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THE CANADIAN LUMBERMAN

WOOD WORKERS' MANUFACTURERS' AND MILLERS' GAZETTE

VOLUME XX.
NUMBER 9.

TORONTO, CANADA, SEPTEMBER, 1899

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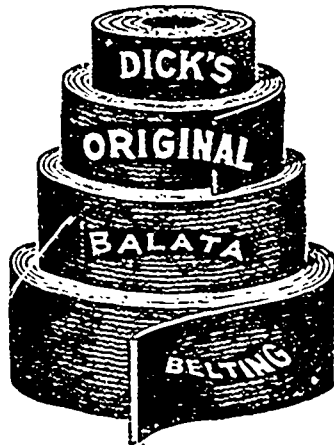


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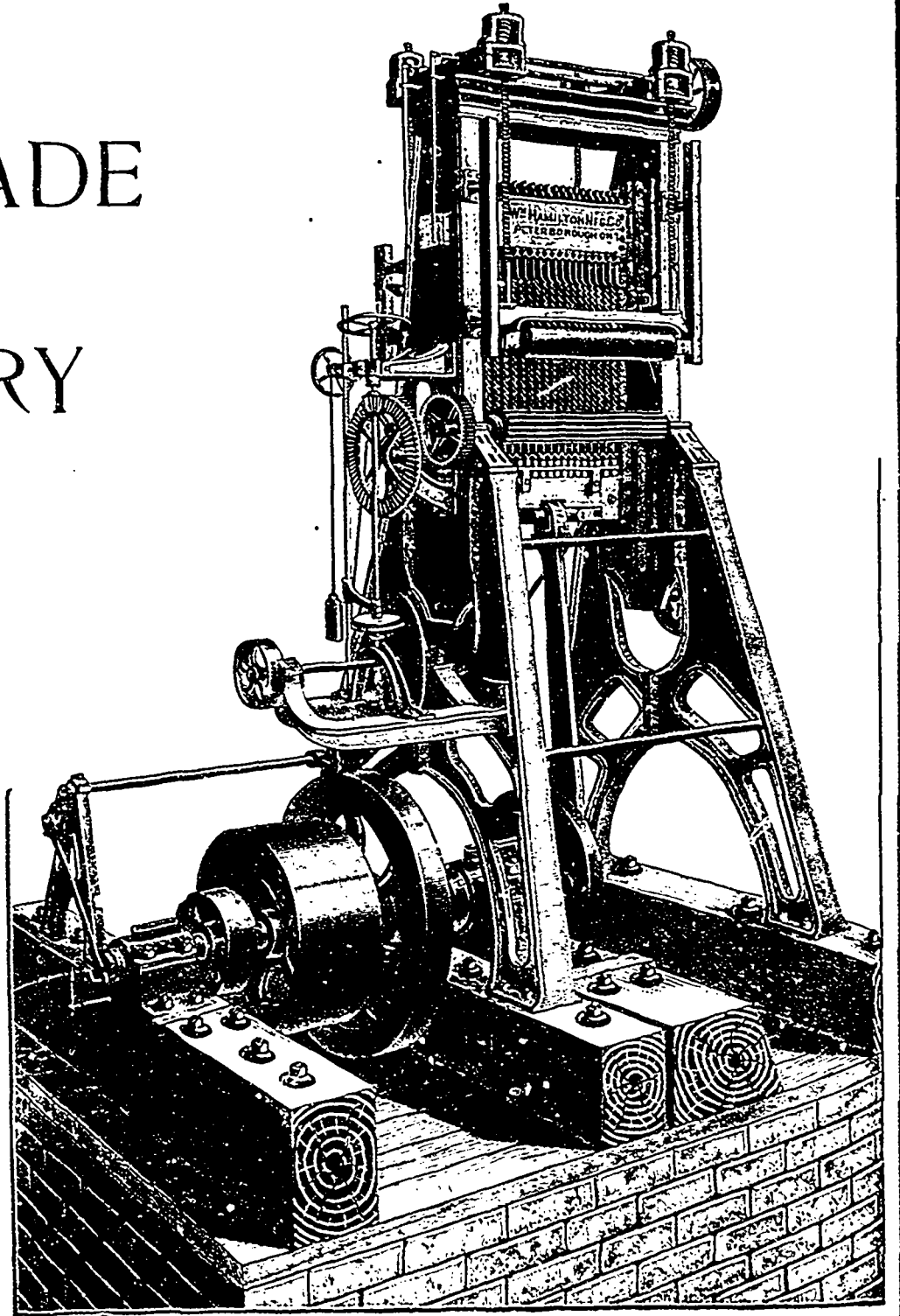
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MILL STREAM, QUE., on I. C. Ry, December 17th, 1894.

R. H. SMITH CO., LTD., St. Catharines, Ont.

DEAR SIRS,—Driving a 20 in. 13 gauge saw into frozen hardwood, using a 9 in. 4-ply belt, if it can be done satisfactorily, is a very severe test. Your saws have stood that test better than any I have tried. I have been experimenting with different makes—both home and imported—during the last five years, and give yours the preference. Last order is just to hand and will report on them by and bye.

Yours very truly, JAMES MCKINLAY.

CAMPBELLTON, N.B., Nov. 17th, 1894.

R. H. SMITH CO., LTD., St. Catharines, Ont.

DEAR SIRS,—In regard to your Shingle Saws, you can say that I have been using Shingle Saws of your make (Simonds) for the past four years, and they have given good satisfaction. I am running nine machines and use a good many saws, but have never had a saw yet that did not work satisfactorily. Before using your saws I used saws of American make, which worked well, but after giving your saw a trial have continued to use yours, as they are cheaper, and in regard to working qualities are all that is needed.

Yours truly, KILGOUR SHIVES.

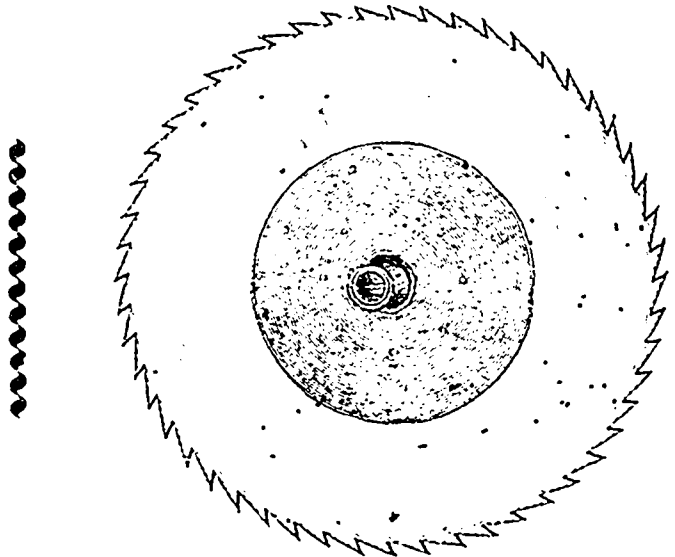
CLAWERING, ONT., May 3rd, 1897.

R. H. SMITH CO., LTD., St. Catharines, Ont.

GENTS,—In reply to your letter asking me how I liked the 62" SIMONDS Saw, I must say in all my experience I never had a saw stand up to its work like the one purchased from you last month. Having used saws for the last 22 years, and tried different makes, I can fully say it is the best saw I have ever had in my mill, and would recommend the SIMONDS' Process Saws to all mill men in need of circular saws.

Yours truly, W. G. SIMMIE.

P.S. —I am sending you my old saw to be repaired: please hammer to same speed as new one.



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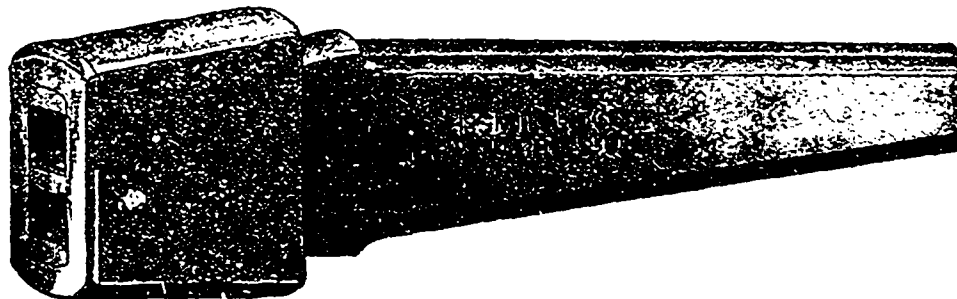


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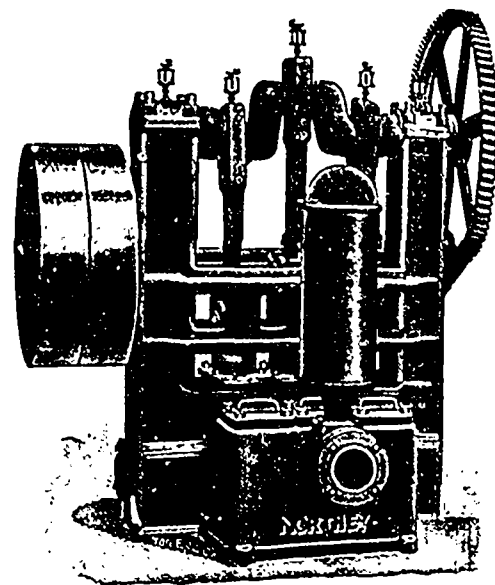
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THE CANADA LUMBERMAN

VOLUME XX.
NUMBER 1.

TORONTO, CANADA, SEPTEMBER, 1899

TERMS, \$1.00 PER YEAR.
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A FLOATING SAW MILL.

PRESENTED on this page are views of what is believed to be the first floating saw mill to be operated in Canada. It was built last winter at Vercheres, Que., by Mr. J. H. Dansereau. The mill is built on a large scow, which is 100 feet long and 30 feet wide. In the first storey, that is to say, in the hold of the boat, there are two boilers sixty inches in diameter by sixteen feet long, an engine of 125 h.p., the necessary shafting and belting, and apparatus for conveying the sawdust to the fire. Located in the upper storey are appliances for hauling up the logs, a steam kicker, steam log roller, steam nigger, carriage with steam feed, Allis band saw, double edger, slab re-saw, trimmer and slasher, together with a complete system of live rolls, the whole being constructed somewhat similar to the equipment of an ordinary saw mill. The filing room consists of a boat-shaped apartment situated on the roof of the mill.

The machinery for this unique mill was supplied by the Waterous Engine Works Company, of Brantford, and is said to be giving much satisfaction.

In the spring Mr. Dansereau took his floating

saw lots of logs which so frequently escape from the boom, while at the same time it does away with the cost of towing logs.

