine or ten inches thick. The color of the coats is made alternately dark and light, and the thickness of the stratum is varied, so as to imitate the varying thicknesses of the annual rings in a tree. When all is thoroughly dry, the cylinders of composition are slipped off their wooden cores and sawed or cut into veneers, which are said to bear a deceptive resemblance to those of real wood.

OTTAWA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

IF the future of trade in the Ottawa district is to be gauged by the shipments of lumber from this point during the winter and spring, the season would rank as one of the duller in ten years. Old members of the trade, however, who have studied the situation carefully, believe that a good season's business will yet be done. It has not always been the case that when business went off with a boom in the months of March and April that the greatest business was done. Prices are fairly maintained, and this is an indication of strength.

The building formerly occupied by the Ottawa Canning factory will be started shortly as a planing mill and sash factory by Mr. Lariviere.

Gilmour & Hughson will increase their cut considerably over what was intended, having been losers of a large quantity of lumber by fire at Ironsides.

Bronson's saw mill has started up. The big mill will be started in a few days. Both mills will be run ten hours per day. By the first of the month it may be expected that all mills will be well running.

The Ontario Government will be about \$140,000 richer by the entering for probate of the will of the late Col. Allan Gilmour, the well-known lumberman. The total value of the estate in Ontario is placed at \$1,452,834. The stamps amount to \$2,144. This is the largest estate ever probated in Ottawa.

It is stated that the Government has decided not to force the sawdust legislation, leaving the matter to be settled by Parliament, which was convened on the 18th inst. This position, however, does not preclude others from taking action against the mill men, and, as intimated in former correspondence, there is talk of private parties moving at once in the matter.

W. C. Edwards & Co., Ltd., have a large force of men repairing and making improvements to their mills. The old water works pump house has been torn down and a more imposing structure is now being built. A large addition is also being built at the shipping docks at mill No. 2, upon which ties and rails are to be laid for the purpose of backing cars on to load.

Mr. William O'Brien was in town a few days ago from the construction of the O. A. & P. S. Railway near Whitney. He says there is a big boom in that district. The American lumber camps are just now breaking up, but the American firms are making a big push. The new saw mill of the St. Anthony Co. is rapidly drawing to completion. The mill will make a very large cut when once in full running order, and employ a large staff of men.

Important improvements are being made to the mill of William Mason & Son, and when finished it will be one of the most complete in Canada, for its size. Over \$10,000 worth of new machinery has been put in. The output will be about 75,000 feet a day. The old circular saws have been taken out and replaced with large band saws. New "live feeds" have been put in; new steam "butting off" saws and other new machinery placed in position. The fire protection has been made very complete.

OTTAWA, CAN., April 20, 1895.

NEW BRUNSWICK LETTER.

[Regular correspondence CANADA LUMBERMAN.]

THE St. John river is rapidly becoming free of ice, and already schooners loaded with lumber have come down part of the way.

Hamilton Bros. mill on the Straight Shore is being rebuilt.

John C. McAuley, of Mill Stream, is doing good work with his portable saw mill.

The export of lumber from St. John in March was \$20,000 less in value than in March of last year.

The Calais Times says that there will be an average cut in that district, where Secretary James talks of a shortage.

Turner & McClean's crew are at work getting the steam mill ready for sawing. About 1,000,000 feet of logs are at the tail of the mill.

Coun. Carson, of St. Martin's, has his winter's lumber all sawn and hauled to the bank, and is making preparations for loading schooners.

It is stated by a local correspondent that there are 30 shingle mills of various sizes, though the majority small, running in Restigouche county.

The Norwegian barque Attila, which carries deals to the United Kingdom, has met with another accident. She has been an unfortunate vessel.

Rhodes, Curry & Co., of Amherst, N. S., owners of the car works, are importing large quantities of oak via St. John. Shipments so far aggregate 400,000 feet.

Heavy rains a week ago have done considerable damage. At Upham Mr. Chas. Titus, mill owner, was a heavy loser, the ice clearing away part of his booms, dam and wharf.

Samuel Darling, formerly customs officer at Milltown, and at one time an active lumber manufacturer in the province, died a week since at the home of his son, at Somerville, Mass.

The output of O'Neil & Lowe, on the Middle Road, will be in the vicinity of 2,000,000 ft. Patterson Bros., H. A. McPhee and others in this district are getting ready for a good season's work.

McLeod Bros., Gasperaux Station, have a larger quantity of logs and railroad ties than usual. Robert M. Graham's mill, same district, has commenced sawing, and a busier season than last year is anticipated.

Robt. Convey, foreman for Geo. B. Vaughan at Point Wolfe, when in town a few days since, stated that a good winter's logging had been completed and they are now awaiting the drivers to get them to the mills.

Several St. John Lumber mills are putting in planers so they can cut dimension stuff for the American market. As a result of the new tariff lumber shipments with the New England and Middle States are looking up.

The mill of S. K. King & Sons, at Kingsville, will be put in operation again in July. New boilers will be put in, the plate for which has been ordered from England. This is the mill where the terrible boiler explosion occurred.

The season's cut of lumber in the vicinity of Andover has been unusually large. The contract for driving from the Forks to the mouth has been sold to Mr. McNair at 23c. per thousand for the 61 miles, and about same rate on chartered distance.