FOREIGN TRADE OPENINGS.

BUTCHERS' WOODEN SKEWERS.

THE attention of Canadian manufacturers of "butchers' wooden skewers" is directed to the following letter recently received by the Department of Trade and Commerce:

IMPERIAL INSTITUTE ROAD,
LONDON, S.W., 22nd July, 1899.

W. G. PARMELEE, Esq.,
Deputy Minister of Trade and Commerce,
Ottawa.

DEAR SIR,—Upon behalf of certain of your correspondents, I last autumn made some general inquiries as to the possibility of Canadian manufacturers of butchers' wooden skewers obtaining a share of the very considerable trade done in the United Kingdom.

As was then pointed out, the supply here is mainly controlled by the American Skewer Trust, which deals through resident agents. Prices are much cut up, owing to severe competition, and it is a question of small profits on large shipments.

Many English houses are not satisfied with Trust methods, and are prepared to welcome Canadian skewers if they can compete with American.

It may be of interest to quote the following letter written on 21st instant by a large dealer in skewers, who has since I saw him last autumn followed up the matter:

"We have received several small consignments of Canadian skewers. Up to the present they have been very good in quality and have met a ready sale. The only disadvantage is they are rather irregular in forwarding their consignments. We consider they are as good or better value than any wooden skewers at present brought before our notice."

This is to a certain extent encouraging, but this irregularity of delivery is a defect which is absolutely fatal to many Canadian goods which might otherwise do well here.

Many of the large merchants are connected with the American Trust, but there are others who would be prepared to go into the matter with any Canadian manufacturer possessing adequate means of regular production.

The future of this trade appears worthy of the attention of Canadian skewer producers.

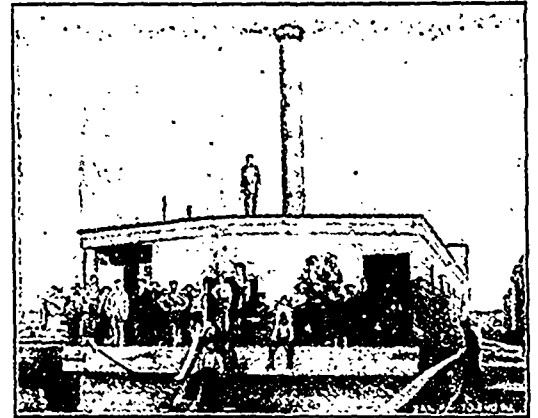
Yours faithfully,
HARRISON WATSON,
Curator Canadian Section.

BROOM HANDLES.

The following letter has been received by the Department of Trade and Commerce at Ottawa regarding broom handles:

DEAR SIR,—As previously stated, I gave the names of the Canadian manufacturers to my inquirers, and have since had a long interview with one of the partners. They claim to do a large trade, have a New York branch,

and one of the partners visits the States constantly. They know Canada, and would like to form a connection there if they can find the right people. They must, however, have someone capable of a large and constant output in broom handles, and state that they are at the moment ready to place an order for 3,000 gross, but would require that any Canadian mill doing business with them should give them their whole output. Any firm going into the export trade should, they think, hold spruce limits. Perhaps you can suggest likely people. The same firm would also like to obtain Canadian



MR. J. H. DANSEREAU'S FLOATING SAW MILL.

mouldings. Several Canadian manufacturers are already represented here, but possibly you know others who would like to work up an export trade.

I have heard from several Canadian producers of chair parts, in reference to a previous inquiry.

This wooden ware and turnery trade is one of which Canada should be destined to obtain a large share in the course of time.

It is essentially a trade of large turn-overs and small profits, and would only be advantageous to persons holding large and well-equipped mills. Regular delivery is important, and it is essential that a connection be formed with a large importer and merchant who would assume the financial risk. Direct trade might be possible with the consumer in a few instances, but as a rule large transactions are carried on by the merchants. As an instance I might cite that large people like the Army and Navy Stores buy turnery entirely through merchant importers.

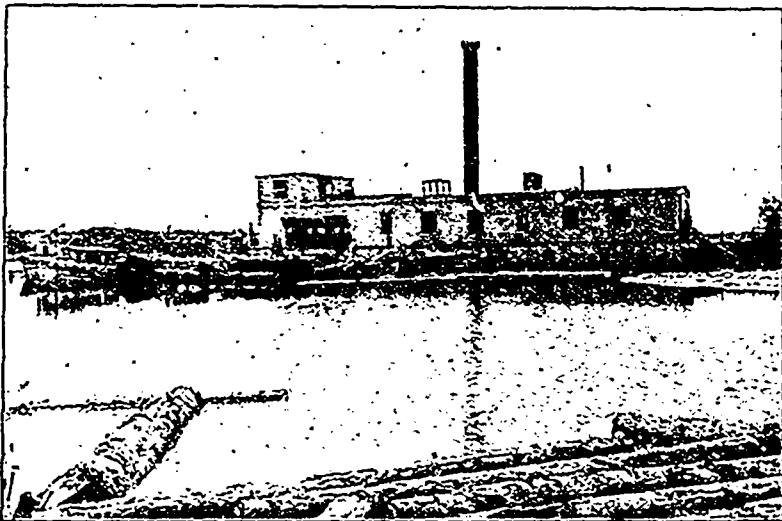
Yours faithfully,
HARRISON WATSON,
Curator Canadian Section Imperial Institute.

SHINGLES OF PAPER.

A REPORT from Japan states that an ingenious innovation recently started by the Tokyo Card and Pasteboard Co., the largest in Japan, has resulted in markedly facilitating the development of that industry. It consists in making thick tarred pasteboards as substitutes for shingles for ordinary roofing. The paper shingles are now in active demand, being about 50 per cent. cheaper and far more easily managed than ordinary shingles. They do not differ much in point of being proof against fire and water from the ordinary articles.

CORRESPONDENCE INVITED.

The publishers of the CANADA LUMBERMAN invite correspondence from its readers on any subject bearing upon the lumbering industry. There are many questions affecting the trade of which a fair discussion would be beneficial, while the views of all would be broadened by reading the opinions of others. To every reader a hearty invitation is extended to contribute to our columns.



MR. J. H. DANSEREAU'S FLOATING SAW MILL.

saw mill to Calumet, on the river Ottawa, at the mouth of the river Rouge, where it has been in operation for some time. Working day and night, its capacity is about 100,000 superficial feet, the timber being spruce. Barges are placed on one side of the mill, the lumber being carried into them and then transported to Montreal for loading on the steamers. The slabs are loaded on cars on the wharf and also shipped to Montreal. The lumber is shipped without being dried, but if it were necessary to dry the lumber before shipping, it would not be a difficult matter to take the mill up to a wharf and pile it on the ground as with any other mill.

Mr. Dansereau finds that there is a great advantage in being able to move his mill from place to place, as the quantity of timber in many districts will not warrant the building of an ordinary stationary mill. This mill can also be used to

NEW STEAM LOGGER.

A NUMBER of attempts have been made to use log haulers in the woods on ice roads, and several contrivances have been planned and constructed, but none with great success. Illustrated herewith is a steam logger invented by Mr. F. S. Farr, of the H. C. Akeley Lumber Co., of Minneapolis. It will be remembered that in the mill of this company the first double acting band saw was tested.

The machine illustrated was built entirely in the woods with what materials and facilities could be obtained, and is therefore somewhat crude in appearance. As will be observed, the boiler and engine occupy two sleds. This was found necessary because the gasoline engine that was first designed to furnish the power, and which was placed on the forward sled, proved insufficient to do the work. This necessitated a change, and Mr. Farr placed an engine on the forward sled and used another sled for a steam boiler. When constructing another machine,



NEW STEAM LOGGER, INVENTED BY MR. F. S. FARR.

both engine and boiler will be placed on one set of runners.

One of the superior points of this sled locomotive is claimed to be the arrangement of the propelling gear. The heavy calked wheels are arranged so that they may be raised or lowered automatically with the unevennesses in the road bed and are operated by chain gear that connects them with a shaft lower than their own centres. This has a downward pull on them and holds them to the road. The calking is a specially arranged and patented device automatically cleaned, thus preventing from being clogged up with snow or dirt. Another unique arrangement is the use of the exhaust steam. It is forced out directly under the front of the runners and serves to keep the ice ruts in order, doing away with the necessity for a sprinkler. The illustration shows only four loads, but it has hauled as many as eight sleds with 30,000 feet of logs, and the limit of its capabilities depends only on the power of the engine that operates it.

The Hastings Shingle manufacturing Co. is building a new mill, the machinery of which was furnished by the Wm. Hamilton manufacturing Co.

DOUBLE-CUT BAND MILLS.

A. J. BURTON, in Wood-Worker.

IN the Wood-Worker for July, on page 27, a filer gives his opinion of the double-cut band mill. He says it will not be the mill of the future. In my estimation, this is the very best evidence that the makers of the double-cut mill want. It is only about fifteen years ago when those same people, with others, were trying to make a success of the single-cut mills of to-day, and it was no unusual thing to hear experienced mill men say the band would never be a success or the mill of the future. I, for one, believe it is the coming mill. I am a band saw filer, but have never seen or filed a double-cut band saw, although I tried it on a Clark mill in Pennsylvania in 1897, but could not make a success of it, for the teeth on the back edge would cut out the guides, knock off the corners of the teeth and raise Cain in general, so I decided the idea was no good unless we had a mill built to suit it. But now, as the E. P. Allis Co. have made a mill suitable to run a double

toothed saw on, I see no good reason why a good progressive filer cannot do the rest, and make the double-cut mill the mill of the future.

This filer says: "Of course they may be made to run successfully, but they are sure to cause trouble." Now, the only trouble I can see that is most liable to turn up is that if the filer in charge of the double-cut saws is not a progressive filer, he is not likely to be successful, and it will be a hard matter to "hold her down" alongside of superior brother filers. I do not see why there should be any trouble in making a saw perfectly straight with teeth on both sides; it will be much easier to keep the saw straight on its edges for the simple reason that it is cutting with both edges, therefore most of the labor in fitting up the saw will be to put in a good even tension, so the saw will be fully capable of standing as much feed on one edge as it will on the other.

I hope all operators of double-cut mills will bear in mind that about one-half of the filers of single-cut band saws are running their saws straight on the back edge, with a tension in the saws put up to a 32 to 40-foot circle, or tension gauge, and those same single-cut bands are cutting from 40,000 to 60,000 feet per day. Now, why

will not a saw do as much from one edge as the other, or both edges cut twice as much as the saw with teeth on one side, and with a straight back? I claim it will do just as much work and stand just as much feed from one edge as the other, although I have never seen a double-cut mill, but I will accept a position as filer for one the first chance I get, and if my saws will not stand up to cut 100,000 feet per day, I will write and tell the readers of The Wood-Worker that I have made a failure.

From what I can learn of those that have seen the double-cut mill work, the greatest trouble is that it cuts a thick and thin board alternately, caused by the saw trying to follow the grain of wood. They tell me if the saw leads in, say one-quarter inch the first cut going ahead, it will lead out in the return cut, and if the log continues to be twisting all the boards will be thick and thin. Now, this may all be so, but I have my doubts as to a saw leading in or out, if it is put up perfectly flat, with a suitable tension and properly fitted teeth.

I was very much amused when I read about the filer who never used a straightedge on a band saw, but simply squinted along the edge of the saw with one eye to find where a high or low place showed on the back, and how he, with hammer in one hand and a piece of iron in the other, hammered the crook out. This reminds me of a mill in Whaleyville, N. C., that I called on in 1896, when I was traveling for a saw company. The saws were cutting to "beat the band." I made my way to the file room, and there, to my surprise, I found the filer rolling his saw and squinting along the back to see when he got it straight enough. When he was done he got a piece of iron and a hammer and tightened up the saw on the wheels of the grinder, then proceeded to level his saw, all with his eye, which he did in about twenty minutes. After he was done I introduced myself and talked about saws, free silver, etc., as this was in August, 1896. Then I asked the filer if he objected to me trying his saws with my pocket straightedge to see how he had them put up. I was surprised that they were put up about as well by this man without a tension gauge or straightedge as it was possible for me to do with both. His saws cut finely, and had no cracks. He had saws that had been worn down from twelve inches to six inches without a crack. When I left the mill I would cheerfully have traded my straightedge, if it were possible, for eyes as good as this filer had.

To imitate rosewood, maple is best employed, since its texture approaches that of the rosewood the closest. According to Deutsche Drechsler Zeitung, the maple board must be carefully rubbed down, a handsome color being obtained only if this is attended to. For staining use anilic acids, a dark red one consisting of roesine 10 grammes, coralline 10 grammes, and analine brown 1.5 grammes, dissolved in 1 liter of alcohol, and a pale red one which is obtained by dissolving roseine 10 grammes and coralline 10 grammes in 1 liter of alcohol. With this pale red liquid draw the veins on the maple plate in distances of about millimeters, using a repeatedly divided brush, and fill up the intervening spaces with the dark red mixture. Before drying is completed blend the light and dark stripes with a soft brush, so that they do not appear too sharply defined.



It would seem that beech is likely to become a more popular wood in the near future. I learned the other day that Mr. J. S. Findlay, of Owen Sound, is building a new residence, and that he is using quarter-cut beech for the floor. In the same town, the North American Bent Chair Co. are using immense quantities of beech in the manufacture of their bent chairs. These chairs are all exported, many of them going to Australia. This company have recently rebuilt their factory burned some time ago, and I understand that it is their intention to build another extension almost as large as the existing building. When this is completed, their capacity will be considerably increased, and a still greater quantity of beech and other hardwood timber will be consumed. It may be a question ere long where to obtain the necessary supply.

Mr. Frank Southern, son of Mr. James W. Southern, timber merchant, Manchester, Eng., spent a couple of weeks of last month in Canada. While principally on pleasure bent, Mr. Southern improved the opportunity of acquainting himself more fully with timber conditions in Canada, from whence his firm import ready-made pine doors, finished pine flooring, white oak, etc., which in turn they supply to Manchester contractors. It will be remembered that the introduction of these ready-made products was at first strongly resisted both by the contractors and workmen of Manchester, Glasgow and other British towns, but the fact is now recognized that the better policy is to use them in preference to the more expensive goods made at home. In conversation with Mr. Southern, it was learned that his firm have imported from Wisconsin ten times as many of these manufactured doors as they have bought from Canadian manufacturers, on account of the slightly lower price at which the American article could be purchased. As Mr. Southern remarked, "even a penny greater profit on each door is a consideration where so large a quantity is handled." It is understood that a number of the American and Canadian manufacturers in this line have recently come to an agreement, under which prices will in future be regulated. Mr. Southern was asked as to the effect of the Manchester canal upon the trade of his city, and replied that it had been most gratifying. The tonnage has increased from 9,000 tons the first year the canal was opened to 150,000 tons last year. The effect is seen in the extensive building operations in progress to meet the requirements of a large increase in population.

EARLY in the month of August Mr. J. M. Macoun, superintendent of the Canadian forestry exhibit at the Paris Exposition, returned to Toronto from a visit of research to some of the saw mills and wood-working plants in Western Ontario, and it was only necessary to glance at

his countenance to know that his trip had been a success. He was very enthusiastic over the prospects of a creditable display of wood goods at Paris. To the writer he stated that what he had seen and learned on his trip was intensely interesting. All the mills and factories were busy with orders, many of them running night and day, and even then being unable to keep up with the demand. Notwithstanding this, he was accorded the utmost courtesy and given every assistance towards the preparation of his exhibit. While the display of forest products will include everything from the tree to the semi-finished product, it is Mr. Macoun's intention to give special attention to lines of wood goods which have only been exported during recent years, and for which there is an extensive market in European countries. These might be classed as specialties, and will include mangle rollers, table legs, chair stock, box shooks, butchers' skewers, hubs and spokes, cooperage stock, coffin boards, cigar boxes, basket material, excelsior, etc. The advantage of a larger trade in this class of timber products is that the money expended in working up the timber to a partially finished product will be given to Canadians. Notwithstanding the limited space at Mr. Macoun's disposal, he hopes to make an exhibit which will do justice to Canada as a timber producing country. The province of British Columbia has forwarded its portion of the exhibit, and the display from the Eastern provinces is well under way. In order that every timber product capable of being exported on a commercial basis may be represented, Mr. Macoun extends an invitation to all manufacturers to forward to him a sample of the article they wish to exhibit. He will probably leave for Paris about the first of November.

NATIONAL HARDWOOD INSPECTION RULES.

THE movement in the United States looking to the adoption of national rules for the inspection and grading of hardwood lumber is steadily gaining ground. On July 13th, the National Hardwood Lumber Association, formed with the above object in view, held its first annual meeting in Milwaukee, at which there were present representatives from nearly all the principal markets. The Inspection Committee presented a report recommending certain amendments and changes to the rules as already adopted by the association, and which have been published in the CANADA LUMBERMAN. These amendments, as adopted by the meeting, are as follows:

MILL CULLS.—The grade of mill culls must be 3 inches and wider, 4 feet and longer, and must contain at least 25 per cent. of clear cutting, not less than 3 inches wide and 2½ feet long, with the exception of basswood, elm and butternut, which may contain 25 per cent. of sound cuttings. This includes the following kinds of woods: Plain-sawed red oak and white oak, ash, birch, maple, basswood, elm and butternut.

ROCK ELM.—Firsts and seconds, 6 inches and wider, 10 feet and longer, not over 25 per cent. under 12 feet. 6-inch and 7-inch pieces will admit of one standard defect. 8-inch to 10-inch, two standard defects; 11-inch to 12-inch, three standard defects; 13-inch and over, four standard defects. Straight splits the width of the piece is no defect in this grade. Common must be four inches and wider, from 6 to 16 feet long, not to exceed 10 per cent. of 10-foot and 15 per cent. of 6-foot and 8-foot, and must work two-thirds clear in not more than three pieces. Culls must not exceed 50 per cent. of 10-foot, and must work 50 per cent. sound in not more than four pieces, and no cutting less than 2 feet.

ASH.—Common, 4 inches and wider, 8 feet and longer; 4-inch piece must have one face clear; pieces 5 inches and wider must be of sound character, and work three-fourths clear.

CHESTNUT. Add to the grade of firsts and seconds: "Wormholes are excluded from the grade of firsts and seconds."

COTTONWOOD.—Culls are 3 inches and over wide, from 6 feet to 16 feet long, and include all lumber not equal to common grade that will work one-half or more without waste. Common same as in inspection book.

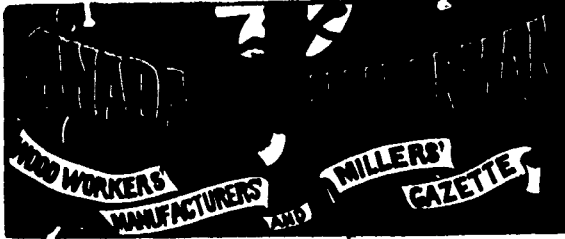
HICKORY. Grades, firsts and seconds, common and cull; lengths, 6 feet to 16 feet; bright sap no defect. Firsts and seconds, 4 inches and up, 8 feet to 16 feet; Pieces 4 inches and 5 inches wide must be clear; pieces 6 inches and wider must be sound, and work 80 per cent. clear in not more than two pieces; no cutting to be less than 4 inches wide. The grade of firsts and seconds must contain at least 25 per cent. of firsts. Common must be 4 inches and up wide, 6 feet to 16 feet long, not over 20 per cent. less than 12 feet long, and must work two-thirds clear in not more than three pieces; no cutting to be less than 3 inches wide and 3 feet long. Culls are to include all lumber below the grade of common that will work at least one-half clear in four pieces; no cutting to be less than 3 inches wide and 2½ feet long.

PLAIN-SAWED RED OAK AND WHITE OAK. Common shall be 4 inches and wider, 8 feet and longer, not to exceed 20 per cent. 8-foot and 10-foot lengths; pieces 4 inches to 6 inches wide, 10 feet and longer, shall work ¾ clear in not over two pieces; 8 feet and 10 feet long shall work ¾ clear in not over two pieces. Pieces 6 inches and wider, 12 feet and longer, shall work ¾ clear in not to exceed three pieces; no cutting to be less than 3 feet long; bright sap no defect in this grade.

QUARTER-SAWED RED OAK AND WHITE OAK. Common shall be 4 inches and wider, 8 feet to 16 feet long; 4-inch and 5-inch to contain not over one standard defect; 6-inch and wider to cut at least 75 per cent. clear in not over two pieces; bright sap no defect in common grade. Clear quartered red oak and white oak strips, 1-inch and thicker; width, 2½-inch, 3-inch, 4-inch, and 5-inch; 8 feet to 16 feet long; the 2½-inch and 3-inch to have one face free of sap; the 4-inch and 5-inch may contain 1 inch bright sap. (Note.—All quartered oak must show figure on one side to eliminate the last sentence in note of inspection book, where the rule says: "The ray should show an angle of 45 degrees.")