Chas. Miller and A. Cushing & Co. have been reported by Harbor Inspector O'Brien for throwing sawdust and edgings into the river, and Stetler, Cutler & Co. have been reported for throwing lime into the river. These will make test cases on the sawdust question.

Lumbering looks lively at Ten Mile Creek. Large quantities of lumber are there and already some shipments have been made. It is estimated that 5,000,000 of sawn lumber will be shipped from that port this season, besides several cargoes of piling, kiln wood, etc.

J. B. Benson, representing the Muskoka Timber Co., and owning timber lands covering a territory of 300 miles along the Restigouche and Kedgewick rivers, and about 100 miles along Green river, says that the former territory will produce 200,000,000 of lumber or about 10,000,000 per year.

Lumbermen here are not disposed to accept the statement of the secretary of the Northeastern Lumbermen's Association, of Boston, as regards his estimate of shortage of spruce. He has estimated a shortage of 80,000,000 at St. John and 25,000,000 in Nova Scotia. Lumbermen here say that these figures will not hold good, as will be shown a little later on.

The destruction by fire of A. Cushing & Co.'s mill at Union Point, ten days since, was an event that has brought much disaster. It is a serious blow to the people of Fairville, as it gave employment to 225 men and boys. The machinery consisted of two gangs, one band saw, three planers, three lath machines, six box machines, one black-board machine and three double edgers, which are all badly burnt and twisted, and will probably be unfit for further use. The entire stock of lumber was saved, with the exception of a few hemlock boards, which were scorched on the end, but not seriously. The loss is estimated between \$50,000 and \$60,000. The mill has been running steadily for nearly four years, when almost entirely new machinery was put in. The firm are undecided whether to rebuild or not. This has given rise to the suggestion that possibly Stetson, Cutler & Co. will start their mill at Indiantown. They had not intended running this year unless the American trade looked up a good deal.

ST. JOHN, N. B., April 18, 1895.

BRITISH COLUMBIA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

BUSINESS is active around the British Columbia cooerage works at Vancouver, these running over time lately in order to cover the large orders received for spruce barrels, etc. Butter makers in the territories are among the larger purchasers of the cooerage products, as also are oriental exporters of molasses. British Columbia spruce seems specially adapted for the manufacture of these packages.

A saw mill will likely be erected on Boundary Falls this spring.

The Brunette Saw Mills are running over time to keep up with orders. About 150 men are now employed.

The Brunette Saw Mill Co. are asking the City Council for better water facilities for fire protection at their mill.

The Royal City Mills logging camp, at Mud Bay, is being closed, and a new camp will be opened at once at Bear River, on the northern coast. The first batch of men have already gone north to open the camp, build bunk houses and prepare the way generally for logging, which will commence in about a month. About 50 men will comprise the crew.

One of the richest timber sections of the interior in the vicinity of Spallumcheen river, near Mabel lake, is likely soon to be opened up by H. W. Wright and others. Mr. Wright has had a good deal of experience in the lumbering business in Maine and on the Sound, and is quite enthusiastic over the prospects in this territory. He considers the territory rich in fine cedar, hemlock and pine.

Robert Ward & Co., Ltd., large lumbermen, have had rendered against them a decision that is said to be without precedent in Canadian courts. Some time ago they had a ship builder, John Clark, imprisoned for debt due them, which he could not pay. Civil action was afterwards taken against Clark and his partner Harrington for \$8,000. Defence raised the unique point that by seizing the person of the debtor plaintiffs had taken the last recourse of the law, and all liabilities on defendant's part had thereby been discharged. The court held the point well taken and ordered Clark's release, purged of all responsibility for the debt.

NEW WESTMINSTER, B.C., April 16, 1895.

MICHIGAN LETTER.

[Regular correspondence CANADA LUMBERMAN.]

THE time has arrived when there ought to be a good deal of stir in lumber at this point. But business is opening slowly. Appearances would seem to indicate that there are large stocks of lumber on hand, but it is believed that most of it is simply waiting for shipment, and now that navigation is about opened it will be quickly removed. At Bay City it is said there is still a good deal of unsold lumber on the docks. Mills are pretty well at work, and it is believed, despite the dullness of trade in some respects, that a good season's business will be done. The shingle market continues as dull as ever.

The Saginaw Lumber & Salt Co. will not start its mills until about May 1st.

James Norn will erect a new saw mill at Standish, on the site of the one recently destroyed by fire.

Hemlock bark is quoted at Grand Rapids lower than at the opening of last season, the prevailing price being \$7.25.

Charters for the delivery of 600,000 feet of lumber have been made by Maltby & Co., of Detroit, to come from Tawas City.

A crew of 30 men are now at work on the Menominee and tributaries getting things ready for the drives of the Menominee River Boom Co.

A sale of 14 car loads of lumber has been made by W. W. Sutherland & Co. to Herberger & Schwander, piano manufacturers, Paris, France. A number of other sales of hardwood for piano manufacture have been made in this district.

The mills of A. T. Bliss, Central Lumber Co., and Bliss & Van Auken have started up for the season. There seems to be no difficulty in securing labor this year, as more men are applying than there is work for them to do. Wall & Weber's mill will start at once, and others.