MAHOGANY.—Grades: Firsts and seconds, common and cull, and shorts; firsts up to 18 feet, as per book; 18 feet to 20 feet, two standard defects. Seconds, 6 inches and wider; length, 18 to 20 feet; not more than 15 per cent. of 10-foot lengths; 5 per cent. under 10-foot lengths; pieces 6 inches wide must be clear; 7-inch to 9-inch, one standard defect; 10-inch to 12-inch wide may have two standard defects; 13-inch and wider, three standard defects; 18-foot to 20-foot may have one additional standard defect. Change the name of 'X' to common grade, 'O' grade to cull. Balance of the rules to conform to the rules in inspection book, except that the clause requiring 75 per cent. of firsts in the first and seconds be stricken out.

An oldtime Maine lumber operator says that the large amount of white birch of large size to be found in that state is due to the action of officials nearly seventy-five years ago. He says that in 1820 some French Canadians squatted on state land near the Penobscot river and defied all efforts to eject them. Finally, in 1825, two special constables were sent to the place from the land office in Augusta with instructions to make a clean job of the evictions. The constables, after turning the families out, set fire to their houses and haystacks. Twelve hours later the French village was a mass of ruins, and the biggest forest fire ever known in the state was sweeping north and burned more than fifty townships of virgin pine. Of this land about 5,000,000 acres came up to wild cherry and white birch saplings, and, after a struggle for supremacy, the latter prevailed, and that great territory is known as a birch country.



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THE CANADA LUMBERMAN is published in the interests of the lumber trade and 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 15 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.

RESTRICT THE LUMBER PRODUCTION.

THE fact has been stated in this journal, and is borne out by almost daily reports, that the lumber business of the Dominion is in a most prosperous condition. There is scarcely a branch of the industry, from the cutting of the tree to the manufacture of the finished wood product, that is not employing more labor and more capital than was the case twelve months ago. The reason for this is the increased demand resulting from the generally improved commercial conditions in nearly every country in the civilized world.

Entering, as we seem to be, upon an era of greater prosperity, the tendency is for manufacturers to largely increase their production with a view to meeting the prospective demand and to making profits to offset the years of business depression, when, it is admitted, goods were frequently sold at the bare cost of production. This disposition on the part of manufacturers is only natural; nevertheless, this same disposition has more than once in the past been a strong factor in breaking down an otherwise promising market. These remarks are particularly applicable to the lumber trade, owing to the somewhat peculiar conditions surrounding it, and a word of warning at this time, when preparations for logging operations are being made, may not be amiss.

Present indications point to a large demand for lumber next year, both on local and foreign account. Notwithstanding this, our advice to

manufacturers is to restrict their production. By this policy there is everything to gain and little to lose. Prices are now moving upwards, and it would be a great mistake to so increase the production of logs this winter as to overstock the market with lumber next season. The log cut, taking the Dominion as a whole, should be little larger, if any, than last winter. The object of manufacturers should be to realize a fair profit on a limited output. It should be borne in mind, therefore, that the cost of labor has increased with the greater demand therefor, and that the lumber cannot be manufactured as cheaply to-day as it could be two years ago. Stumpage values are also higher. This we regard as an argument in favor of restricting the production of lumber.

As timber becomes less plentiful, it devolves upon the people of Canada to be more conservative in regard to its use, with a view to perpetuating the supply. In this aspect of the case lumbermen are quite as much interested as the public generally. Thus the advantage of manipulating the timber in such a way as to obtain the best possible returns from a minimum quantity of timber.

We commend for the consideration of saw mill owners the policy adopted by Mr. John Bertram, manager of the Collins Inlet Lumber Company. Mr. Bertram has fixed a certain quantity of timber to be cut each year, which must not be exceeded, the object sought and which he hopes to attain being to secure a permanent supply, after the forestry methods adopted in some European countries. Mr. Bertram has given the subject of reforestation much study, and for that reason we believe his course of action might safely be copied by other lumbermen.

To revert to the vital object of this article, we would strongly urge upon saw mill owners to pursue a conservative policy in regard to their output. Profit by the example of this year, when nearly every lumberman in Canada has done a successful business, even though not a large one. Let the world get hungry for our lumber and timber products, and in the end we will profit thereby.

SEASONING OF TIMBER.

MUCH interest is shown on this side of the Atlantic in the numerous experiments that have been conducted in European countries to preserve wood from decay. The attention that has been given to this subject in Germany, France and Great Britain is no doubt due in a great measure to the growing scarcity of timber in these countries, as with increased value naturally comes increased care and science in its use.

The usual way of protecting wood from decay is by impregnation with a preservative. The Southern Pacific Railway treats piles 110 feet long by evaporating the moisture at 230 degrees and filling its place by creosote at the same temperature. This process is said to be perfect. All microbes, bacilli and animalculae avoid creosote; and the teredo, which makes nothing of the hardest timber, is said by the Portland Oregonian to "stand off and gnash his teeth in rage as he contemplates the creosote treated piling" of the Southern Pacific. This process is expensive, one dollar's worth of creosote being required to preserve one cubic foot of wood. A cheaper process is under experiment in France, where engineers have succeeded in extracting the sap by electric osmosis and sucking into its

place an antiseptic mixture of borax and resin. This method is known as the Nodon-Brettonneau process, and is referred to elsewhere in this issue. Another inventor whose work is still in the experimental stage has examined extracted sap, and finding it to be albuminous and coagulable, has taken a hint from hard boiled eggs and solidified the sap in place. He claims that, without making the wood hard to work, he has removed the possibility not only of decay but of shrinkage.

The capacity for interminable shrinkage is the great fault of wood, and, for any fine and permanent use of the material, something must be done to overcome this fault. The trouble seems again to lie in the sap, so that woods treated with preservative after extraction of the sap should be comparatively free from shrinkage. The simple practice of soaking in a pond, which is practised in country places, has this end in view; and it is far more effective than kiln drying. The rapid swelling, when exposed to moisture, of kiln dried wood which has received no other treatment, as compared with the comparative steadiness of soaked boards, seems to point to the sap as the seat of the hygroscopicity of wood. To dry in a kiln a board with the sap in it is to deprive it temporarily of its moisture, so that it comes out of the kiln hungry, and paint cannot keep from it the moisture it craves.

It is of little use to specify a condition of dryness which cannot be made permanent. The wood is bound to attain the same proportion of moisture as the air of the house. The air of inhabited houses is found to contain usually about 10 per cent. of moisture. Flooring or other finish ought therefore to be brought into the house when the building has reached as nearly as possible its normal condition of dryness and temperature, and the wood ought to contain about 10 per cent. of moisture. It is easy to ascertain the proportion of water. If a piece is cut from the middle of a floor board, weighed, heated till dry and weighed again, the difference between the two weighings is the weight of moisture, and this should be ten per cent. of the weight of the piece when dried. If, as is usually the case, there is little hope of precision in the proportion of moisture in the wood, and good work is still sought, there remains the expedient of specifying quarter cut wood. It is the unequal consistency in the structure of the rings that makes tangentially sawn boards warp under shrinkage.

The summer wood in the annual ring is thicker than the spring wood, and takes up and parts with more moisture than the spring wood. In tangential boards these portions of the ring are often opposed to one another, and the consequence is warping. There may also be a great width of summer wood and consequently great shrinkage. If quarter cut wood is used the shrinkage will be much less and there is nothing to cause warping, for the structure is the same on both sides of the board.

There is this to be said in addition in favor of seasoning by soaking, that it is as effective to prevent decay as it is to prevent shrinking and swelling. It is the sap and soluble portions of the wood that form the food of the fungus of disease, and when these are washed out the liability to decay is gone.

In the matter of inflammability, much may be

done by treatment of the wood. The application of silicious compounds has in experiment produced such results in England as to cause a decrease of 50 per cent. in fire insurance rates for buildings in which the wood is treated in this way. Experiments by the Belgian government exhibited the efficiency of treating wood with a solution of ammonium salts. Ammonium phosphate was found to be the most efficient. By the production of a non-combustible vapor, fire, which attacked untreated wood in less than two minutes, was retarded in its action for forty minutes. Such retardation is all that can be expected, but it is sufficient to reduce the inflammability of wood so that it is no longer a menace to the building in which it is used, but will instead prevent the spread of flames for such reasonable time as is necessary to let the fire department get to work. Thorough impregnation with ammonium phosphate, at 25 cents a pound, would be expensive, as it would require about four pounds to the cubic foot, but thorough impregnation is not considered to be necessary. It is evident that, with proper care and the application of science, wood can be made more efficient than it is as we use it. Greater care is the natural accompaniment of greater value, and the time is not far distant when the value of wood will rise to the point of *finesse* in its use.

EDITORIAL NOTES.

ALMOST each day emphasizes the necessity of some authorized inspection rules by the lumber interests of Canada. As we have before intimated, it might not be practical to adopt rules applicable to the trade of the whole Dominion—provincial rules, corresponding as nearly as possible to each other, would probably be preferable. We believe such rules to be the greatest necessity of the hardwood lumber trade of the present day, and this necessity will become intensified as our export trade increases. It might be in order to enquire what is being done in this direction by the Ontario Lumbermen's Association?

JUDGING by statements appearing in the United States press from time to time, the opinion is prevalent in that country that it was only during recent years that the Ontario government placed any restrictions on the exportation of saw logs. This, however, is entirely erroneous. The writer was recently shown a copy of the crown timber regulations dated August, 1851, in which appeared the following clause:

"All saw logs cut in future upon public lands, if exported from the province, shall be paid for at double the rates mentioned above respectively."

It would seem that nearly fifty years ago the provincial authorities were alive to the wisdom of fostering home manufacture.

A REPRESENTATIVE of the CANADA LUMBERMAN who recently returned from a trip to the Pacific coast was much impressed with the prevailing activity in all lines of business, but particularly in the lumber trade. From the Lake of the Woods, whose mills supply the Manitoba market, to Victoria, every saw mill plant was operating to its full capacity, and the most general complaint was inability to keep pace with orders. While the British Columbia manufacturers expect

to be able to considerably increase their foreign shipments of lumber, it is to Manitoba and the Northwest and to the mining districts that they look for the greatest expansion of trade. Already the consumption of no small quantity of lumber can be attributed to mining work. The residents of the coast province are a truly loyal class of people, who have unbounded faith in the future of western Canada.

THE granting by the Dominion government this year of over six million dollars as subsidies to railways will certainly have an important bearing upon the development of the lumber and pulp industries in this country. It will insure the building of railways in districts heretofore unreached, and which abound with spruce and pine timber. It will also open up undeveloped mining and agricultural lands, which in turn will augment the lumber requirement. The extension of the Ottawa and Gatineau Valley railway may be taken as an example. When the road is completed to Eagle Bay, on Victoria Lake, there will be opened up timber berths heretofore inaccessible only by the Ottawa river, which route is, however, almost impracticable owing to the lack of improvements on the tributaries. The distance to Ottawa by this undesirable water route is 550 miles, while by rail it would be little more than one-third of that distance.

TWO TREASURY DECISIONS.

IN the weekly report of United States treasury decisions bearing date of August 3 there are two of interest to the Canadian lumber trade. One reports the supreme court decision on that famous Burlington case involving the question as to what is dressed lumber. It dates back before the passage of the present tariff act. The merchandise involved consisted of planed, tongued and grooved lumber on which duties were assessed at the rate of 25 per cent. ad valorem as a manufactured wood. The importer protested, claiming that the merchandise was entitled to free entry as dressed lumber. The board of general appraisers sustained the collector, but in the U. S. circuit court the case was decided adverse to the government, and the U. S. supreme court now holds that although the lumber in question had been tongued and grooved, it had not ceased to be dressed lumber and had not become a new and distinct manufacture; in other words, that tonguing and grooving is an additional dressing but does not make it a different article. This decision will serve as an interpretation to the present act on this point.

Another decision is as to the duty of staves, beveled and chamfered. The digest of the opinion of the general appraisers is as follows:

The goods are spruce barrel staves about eighteen inches long, four inches wide and three-eighths of an inch thick. They were assessed for duty as manufactures of wood at 35 per cent. under paragraph 208, act of July, 1897, and were claimed to be dutiable at 10 per cent. under paragraph 202.

The ordinary staves of commerce are flat sawed or split strips of wood, while these in question have been beveled at the ends, chamfered or grooved for the headings, and fashioned or bent into form ready to go into the "dry" barrel for which they were intended. They are still, however, nothing more nor less than staves.

Paragraph 202 reads: "Pickets, palings, and staves of wood, of all kinds, ten per centum ad valorem."

Under this provision the goods are entitled to classification as staves, and the protest sustained accordingly.

MR. ELIHU STEWART.

THE accompanying portrait will introduce to readers of the CANADA LUMBERMAN Mr. Elihu Stewart, who has recently received an appointment by the Dominion Government as Chief of the Bureau of Forestry. Mr. Stewart was born at Sombra, Lambton County, Ontario, was educated at the public school and at the Normal school in Toronto, and admitted as a Dominion and Provincial Land Surveyor in 1872. For over twenty years he has been engaged on Ontario



MR. E. STEWART,
Chief of the Dominion Bureau of Forestry.

and Dominion surveys, extending from the Ottawa river to the Rocky Mountains, and has thus obtained a wide knowledge of the various woods of Canada. He has frequently been employed to make estimates of standing timber, and has acted as arbitrator in timber matters involving hundreds of thousands of dollars. He has also had some experience as a lumberman on his own account, and is well posted on practical forestry. Mr. Stewart was for two years president of the Association of Land Surveyors; and was one of the founders of the Canadian Magazine, to which he has been an occasional contributor.

Mr. Stewart is a resident of Collingwood, Ont., where he has served as a member of the council and as mayor of the town. A Liberal in politics, he contested the riding of North Simcoe in 1896 against the late Dalton McCarthy, but was unsuccessful.

Heavy forest fires are reported from British Columbia, where considerable timber along the Crows Nest Pass railway has been destroyed. The Canadian Pacific railway lost a quantity of logs.

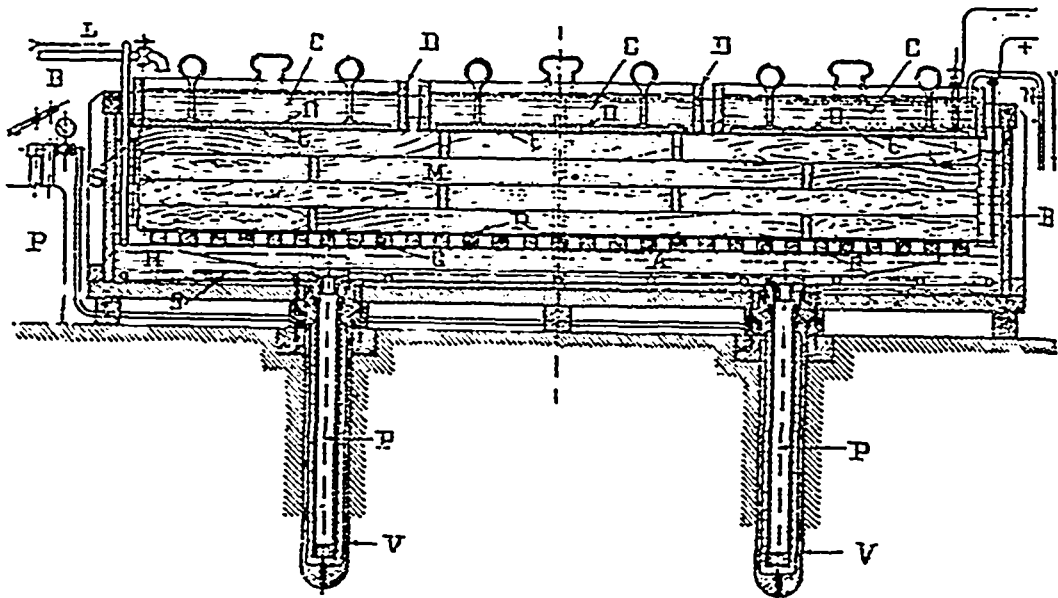
THE RETAILER AND Wood-Worker

NEW PROCESS OF FIRE-PROOFING WOOD.

The best method of impregnating wood in order to render it incombustible, said Mr. C. J. Hexamer, Ph. D., in the course of a lecture recently delivered before the Franklin Institute, London, is the following:—In the first place, use only well-seasoned timber, thoroughly air and kiln-dried, and impregnate, whenever possible, the finished articles. Then place the wood in a strong metal chamber, specially made for the purpose, capable of withstanding strong pressures, and provided with a lid that closes it hermetically. The receptacle is surrounded by a steam jacket, so that the temperature in it can be regulated at will. The interior of the chamber must be thoroughly dry before the wood is placed there. The lumber should not be steamed before saturating it, although this custom is still prevalent in many creosoting works. The laborious tests of Drude have conclusively proved that steaming wood before impregnating it with solutions tends to lessen its absorptive powers, and therefore it should be as dry as possible. The temperature in the receptacle is slowly increased above the boiling point of water, and is maintained until all the moisture in the wood has been expelled and the mass is equally heated throughout. The chamber is then hermetically sealed and the temperature in it is reduced to 60 degrees C., and held there. The air in the receptacle is now extracted as quickly as possible by means of an air pump. The more complete the vacuum, the better will be the ultimate results. Few persons have any idea of the amount of air contained in porous substances like wood. After the air in the wood has been removed, a solution of water glass of about three times its volume of water, previously heated to 60 degrees C., is sprayed into the vacuum. This method of injection is used to remove the air in the solution. The solution must not be too dilute, but, at the same time, not so thick as to refuse to enter the finest tissues of the wood, in other words, it must be of such consistency that after impregnation it is completely retained in the pores. It is almost needless to add that the final results depend on the completeness with which the moisture, sap, and air have been removed from the wood before impregnation. For ordinary purposes a block of wood can be made fire-resisting by repeatedly soaking it in a water-glass solution, and, when dry, coating it with a mixture of the liquid and cement. To return to the process, when the wood has become saturated with the solution at normal conditions, hydrostatic pressure of about ten atmospheres is applied and maintained for three hours, this drives the liquid through the mass. Numerous experiments made in Germany for the conservation of wood have conclusively demonstrated that the "hydrostatic

pressure method" is the only one to be relied upon for forcing solutions to the innermost parts of a log.

The question now becomes, What to use to precipitate insoluble silica from the solution of soluble glass, thereby forming an insoluble compound in the fibres? A dilute solution of hydrochloric acid was tried at first, but this affected the wood, and would in practice, attack metal receptacles. Gaseous and liquefied carbonic acid were experimented with, also calcium chloride, until finally a solution of ammonium chloride—a very cheap substance—was used with excellent results. This produces in the very fibres of the wood a gelatinous precipitate of silica. To apply this secondary liquid, the water-glass solution is



THE NODON-BRETONNEAU PROCESS OF SEASONING TIMBER BY ELECTRICITY.

drawn from the receptacle, and the before-described process is repeated with the ammonium chloride solution. In practice it may be found advantageous to use a second receptacle, removing the wood from one to the other. The pressure should be applied gradually in the second treatment, so as not to force out the first solution. After the precipitation has been completed, the wood is thrown into a stream of running water to dissolve and wash out the salt near the surface, and is then slowly dried. It may be of interest to add that, as a secondary result of the experiments by using stronger solutions than are necessary for fire-proofing purposes some beautiful specimens of petrification were obtained; a piece of filter paper was turned into stone, and looked like a delicate film of some pure white siliceous mineral. It is therefore possible that this process can in future be utilized in the arts to petrify organic substances.

The firm of Buckle, Beckett & Hemstock are building a new saw mill at Nipissing, Ont.

SEASONING TIMBER BY ELECTRICITY.

SINCE the references in the July number of the CANADA LUMBERMAN to a method of seasoning timber by electricity, as adopted in Europe, several communications have been received from subscribers requesting further information. We therefore publish an illustration of the apparatus for the purpose as patented by Messrs. A. L. C. Nodon and C. A. Bretonneau, of Paris, France, who have introduced further improvements into their patent.

The apparatus used remain essentially the same, the modifications being improvements of detail, including the employment of a stronger current of electricity, and in modifications of the apparatus to make it more efficient, lighter and easier to handle. The improved bath is composed of a solution of 10 per cent. of neutral borate of soda and 5 per cent. of resinate of soda maintained at a temperature of about 55 degs. C. during the process. The electric current which causes the electro-capillary changes, and causes the sap of the wood to be extracted by the borate, has an electromotive force of 50 volts, sufficient to traverse 50 to 60 centimetres of wood and complete the operation in five hours. The solution of borate and resinate of soda penetrates by reason of the electro-capillary action, into the whole mass of wood, and produces a

thorough extraction of the sap, which is carried towards the anode and remains mixed in the bath. To facilitate the manipulation of the woods, and to obtain a controllable immersion, according to the progress of the treatment, the patentees have devised the arrangement represented in the illustration, in which H indicates the bath, S the heating coil, L the water supply pipe, O the negative pole (cathode). The frame of double lower bottom rests on the support, A, upheld by the pistons, P, of an hydraulic jack, V. This latter is manipulated by a pump, R, and the pistons, P, can either be raised or lowered as desired. When the latter is raised, the wood can be placed on the frame, and then be plunged in the vat, B, by lowering the pistons. The same action reversed serves to withdraw the wood after treatment. The upper porous partition C has also undergone a modification in its construction to make it lighter and less expensive; it is now composed of a number of sashes or frames, D, the bottom of which is formed of strong sail-cloth, t, fixed with brass nails. These frames are lighter and more convenient to handle, and are conductively connected together.