R. A. Loveland, R. H. Roys, D. L. White, Jr., and Ralph Loveland, have organized themselves into a company with a view of engaging in certain lumber operations. This is the syndicate who recently purchased two berths from the Parry Sound Lumber Co., of Toronto.

A number of firms are establishing branches at different points in Michigan, which is good evidence of its position as a distributing point. A recent firm to establish a yard here is that of Crosby & Beckley, of New Haven, Conn., who have leased the Kimball & Merriman property, west side, which they will utilize as a distributing point for hardwood lumber.

Vessel men are not anxious to see navigation get into good swing too soon, as they say that a late opening will more certainly ensure them better prices. There has not been much profit in connection with vessel business lately. It is believed that freights from Bay City to Buffalo will open as low as \$1.25. There will be a considerable addition to the tonnage of the Saginaw river this season, as ten boats are now being built at Bay City. The two ship yards are employing 1,000 men.

SAGINAW, MICH., April 19, 1895.

The J. C. McLaren Belting Company, of Montreal, is applying for incorporation. The incorporators are David W. McLaren, Mrs. A. Cummins Walker, Alexander Walker, B. S. Sharing, Joseph Ryan, and G. W. McDougall, all of Montreal. The capital stock is \$99,000.

THE HAWAIIAN TIMBER TRADE.

THE lumber trade in the Hawaiian Islands is monopolized by a few large dealers of Honolulu, on the Island of Oahu. A strong combination exists among the lumber dealers for the purpose of opposing any attempt to disturb their trade or prices. Each firm has its customers, most of whom are owners of sugar plantations, wherein the lumber dealer usually has some interest. No competitor ever tries to sell to the customers of another firm. As grades and prices are the same in each yard, no customer feels inclined to change, except when he cannot find the material wanted at the yard which he usually patronizes.

Redwood is used very little, as a beetle about 1 in. long and $\frac{1}{2}$ in. diameter, with its two horns, very easily bores into the redwood, and so quickly, that it is soon rendered useless for anything but fuel. Douglas fir seems to offer no gustatory attraction to this lumber eater, and therefore, and for other good reasons, the fir is mainly used. It stands the best of all woods, the many differences in climate peculiar to the Hawaiian Islands, where one side of the mountain may get 150 to 180 inches of rain during the year, while the opposite slope may get hardly four inches.

The forests of the Islands still occupy large areas of land, but the valuable woods were for the most part exported during the early part of this century. Mr. Astor, of New York, is said to have made a substantial part of his fortune at the Islands, when he bought for a drink of liquor, the finest sannaal-wood trees, and he kept up this trade until the last tree was exported by him to India and elsewhere.

Among the few woods worth exporting is the Coa, but there are only a few trees left, and they are in places on the mountains, whence it would require more expense to transport them to a shipping point than ever could be made at the highest possible prices for the veneers cut from them.

There grows in the forest of Hawaii one more hardwood worthy of mention, named by the natives Ohia (pronounced o-bee-ah), but it is hardly to be considered a lumber tree, as when it begins to grow it divides itself into three trunks on the same stumps, and none of these divisions, or trees, are found measuring more than 10 in. in diameter. These triplets, however, are solidly connected up to 50 or 60 ft. from the ground, but each of them has its own heart, rarely, if ever, running in a straight line. The wood is very hard, and its color changes from olive, near the bark, to pink, near the heart. For small dimension stock, balusters, parquetry strips, narrow veneers for fine cabinet work, &c., it would be valuable. The ohia wood takes a very good finish.

The bark of the ohia tree is very similar to that of the scaly-bark hickory. It surrounds the tree in a loose manner, growing tighter from the first branch upwards. The color of the bark is a little brighter than that of the scaly-bark hickory. A devoted friendship for lifetime is formed between the ohia tree and a beautiful vine that is worthy to be exemplified to humanity. This vine grows up with the ohia tree, envelopes trunk and sometimes part of its crown with its tendrils, foliage and magnificent blossoms, which are of the size and similar in colour to the pine-apple plant in sprouting season. When this vine is severed from its roots and dies, its friend, the ohia tree, sheds its dressy leaves and follows its lifelong companion in the road to decomposition, from where is no return to former beauty.

It is safe to say that nine-tenths of the area covered by forests on the Island of Hawaii is occupied by banana, guava and other shrubs, that propagate themselves so densely that it is impossible to enter their strongholds without chopping a trail. But even with this difficulty, the visit to such a jungle is very gratifying. No reptile or beast of prey has, ever since the Islands were known, made its appearance. Some cattle, donkeys, turkeys and other domestic animals have for many years wandered from their herds or flocks and inhabit the ridges of the forests, while birds of beautiful plumage enliven the denser parts. To rest upon a banana leaf under the gorgeous domes of the fern trees, inhaling the balsamic air, purified and seasoned by millions of fragrant blossoms of magnificent colouring and peculiar shapes, enables us to separate our profane thoughts from the higher spirits, to whom we in such surroundings gladly surren-

der in worship. The mere reminiscence of an excursion undertaken with the assistance of two wood choppers, into an Hawaiian forest, recalls this happy feeling so vividly that one cannot refrain from dwelling in a few words upon the blessed sensation it affords, and principally for the purpose of having companions among those readers, whose hearts and souls are not petrified by the profane dust accumulated during the monotonous daily hunt for business.