HINTS ON BOILER STEAMING.

By GEORGE W. HORTON.

WOULD you suppose that the cracks in the brick base wall of a chimney stack would have any perceptible influence upon the draft? This was the question asked me by the manager of a large saw mill, as we walked about the premises, and proceeding, he said: "Here for many years we have run a battery of eight boilers, and until within a couple of years have had no trouble to keep up all the steam we required, but about two years ago we began to have trouble." About that time you put in the band saws, I suggested. "True," said he, "but that was not the trouble, or at least the whole of it; in looking for it we came to notice that the brick part of the stack, which as you see is about twelve feet square and twenty high, had a number of large cracks in it, and concluding that this had something to do with causing the trouble with the draft, we set the mason at work and filled them up; this made considerable difference, but did not fully cure the evil, and we began another hunt, and finally found it in our methods of firing. Our boilers were fired with sawdust fed by carriers, which delivered the sawdust in large heaps on the grates, so we had a smothered fire all the time, which prevented the blaze from reaching the fire sheets; this had been our custom for years, and we had no trouble, but in those days we had green sawdust of the coarse character produced by our circular saws. Of late, by reason of the forest fires which compelled us to cut our timber to save it, our stocks have been more largely of old logs which have lost their pitch through lying in the water so long, and the sawdust is therefore less inflammable while more water-soaked; of course, the finer sawdust of the band saws made considerable difference, and this we strove to overcome by burning more slabs. But we did not reach the seat of our trouble until we adopted a new system of firing. Just take a look into this fire box; observe how clean and intense the blaze, and the grates are almost clean; you can see every part of them; here was the trouble with our draft; we had been trying to make steam with smothered fire. We have had no trouble since we began to feed the sawdust only so fast as it would burn; where we formally used eight or ten loads of slabs with the sawdust, we seldom use any after we get the fire started in the morning and the grates well heated; a couple of waggon loads of slabs is about all we use in the day's run."

Here is a hint for sawmill men who have trouble with their draft. Don't try to keep too heavy a body of fuel, especially sawdust, on your grates. A quick blaze under the fire sheets is better than a large body of dead smoke. The sawdust from a band saw being so much finer than that from a rotary, unless the grates are very fine in the mesh, there should be a mixture of fine wood with it, and here is where the "hog" is of great utility, converting the slabs and edgings into just the proper size to aid the finer sawdust and intensify its flame. Mix them together with a shovel on the hearth, or with carriers if you feed automatically, not allowing too large an accumulation on the grates, and my word for it, you will get rid of the largest cause of the trouble in keeping up steam.—Lumber Trade Journal.

The Gilmour Company, of Trenton, Ont., are rebuilding their dam on the Scootamatta river.

QUESTIONS AND ANSWERS.

"(1) In log run, can a buyer measure out the defects; if so, to what extent? (2) If there are two or more splits in the end of a board, can a buyer measure them out; if so, in what grade? (3) In purchasing a lot of elm logs "log run," can the hearts be measured out if they are not sawed out? (4) Should it be necessary to give the manufacturer orders to saw the hearts out? (5) Are there any persons appointed by the government or by the Lumbermen's Association for the inspection, grading and measuring of lumber?"

To the above questions we have received the following replies: (1) No; if defects were not of such a nature as to throw the board into mill culls it should be accepted at its full measure, unless it was reduced for bad edging, barky or waney, for instance. (2) If the splits are straight and do not extend more than two feet from the end of the board, and the board is not less than 10" wide, the board should be accepted in No. 1 grade. (3) A dealer has no right to measure out the heart unless it is specially agreed that he do so in scaling the logs. Hearts, as a rule, are always sawed out of hardwood by manufacturers. This is seldom or ever done with pine, hemlock or spruce. (4) If the logs were hardwood I do not think it should be necessary to give orders to have the hearts cut out. It has always been the custom to cut out the hearts unless instructed to leave them in the lumber. This rule should be reversed in manufacturing pine, hemlock or spruce. (5) There are no government inspectors in Canada, and every manufacturer makes his own inspection.

COST OF POWER IN BOX FACTORIES.

We too often hear the remark made that power in a box factory costs nothing.

We thoroughly agree with the above when the box factory is a shook factory, and the same is located in the woods or adjacent thereto, where slabs, kindlings, shavings and sawdust are a nuisance and a drug, and absolutely valueless as a money producer. But when the box factory is located in the heart of a large city, power is worth something, in fact is worth a great deal. Because the kindling wood brings a big price, sawdust and shingles are burned, and are usually referred to as nothing of value.

The shaving press is now an established fact around a box plant, and what it means towards the solution of the sawdust and shavings problem those alone know who have used the press.

The uses for fixed sawdust and shavings are many, but one thing above all else are they good for, viz., insulating ice-houses. We know this to be a fact.

As to the value of shavings as a fuel, compared with coal. On a three days' continuous test the following facts were learned, viz., that 8,000 pounds of baled shavings at \$2.50 for 2,000 pounds, or if bales are full weight, 12½ cents a bale, in other words, \$10, with the aid of an extra fireman at \$1.50 a day, will produce steam about equivalent to three tons of soft coal at \$3.90 a ton, \$11.70. In other words, a ton of 2,000 pounds of shavings at \$2.50 is worth practically three-fourths of a ton of coal at \$4.00.

Where a man can dispose of shavings at 15 cents a bale, he can better afford to buy coal and

sell his baled shavings and sawdust. In large cities the progressive, alert box man does not boast that his power costs nothing, and when thinking of putting in machinery the question he first asks is, "How much power does it take?"

A machine that daily uses 40 h.p., taking it from an engine with a capacity of say 100 h.p., that machine costs in dollars and cents to run through the year \$1,440.00 on a basis of \$4.17 coal, ten hours a day for 309 days. Every horsepower added to a plant, when a market can be had for fuel and shavings, means outlay. The shavings and saw dust may cost nothing, but they are worth, like any other commodity, what they will fetch.

The failing of the average box man when making up estimate, is to repeatedly refer to this and that as "costing nothing." Every movement of the men, every turn of the saw, every stick of waste costs something and represents some value in material and time and labor expended upon it, all of which gets into the payroll and expense account.

If box men realized, concludes Charles Cristadoro in the Barrel and Box, that to turn a board over costs money, many items of expense now ignored as too trifling for account would be considered and duly charged for.

TAMARAC WANTED.

THE Ontario Forestry Department has received a letter from the Imperial Institute of London, England, replying to the enquiry made some time ago as to the possibilities of developing a lucrative export trade in tamarac between Canada and the mother country. The letter states that gum of any kind is practically unknown in England, gum-chewers being confined to Canada and the United States. But there is a good demand for tamarac for medicinal purposes, and a number of British importers have evinced a desire to see some samples of Canadian tamarac. Mr. Southworth is collecting samples and will forward them in a few days. He is also sending over some specimens of the Canadian shumach, which is used largely in England for tanning purposes. At present the European market is supplied by Sicily, and even Toronto firms secure their shumach from there. But in the Ontario north country there are large quantities of shumach cumbering good agricultural land and which is of no use whatever to settlers. Mr. Southworth sees no reason why these apparently useless bushes cannot be turned into a profitable staple of export.

GERMAN METHODS.

THERE are no factories in Germany where cheap furniture is produced, it is made in small quantities at the workshops of individual joiners, who are supplied by wood-working establishments with the different parts in an unfinished state. These joiners work at a very cheap rate. It may pay American manufacturers to export high-class articles of wooden furniture to Germany, provided these are tasteful in design and superior in finish to those made in Germany. They should be of superior workmanship and solidity, and, if anything, somewhat cheaper in price than similar articles of German make. It must be taken into account that such American furniture will have its original cost price increased by about 20 per cent. of the selling valuation here, owing to the cost of packing, freight, insurance, and the German import duties.

THE NEWS.

—Mr. James McLean, of Bryson, Que., is erecting a large sawmill at Fort Coulonge.

—Mr. Wm. Beatty, planing mill, Harriston, Ont., has been succeeded by Mr. J.E. Merriam.

—Mr. J. C. Shields, of Ashcroft, has selected a site at Kamloops, B.C., for a sawmill, and will commence work at once.

—Mr. H. H. Drake, of Red Deer, N.W.T., is moving to Innisfail, where he will establish a sawmill and lumber yard.

—Messrs. Donald Fraser & Son, of Fredericton, N.B., have completed a new sawmill at Calhoun, on Lake Temiscouata.

—The new Hastings sawmill at Vancouver, B.C., started up last month, having been rebuilt in a most substantial manner.

—Mr. Arthur P. May, timber merchant, of Vancouver, B.C., has made the first importation of Australian hardwood into that province.

The Canadian Pacific Lumber Co., of Port Moody, B.C., have established yards at Vancouver, under the management of Mr. J. McLellan.

—Mr. Josiah Watson has purchased the Coleman sawmill and stove factory at Seaford, Ont., and is having the establishment thoroughly overhauled.

—On Saturday, July 19th, the employees of the James Robertson Manufacturing Co., of Toronto, enjoyed their annual excursion to St. Catharines.

—The Wm. Tyler Lumber Company, of Vancouver, B.C., are making extensive alterations and improvements to their mill, including the building of dry kilns.

—Mr. John A. Christie, late manager of the Assiniboine Lumber Co., of Brandon, Man., has gone to British Columbia, with the intention of taking up his residence there.

—The sawmill of R. & W. Conroy, at Deschenes Mills, Que., which was destroyed by fire on July 7th, was valued at about \$125,000, the capacity being 175,000 feet per day.

—The Roxton Novelty Chair Company, of Roxton Falls, Que., has been incorporated, to manufacture furniture, chairs, etc. Wilfred Wood, of Roxton Falls, is interested.

Messrs. J. W. Shannon & Co., of Prince Albert, N.W.T., have put in a saw and planing mill plant on timber limits secured by them 20 miles north on the Saskatchewan river.

—The sawmill of the Rathbun Company at Tweed, Ont., closed down for the season recently, having cut 47,000 railroad ties, 135,000 feet of lumber, and 475 cords of slab-wood.

—The Brunette Sawmill Co., of New Westminster, B.C., are about to increase the capacity of their mill and build a planing mill and dry kilns. Mr. Lewis is manager of this company.

—The sawmills and yards of McLaren & McLaren at East Templeton, Que., are now lighted by electricity, a 500 light plant having been installed by Gariock & Goddard, of Ottawa.

It is reported that the extension of the Atlantic & Lake Superior Railway to Gaspé Basin, Que., is to be entered upon immediately. The road will pass through immense spruce forests, which will thus be opened up.

The United States Consul General at Montreal, in a recent report on the forests of Canada, estimates the area under timber in the Dominion at one and one-quarter million square miles, or over 37 per cent. of the total area.

—Statistics show that Canada imported from the Southern States during the six months ending June 30th, 1899, 628,000 feet of sawn timber, 9,022 cubic feet of hewn timber, 12,000 feet of boards, and manufacturers of lumber to the value of \$6,736.

Mr. J.G. Scott, manager of the Pacific Coast Lumber Co., New Westminster, B.C., reports a very satisfactory trade in red cedar lumber and shingles for the first seven months of this year. The shipments have exceeded those for the whole of last year.

Work is being rushed on the calcium carbide factory now adjoining the mill of the Bronson-Western Lumber Company at Ottawa. The main factory will be built entirely of stone and steel, and will be five stories high, its dimensions being 276 x 70 feet. The entire plant will cost

\$225,000, and it is expected that it will be in operation by the first of the year. The works will run day and night and will give employment to over one hundred men.

The Sturgeon River Improvement Co. is the title of a new concern, consisting of J. R. Booth, Wm. Anderson, C. J. Booth, J. F. Booth, Ottawa, R. Booth, Pembroke, A. A. Young, Cache Bay, and A. G. Browning, North Bay. The capital is \$18,000.

—Mr. J. R. Eaton, of Orillia, Ont., has completed a large addition to his mill, increasing its capacity by about one-third. Several new machines have been added and an additional dry kiln erected. He has commenced the manufacture of doors for export.

—As already announced, the Rat Portage Lumber Co. have in view the erection of a large sawmill at Winnipeg. Should the South Eastern railway be completed to Rainy River this year, the erection of the proposed mill will be commenced immediately, otherwise it will be delayed until next year.

—Messrs. A. L. & D. G. Mackay, loggers, of New Westminster, B.C., are managing a logging camp at Tipella, at the head of Harrison Lake. They report that there are excellent limits back of Tipella. So far the timber has been rather inaccessible, but the trail has enabled the loggers to get out about 5,000,000 feet.

—An exchange states that Mr. J. H. Veno, a mill man of extensive experience, is negotiating to obtain possession of several hundred acres of cedar timber limits lying about two and one-half miles from the Fraser river, in British Columbia, and accessible by a trail to shipping. Mr. Veno is understood to have an option on the property.

—Mr. D. C. Cameron, manager of the Rat Portage Lumber Co., states that they have been delayed in opening their yard at Brandon, Man., owing to their mills being crowded with orders. The scarcity of men has been a great drawback, and a short time ago a representative of the company went to Montreal to engage one hundred men.

—Mr. D. Mann, of the firm of Mackenzie & Mann, Canadian railway contractors and promoters, recently sailed from Vancouver for the Orient. It is said that the firm have been offered contracts for building two lines of railway in China, one from Shanghai to Nankin, a distance of 250 miles, and the other from Hankoo to Shaugtu, some 600 miles.

—Mr. David Richards has just completed a fine sawmill at Richardville, N.B. The main building is 150 x 35 feet, equipped with gang and rotary, re-saw and edger, manufactured by Carrier, Laune & Co., of Levis, Que. In the wing of the building, 65 x 30 feet, are situated three shingle machines, a clapboard machine and planer. The engine house is built of solid brick, with galvanized iron roof. The capacity of the mill is 55,000 feet of lumber per day.

PERSONAL.

The death is announced of Mr. C. W. Crawford, sawmill owner, of Westfield, N.B.

Mr. John McLean, of the firm of McLean & Son, sawmillers, Wingham, Ont., recently had the misfortune to break one of his legs.

The sympathy of many friends has been extended during the past month to Mr. Geo. Niebergall, the well known lumberman, of Staples, Ont., upon the death of his wife.

The Department of Crown Lands at Toronto was recently advised of the death of Mr. John Crowe, a wood ranger in the Rat Portage district, who was drowned in the Mimikon river.

Mr. R. E. Gosnell, who for years was Provincial Librarian for British Columbia, and who about two years ago compiled a valuable work entitled "The Year Book of British Columbia," has entered the ranks of journalism, having purchased the Greenwood, B. C., Miner. Mr. Gosnell is an able writer, and we predict for him a high degree of success in his new field.

The Dominion Government has established a Bureau of Forestry in connection with the Department of Interior. Mr. E. Stewart, of Collingwood, has been appointed chief inspector. Mr. Stewart is a land surveyor, and while engaged in the practice of his profession gave much attention to the various woods of this country. He is said to possess a knowledge of forestry which well fits him for his present position.

TRADE NOTES.

Messrs. Baldwin, Tuthill & Bolton, of Grand Rapids, Mich., are sending to their friends and customers a circular enumerating a number of causes for the cracking and breaking of saws, and calling attention to their 100 page manual on saw-fitting. Every saw-filer should have a copy of this manual.

The Victoria Lumber & Manufacturing company, of Chemainus, B.C., have just given to the Wm. Hamilton Manufacturing Co., through their Vancouver agency, the contract for the machinery to complete their mill to make it a double header. This was the original intention when the mill was built, but in the past only one end has been operated. Now Mr. Palmer, the energetic manager of the company, has decided to increase the output by fitting up the balance of the mill. The work is expected to be completed by December.

CUTTING UP BOX STOCK.

The process of cutting up stock involves the nicety of judgment which can only come from a natural talent developed by more or less experience. In one factory which I lately visited, the head of the cutting-up department had been with the concern for twenty-five years, and for a large portion of that time in his present position. Some of his men had been with him nearly as long, and every one in his department had been educated under his eye. It is really astonishing what results can be produced by the right man at the cutting-up saw, in the way of economy of stock; and, on the other hand, it is astonishing how much loss can be made in the same place, with no one in the shop really able to point out just exactly how it can be avoided. The man at the cutting-up bench can knock off a large amount of profit without any one but a thoroughly practical man in his line being able to tell how he does it.

In some shops, one man cuts up nothing but stock for one kind of boxes at a time, and only a part of the stock for one box, at that, say, for instance, the sides, top and bottom, or those parts which are all of one length. This involves more or less extra handling of a certain amount of the stock, for it is not possible ordinarily for a board to be all cut into one length of stock without waste, unless the board is sound enough so that the whole length can be used. Therefore, when a man cuts only one length, in order to save material, he must pass a part of his board to another cutter, who cuts something of a different length, shorter or longer.

In one factory which I lately visited, where there were a large number of cutting-up saws in operation at once, each man cut several different lengths, cutting for several sizes of boxes at the same time. Even then it occasionally occurred that he could not use all the board economically. In such cases, the piece was carried automatically to another cutter, whom he knew could use it to advantage, or at least a part of it, and he, in turn, if necessary, could pass the rest along to another cutter. I honestly believe that the greatest chance for a leak in the making of a box is right here, at the cutting-up benches, and that a good many box makers do not realize it, because they are not themselves experts in that particular branch.

There is where the sawing of waste in material should be made, more than at any other stage in the making of a box, and the amount of refuse that the really first-class cutter will leave in a day in one of the large factories is really remarkably small. Of course, this results, to a large degree, from the fact that in a large shop he has so many different sizes to cut to. For instance, I was in a shop, not long since, where they were making simultaneously, seven different sizes of boxes, for one packing house at the Chicago stock yards, and this did not include a number of different sizes of boxes for canned goods, which they were making for the same concern. The seven sizes of boxes were all coarse, cheap things for bulk meats, cured in different ways, including boxes for shipping cooked hams and cooked corn beef, not in cans, but in the whole piece, to retail dealers in the city and country within a reasonable distance. Taking note, afterwards, I saw several of these boxes at a railway station, waiting for the express train. They were not made with tight joints on the sides, bottom or top, but with solid ends. They were little better than an extra tight crate, with a hand hole near the top of each end for handlers to carry them by. Each box contained a certain number of real hams or "picnic" hams, or pieces of

wood beef, all thoroughly cooked and ready to slice for sale, and each ham or piece of beef securely wrapped in one or more thicknesses of heavy brown paper, so as to be safe from flies or dust.

In the factory of which I speak, several sizes of these boxes were made to suit the size of the retailers' orders, and from these boxes up to a large heavy pork box, for holding dry-salted pork, all were being made at the same time. It may be noted here that the size of the box often has something to do with the quality of the lumber used, such is the range in quality, unless a piece of board has a large, loose knot in it, or some other kind of a hole or a rotten piece too soft to hold together long enough to safely carry its contents to some distance, little or nothing is wasted in the making of the larger or coarser boxes. So, when a board comes to the cutting bench, it takes but a glance for the cutter to decide what to put it first cut into. If he has a clean, solid piece he can cut off without involving waste in the next cut, he takes care for some size or quality of box requiring that kind of stock.

The next piece may be too poor to accompany the first piece, or there may be a loss on it, or a spot that must be cut out. But, even in this respect, the cutter does not always do the cutting out, as perhaps it may be better when the piece passes to the rip saw, to size up the sides, top and bottom of the given box, so he may leave the defective parts in, simply cutting the right length, depending upon the man at the rip saw to make it good enough for the box for which he designs it. If the cutter has not sizes enough on his list or on his orders to use up the pieces he is obliged to make, those pieces left are sent on the carrier to some other part of the shop where they are carefully piled up and marked for future use.

Before getting thus far, I ought to have said more with regard to the thickness of stock. For instance, the bulk of the lumber bought for any box factory is sawed one inch thick, or, really, an inch and one-sixteenth, although there is a good deal cut that is barely an inch thick. Next comes stock one and one-quarter, one and one-half and two inches. The box makers buy but little over two inches thick, although occasionally some is wanted for special purposes, usually to be resawed into several thicknesses of thin lumber, which can be obtained in no other way. As a general rule, the saw mills make but very little lumber, suitable for the box makers, which is under one inch thick, although, in some kinds, like poplar, basswood, cottonwood and gum, the box makers get more or less of the low sortings of thin stock, cut perhaps for other purposes, but which is too poor to ship for anything but boxes. In cottonwood and gum there is, besides, considerable cut thin purposely for the box makers, but, at the same time, very much of both kinds of wood has to be resawed for the smaller and finer boxes.

I think the bulk of the one-inch lumber bought by the box-makers is used full thickness, after simply dressing. They buy the inch and one-fourth and inch and one-half and resaw into two, three or four thinner pieces. As I have already said, the two-inch and thicker is almost invariably bought to be resawed, but, of course, some two-inch stock, as well as some of the thinner kind, the inch and a-half and inch and a-quarter, is used for making crates, of which more will be said later on.