Coffee planting is a new venture for the Hawaiian Islands, and the influx of planters from the eastern shores of the Pacific ocean has increased the demands for lumber and timber to be used in the construction of buildings. But lumbermen should be cautioned not to ship any lumber or timber to Hawaii before it is sold, less they should meet with the same experience over which a concern on Puget Sound has occasion to mourn. This concern last summer sent a vessel load of fine fir timber and lumber in charge of a manager to Honolulu, in an effort to break the combination of lumber dealers there and open that market for the general trade. After lying in Honolulu harbour with his unsold cargo for some weeks, the dealers of Honolulu took pity upon the "skirmisher" and relieved him of his burden at \$5 per 1,000 ft., which was less than the freight amounted to from Puget Sound. Freight rates range from \$5 to \$6 per 1,000 ft., the fluctuation depending upon the back freight, which is mainly sugar. This again lessens the chances of any new commer, as one firm controls all the sugar shipments, most of which the lumber dealers of Honolulu secure in time for their own vessels.

Except in Honolulu, where several business blocks, Government buildings and private dwellings, are built of brick or stone, lumber is the material for all construction. Few houses are covered with shingles, most of the roofs being of corrugated iron. This has proved to be the best material for roofs in tropical countries. A swift conductor of temperature, the iron exhales quickly, after the solar rays disappear, the heat that accumulates during day in it and under it in the building. The rain-water from corrugated iron roofs is also preferred for its cleanliness, and because in large districts the inhabitants are dependent on rain water for drinking and cooking.

This fact reduces the demand for shingles to a minimum, while on the other hand a large demand for water tanks is created. Tanks are a prior necessity to any other construction on a plantation, and are usually provided before the buildings are commenced. Some of the tanks are imported from San Francisco, especially redwood tanks, which, when filled with water, are not attracted by the beetle. But most of the tanks come from Puget Sound. Their sizes, 5 to 8 ft. in diameter, 6 to 12 ft. high, vary according to the sizes of the buildings. The staves are from $2\frac{1}{2}$ to 3 in. thick. Each tank or cistern rests upon a trestle of 6x6 or thicker fir timber, sufficiently high that water may flow by its gravity through pipes into the building.

Large quantities of fir timber are also used in the Hawaiian Islands in the construction of water "flows," some of them many miles long, connecting sugar factories with their cane fields. Where a streamlet coming from the mountains permits of it, the water is led into a gutter or "flow" as they call it, made of fir boards tightly jointed to widths of from 4 ft. to 6 ft., resting upon a strong trestle of fir timber and under a grade of from 10 to 30 degrees. After it is cut, the cane is thrown into the "flow," carried swiftly down the incline to this aqueduct, and not only delivered at the rollers of the mill without further handling but at the same time with the water necessary for steam and other purposes in the factory. Several such aqueducts employ millions of feet of lumber, and consequently a capital in themselves.

Dwellings on the Islands are built with large verandas, for there everybody spends most of his time when at home. Rooms are considered abodes for the night's rest only, and many prefer to sleep, even at night on the verandas. These are usually of large size, 9 ft. to 16 ft. wide, and all around the house, which contains in its single story from six to twelve rooms. Thus the veranda requires about as much lumber as the house proper.

In the construction of walks very little lumber is used. The trunks of fern trees furnish a material for this purpose which is far superior to lumber as it is unique. Of a

spongy texture, similar to the trunk of a date palm, the trunk of a fern tree permits of working it into any shape by little labor, while for many years the walks afford the comfort like that of walking over a Damascus rug. In rainy districts, these fern walks offer also the benefit of absorbing rapidly the rain water and to be comparatively dry, even if they are on a level with the fields or gardens.

Owing to the lack of docks or other facilities for discharging freights in other ports of the Islands, besides Honolulu, the unloading of lumber is done primitively. These boards or timbers are hoisted overboard from the vessel in lots of about 1,500 ft. tied with a rope and dumped into the sea, where a crew in a row boat takes the raft in tow and out to shore. In Honolulu are docks to which the largest boats can go and discharge their cargoes.

ENGINEERING NOTES.

IT is of course necessary to have a set of heavy fire tools in every boiler room for the purpose of handling heavy fires, but there should also be a set of light tools there, for in many places the latter may be used to advantage during a large portion of the time, thus saving much labor on the part of the fireman. Do not compel him to use a hoe that weighs 75 pounds, more or less, to draw the ashes out of the ash pits, when a much lighter one will answer every purpose.

When buying gaskets with which to pack man-hole or handhole covers on steam boilers, be careful to select those that are soft and tough, and not too thin, for the inside of the heads where these are to be used, and also the covers themselves are frequently anything but smooth and true, and the gaskets must "fill the gaps" as it were.

It is a good idea to have extra man-hole cover guards on hand, so that if one is broken on Sunday or some holiday when it may be difficult to procure another, no loss of time will be necessary. Especially should this be attended to in plants that are located at a distance from foundries and machine shops.

In case of accident to the feed pump, or any part of the boiler which makes it necessary to reduce the temperature at once, it is much better to cover the fire with damp ashes or fresh coal, rather than to attempt to draw it, for when a fire is disturbed it gives out an intense heat for a few minutes.

It is a good idea to be as economical as possible in the use of oil, but it does not pay to attempt to run an engine with an insufficient quantity of cylinder oil, for not only will the cylinder be ruined, but you will use extra oil enough to much more than pay for all the cylinder oil needed.

Always have a sight feed oiler located where it will drop oil on the piston rod as it travels back and forth, for it lessens friction, saves wear on the rod, and makes the packing last much longer. This applies to both fibrous and metallic piston rod packing.

After cleaning boilers do not screw up the nuts on the man-hole and hand-hole covers any tighter than is necessary, for you may break the guards or dogs that hold the covers in place, and cause yourself much trouble.

When wiping up the engine be constantly on the watch for loose set-screws, keys, nuts and pins, for by attending to this simple matter, many an expensive shut down has been avoided.

When fitting grate bars to a furnace do not make them too tight a fit, for expansion by heat must be provided for, or else the bars or furnace will be ruined.

Try gauge cocks often and keep them in perfect order, for you cannot tell how soon the gauge glass will leave you in the lurch, unless you have them to fall back on.

Asbestos packing for valve stems and similar purposes is much improved for use by oiling it well with cylinder oil before putting it into place.—Power and Transmission.

Maitland, Rixon & Co., and John Harrison, of Owen Sound, Ont., have been given a contract to furnish about one million feet of timber and plank for the new dock now being built at that place. The former firm have also secured the contract to supply the timber required for harbor improvements at Thessalon.

ZINC WILL PREVENT SCALE.

IT is a well-known fact that zinc slabs suspended in steam boilers prevent the formation of scale, and large quantities are used annually for this purpose. The following directions will enable one to use it successfully. The proportions necessary to insure complete protection are one square foot of zinc to fifty square feet of heating surface in new boilers, which may be diminished after a time to one in seventy-five or even one in one hundred square feet.

Merely placing the zinc in trays, hangers or strips will not insure metallic contact, and the action of zinc to prevent corrosion under such circumstances will be weak and limited. The best method of fixing the zinc is to place

a number of studs in the sides of the furnaces and combustion chambers, and to bolt on to these studs the zinc plates, which should be about 10x6x1 inches. It is important to see that the contact surfaces are clean and bright and the nut screwed close to the zinc to exclude the water and deposits from the contact surfaces, thus comparatively insulating them and preventing the galvanic action. Otherwise the zinc is acted upon as a solvent that renders the water innocuous or non-exciting.

LONG DRIVING BELTS.

A VERY bad habit in mills where there are large driving belts, is shifting belts with a square stick, no regular shifters being used. The result of this is the

belts are more or less injured on the edges. All heavy machines should be shifters to act so that they shift the belt over steadily, not putting too much strain on the driving belt too suddenly. Two pieces of gas pipe just large enough to revolve on round iron supports for shifters will lessen the friction on the edges of heavy belts, as these pipes revolve while the belt is being shifted. It effects a great saving in long driving belts, in fact any belt at all, leather or rubber.

While engaged in felling a tree at Midland, Ont., Charles Taylor, aged 20, met with an accident which resulted in his death. In falling the tree bounded back, the butt pinning him against a fallen log. He lived only two hours.

LUMBERMEN'S SUPPLIES

H. P. Eckardt & Co.
WHOLESALE GROCERS - TORONTO.
A call from buyers when in the city solicited.
Letter orders have careful and prompt attention.

CAMP SUPPLIES

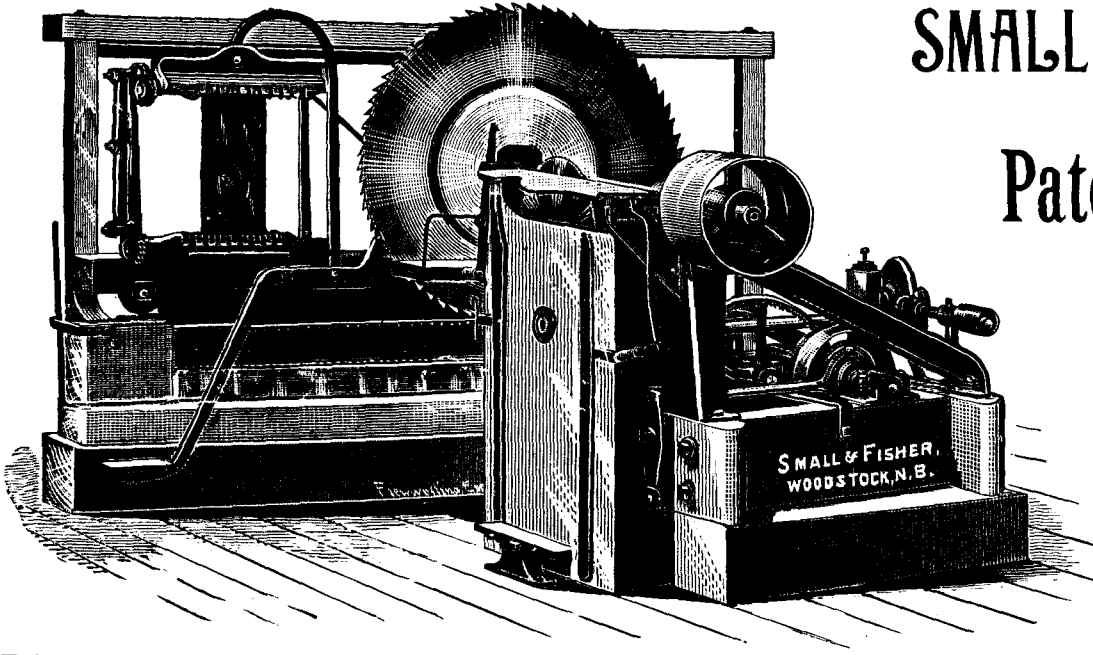
Being extensive operators in the lumber business, as well as Wholesale Grocers, we are exceptionally well qualified to fill orders for Lumbermen's Supplies.

MAIL ORDERS GIVEN PROMPT ATTENTION.

DAVIDSON & HAY
Wholesale Grocers TORONTO

SMALL & FISHER CO., Ltd.
Woodstock, N. B.

Patent Shingle Machine

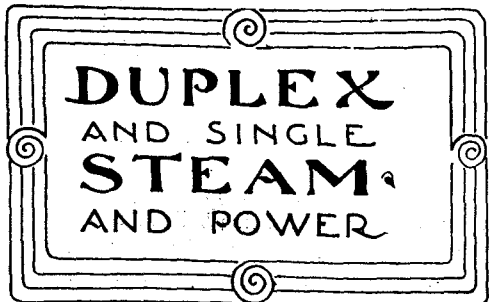


DRUMMOND, N. B., February 21st, 1895.
SMALL & FISHER CO., Woodstock, N. B.
Gentlemen: Your favor of the 19th received, and in reply would say we have been using your Shingle Machines for the last three seasons and like them very much, and think they are the best machines made, as they are an easy machine for the sawyer to operate and the principle is first-class.
Yours truly, STEVENS LUMBER CO.

ALEXANDRIA, ONT., February 22nd, 1895.
MESSRS. SMALL & FISHER CO., Woodstock, N. B.
Dear Sirs: We have six Small & Fisher machines and have pleasure in saying that they are very satisfactory to us. We are using at present five different makes of Shingle Machines, and none are superior to yours, as you may judge, when we have six of one kind in operation.
Yours truly, McPHERSON & SCHELL.

See description in reading pages of this number of The Lumberman.

Pumps & HYDRAULIC MACHINERY



THE NORTHEY MFG. CO., Ltd.
TORONTO

PERSONAL.

Mr. James McReary, lumberman, of Arnprior, Ont., recently lost a valise containing \$1,500 on the road between Renfrew and Shamrock.

Mr. Thos. Southworth, editor of the Recorder, Brockville, Ont., has been appointed to the position of Clerk of Forestry, vacated by the death of Hon. C. F. Fraser.

Mr. R. A. Stark, saw miller, of Owen Sound, Ont., died on the 19th of April. He was one of the pioneers of Grey County, was for years reeve of Derby township, and lately resigned the candidature of the Patrons for the House of Commons.

The death is announced of Mr. A. H. Baldwin, one of the pioneer lumbermen of Ottawa, who has been closely identified with the growth of this leading industry during the past forty years. He owned one of the first saw mills on the valuable site now occupied by the McKay Milling Co.'s grist mill.

HOME MADE TESTING MACHINES.

THERE is not a shop or mill in Canada which is engaged in manufacturing pursuits, which would not find a profitable use for a testing machine, were such a tool once placed in them. The tensile and transverse breaking strength of various material is an important factor in many cases, especially where lightness in design and weight must be considered. Improvised testing machines may be cheaply rigged up, an ordinary platform scale being used for the registering mechanism and a stout screw supplying the power. A hydraulic ram of the variety used in many English machine shops will also answer well for certain kinds of work. This little ram is about six inches in external diameter and six or eight inches high. The plunger has a movement of about one or two inches, and is capable of raising from two hundred to five hundred tons; an ordinary grocer scale and a large letter press have been successfully

adapted to the testing of iron, steel and aluminum, test pieces being a few inches in length and one-fourth of an inch square.

ANCIENT TREES.

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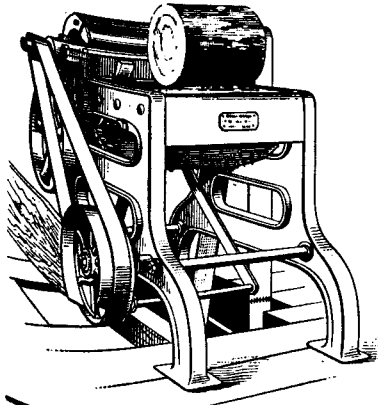
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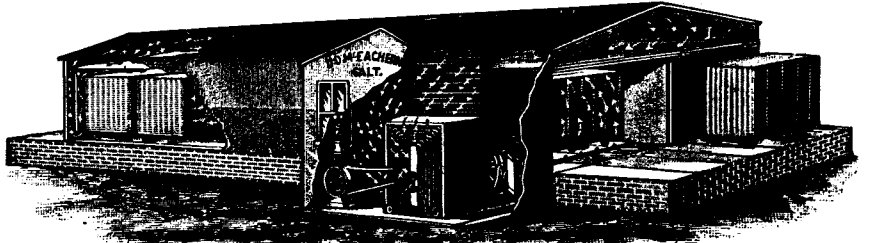
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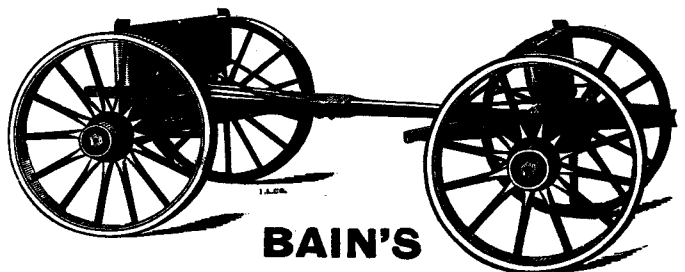
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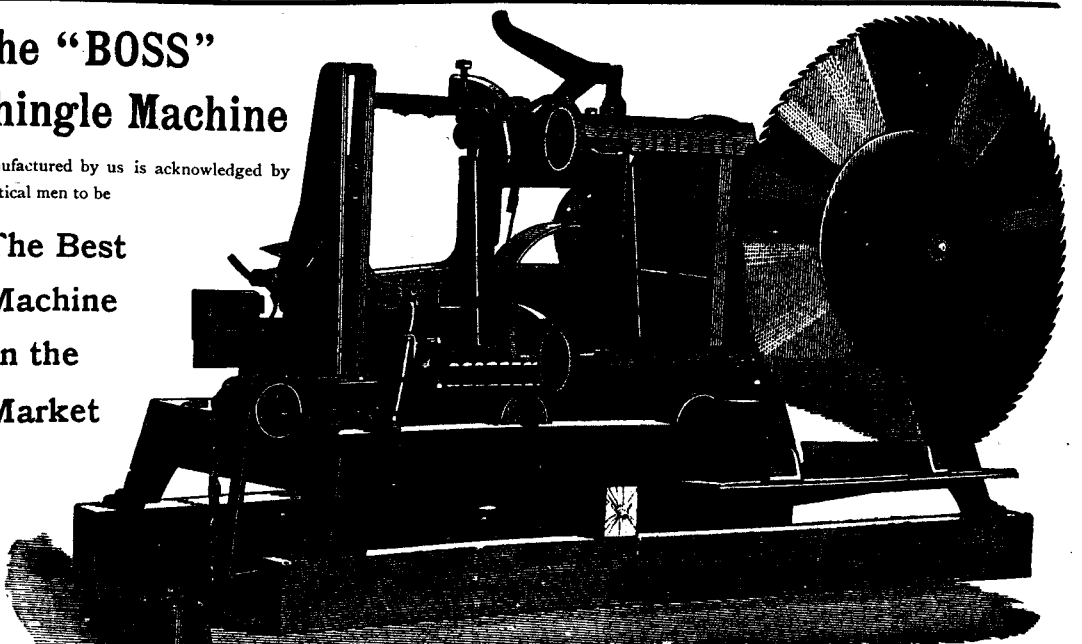
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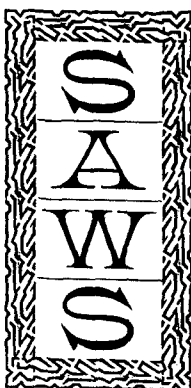
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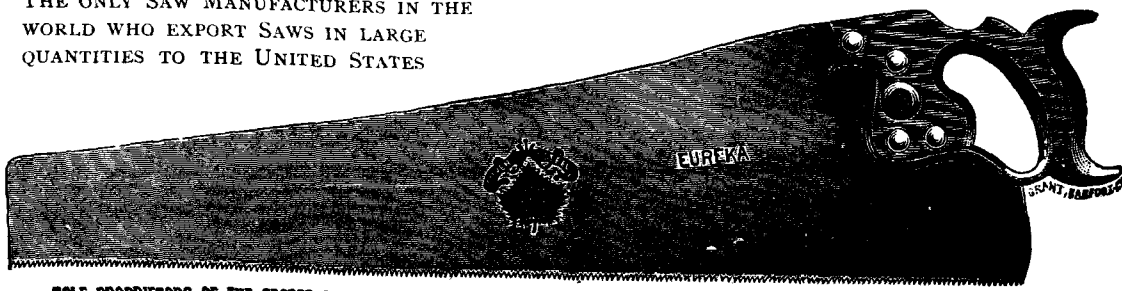
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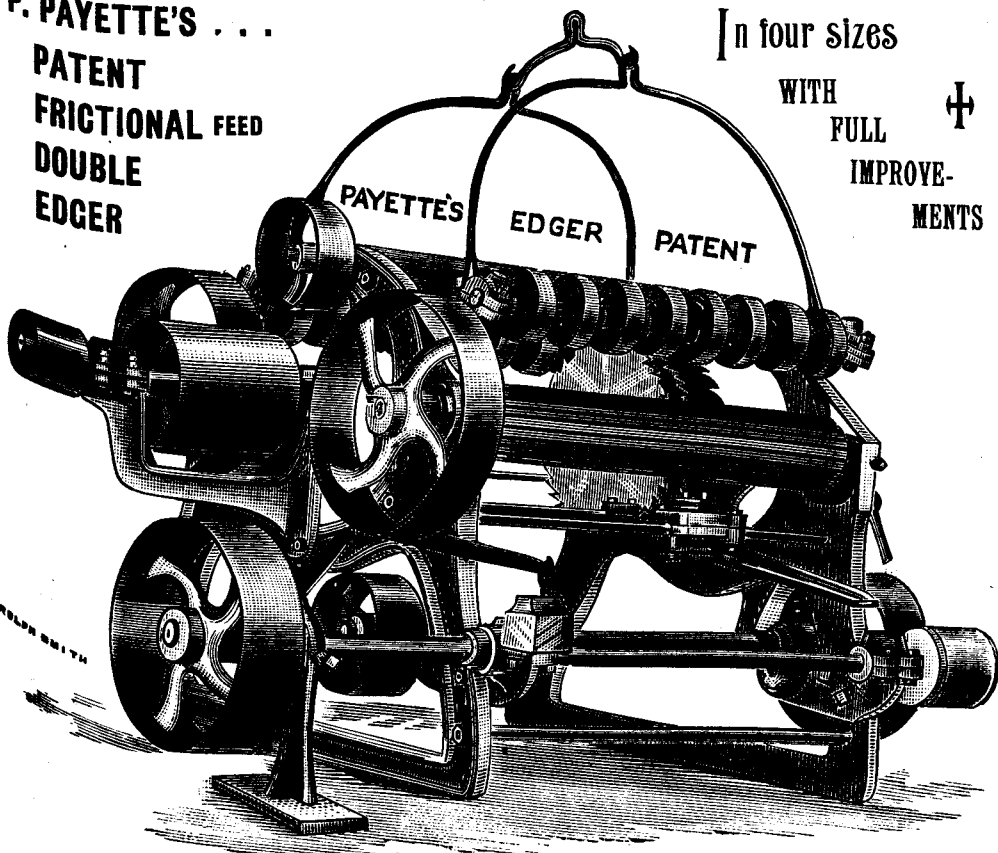
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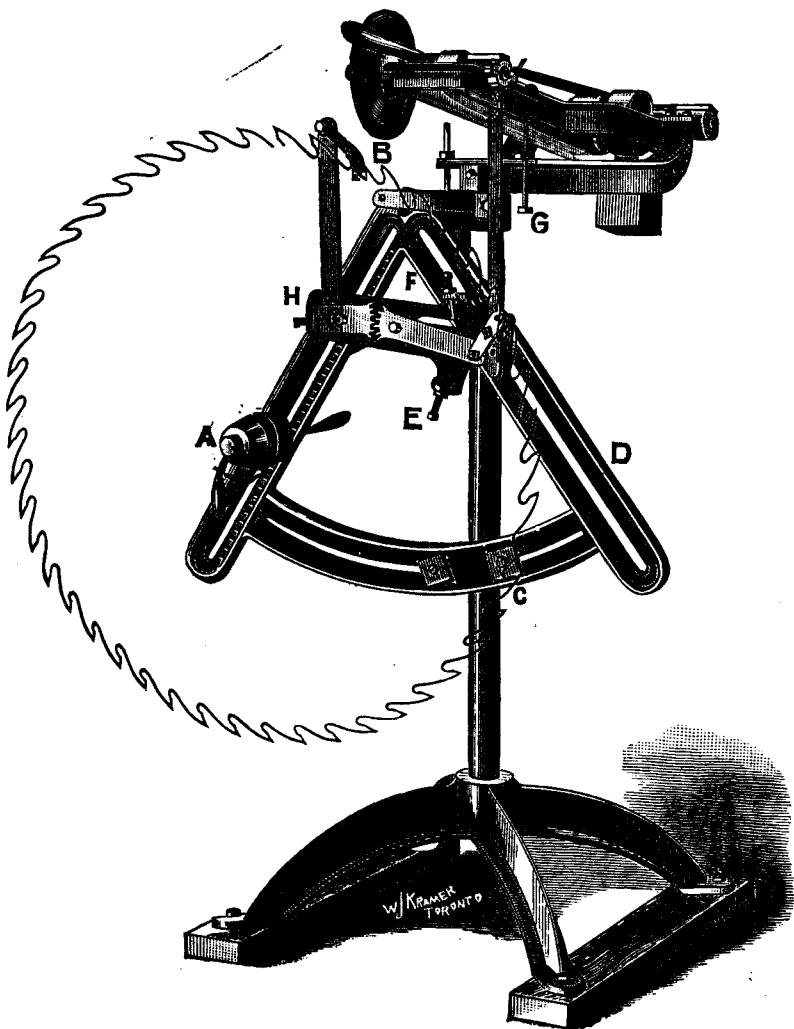
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