To return to the regular process through which the lumber goes: It may be said that, usually, after leaving the cutting-up bench, it goes to the rip saw, where the ripper takes one, two or more pieces of the cut-up lumber side by side, rips off enough from the last piece to leave the whole just wide enough for a top or bottom or side, and, perhaps, at the same time, the pieces for the ends, putting just enough together to make the parts of the box ready to nail up.

Here, again, is a great chance for saving or losing. Where two, three or more parts are required for a side or bottom, the ripper must be able to lay his hand on a last piece that shall so nearly answer the purpose as to require the least amount to be ripped off, or else he must take a piece so wide that after ripping off what is needed for the purpose, he will have a piece left to go into the next side or whatever he is making. It also depends upon him to cut out the defective parts in the boards without wasting any of the good lumber. He may sometimes be obliged to cut out such a wide piece from the middle of the board, in order to get rid of a bad defect, in which case he sends the piece cut out back to the cutter to be cut over for a smaller box.

It is plainly to be seen that there must be a man of the best judgement at the rip saw bench, as well as at the cutting table; for between the two men, more than anywhere else in the mill, lies the making or breaking of the concern. Between them more than anywhere else in the shop, after the buying of stock, lies the portion of profit and loss, provided always the man who makes the price on the finished box has figured properly.—Packages.

SAW GRINDING.

THE following suggestions are taken from the Timber Trades Journal, London. They are contributed by M. Powis Bale, M.E., author of several works on wood-working methods, and are presumed to represent the latest English practice:

For many years after the introduction of emery wheels or discs, a prejudice existed against their use for sharpening saws, and, to some extent, this prejudice still survives. It arose chiefly from the fact that many of the wheels made were unsuited to their work, and the user had little knowledge as to their proper management. In the following paper some hints will be given as to their management, which may be found serviceable to users, and although these remarks relate chiefly to emery wheels for sharpening saws, they can in most cases be equally well applied to emery wheels used for other purposes. In the first place, it is important to secure an emery wheel of good quality, and of a texture and hardness well suited to the work. This is not so simple a matter as it may at first appear, owing to the quantity of cheap, inferior wheels—chiefly of continental make—with which the market is flooded.

For saw-sharpening purposes a moderately soft wheel should be preferred, since it will cut quicker and heat and glaze less than a hard one; it will, however, wear out a little sooner. Some wheels are harder on their surface than further in, and they do not cut their best until they are worn a little, but the best class of wheels may be obtained of any required degree of hardness, as it is only necessary to vary the proportions of the compound used in their manufacture. Sometimes a good wheel will be condemned as bad when the fault may arise from its being unsuited to the work it is used for, or it may have been run at an improper speed. In establishments where a variety of work is done, it will pay well to have a fair assortment of wheels, and not make one do duty for all kinds of operations. When the wheel is secured, before mounted it should be examined to see that it is perfectly sound. This may be ascertained by tapping it lightly with a hammer; if sound it will ring, if it does not ring it should be closely examined, and if any cracks or flaws are detected, however slight, the wheel should be discarded, as it would be dangerous to work.

To lessen the chance of accidents from cracks, the manufacturers of some wheels insert in them a web or webs of brass wire, proportioned in strength to the size and weight of the wheel. They claim that the insertion of the wire does not in any way affect the cutting power of the wheel, as it wears away in advance of the emery. The wheel should be mounted so that it fits easily on the spindle, and thus have room to expand should it become warm. Large washers or flanges, say about one-third the diameter of the wheel, should be fitted on either side. These are preferably made slightly concave on their inner side, and a thin piece of packing—rubber or leather will do very well—should be placed between them and the wheel. Care must be taken that they are not screwed too tightly, as the wheels are liable to crack, especially if a little warped, and they are then, of course, exceedingly dangerous. The saw-sharpening machine in which the wheels are run should be well made and substantially built, the main frame being cast in one piece. In the best machines the emery wheel is mounted on a small steel spindle running in bearings or centers fitted in a counterbalanced swinging carriage. This carriage is brought down to the saw by hand, and, by means of a quadrant, can be set at an angle to give any desired lead to tooth; stops are also fitted to regulate the depth of the gullet and the pitch of the tooth. The countershaft is usually placed at the back of the machine, and the band (belt) giving motion to the emery disc passes over an idle pulley and then directly on to a small pulley on the emery disc spindle. In the place of single pulleys the writer strongly recommends the use of adjustable pulleys of different size, or small cone pulleys, so that as the wheel wears less in diameter its speed can be increased in proportion.

The question of speed is a factor of immense importance in the successful working of emery wheels. The best cutting speed will vary somewhat in wheels of different character; but a speed of from 4,500 feet to 5,500 feet per minute at the periphery of the disc will usually be found suitable. A speed midway between the figures, say 5,000 feet per minute for the 12-inch wheel, which is generally used in sharpening saws, may be accepted as a standard. When the wheels are worn down considerably in diameter a smaller set of side washers may be substituted.

For sharpening saws, wheels of a thickness of three-eighths to three-quarter-inch, with a diameter of 12 inches, will be found the most suitable sizes. If a deep gullet be required, a moderately coarse grit wheel should be employed, and for topping and finishing the teeth, a fine grit wheel used; the teeth should not afterward be touched with a file, as some operators will persist in doing. It will pay well to have a set of emery wheels mounted on different spindles, so that they can readily be slipped in and out of the machine. In sharpening saws, in fact in any kind of emery grinding, the pressure of the wheel on the material to be removed, or vice versa, should be light. It is a very erroneous idea that heavy pressure produces rapid cutting; it simply results in the glazing of the wheel and the hardening or burning of the teeth, which will often crumble and break at the points when in work.

The teeth of saws should never be allowed to get short and stumpy, as they will do less work and take more power to drive, as the saw has a greater tendency to bind owing to the want of sufficient room in the gullets for the sawdust to escape rapidly. If a saw has been badly kept and it is necessary to remove much metal, instead of forcing the wheel as hard as possible on the saw-plate, and making it become red or blue from the heat, the operation should be lightly repeated several times in succession. With the object of preventing the case-hardening of the teeth points, sometimes a jet of water is allowed to play on the tooth being sharpened, but with ordinary skill and care this should not be necessary.

In America deep gullets are often cut with a milling cutter arranged with an automatic feed, and a stop adjustment to regulate the depth of gullet; but if a saw be kept in proper order the use of this tool is unnecessary. The same may be said of the fly press sometimes used in this country, which, in punching out deep gullets, often springs or cracks the saw plate, and is at the best a very bad practice.

STEAM PIPE COVERING.

A NOVEL method of testing the efficiency of coverings for steam pipes electrically is in use. A section of the steam pipe is heated electrically by means of a coil of wire in oil within the pipe. The amount of energy necessary to keep the pipe at a definite temperature is measured. Since the energy supplied is just enough to maintain a constant temperature, it must therefore equal the heat lost from the pipe. Hence, from the electrical energy supplied the heat lost from the outside of the pipe can be calculated. The new method, which was recently described by Prof. Chas. L. Morton before one of the American learned societies, would seem to be worthy of attention.

CANADA'S COMMERCIAL AGENTS.

FOLLOWING is the official list of Canada's Commercial Agents in Great Britain, British possessions and foreign countries:

- J. S. Larke, Sydney, N.S.W., agent for Australasia.
 - G. Eustace Burke, Kingston, Jamaica, agent for Jamaica.
 - Robert Bryson, St. John, Antigua, agent for Antigua, Montserrat and Dominica.
 - S. L. Horsford, St. Kitts, agent for St. Kitts, Nevis and Virgin Islands.
 - Edgar Tripp, Port of Spain, Trinidad, agent for Trinidad and Tobago.
 - C. E. Sontum, Christiania, Norway, agent for Sweden and Denmark.
 - D. M. Rennie, Buenos Ayres, Argentine Republic, agent for Argentine Republic and Uruguay.
- In addition to their other duties, the undermentioned will answer inquiries relative to trade matters, and their services are available in furthering the interests of Canadian traders.
- J. G. Colmer, 17 Victoria street, London, S.W., England.
 - Thomas Moffat, 16 Church street, Cape Town, South Africa.
 - G. H. Mitchell, 15 Water street, Liverpool, England.
 - H. M. Murray, 40 St. Enoch Square, Glasgow, Scotland.
 - Harrison Watson, Curator, Imperial Institute, London, England.

WOOD PULP DEPARTMENT

PULP AND PAPER PRODUCTION IN THE UNITED STATES.

The United States Department of Labor recently undertook the collection of data relative to the production of paper and pulp during the six months of 1898, from January 1 to June 30. Out of a total of 723 plants in the United States which were in active operation during this period, statistics were obtained from 644 of these. By the word plant is meant one or more mills in the same locality, owned or operated by the same person, firm or corporation. From 644 plants complete returns of production were secured, while for 79 plants an estimate has been made which is believed to approximate closely the actual facts.

The tables compiled show that during the six months there were produced in the 644 plants from which reports were secured, 994,087 tons of paper and 619,383 tons of pulp, the value of the paper being \$48,689,880, and that of the pulp \$13,428,542. In this connection it should be noted that the pulp produced was almost entirely consumed in the manufacture of the 994,087 tons of paper, and that therefore its value should be added to that of the paper in order to secure total value of product.

Of the 619,383 tons of pulp produced, 367,744 tons were ground wood pulp, 173,420 tons were sulphite fibre, and 74,379 tons were soda fibre, while 3,840 tons of cotton fibre were produced.

FIBRE FROM SAWDUST.

HERE is a new and original idea that reaches The Paper Mill from a well-known chemist and government official. He has evidently solved the problem of manufacturing fibre for paper-making from sawdust and shavings. The detailed account of his discovery is given below :

"The special object of my process is to prepare a fibre suitable for paper making from planer

shavings, sawdust and the like. Of course I know that this is an old, old problem, upon which effort and money have been expended without developing a commercial process, but I have looked into the matter with care and discussed it with people in a position to know about the difficulties in the way of a successful process, and particularly with a man who had considerable experience some years ago in trying to make fibre from sawdust. As a result of my work I have found that there are three chief difficulties in the way of commercial success: First, the small yield of fibre; second, the excessive amount of solution required in boiling; third, the difficulty of washing the fibre, which required the use of large amounts of wash water, resulting in the production of large quantities of solution too weak in soda to pay for the recovery of the soda. If there are other serious difficulties I have not yet come across them, and I would be glad if you would point out any other obstacles in the way of commercial success.

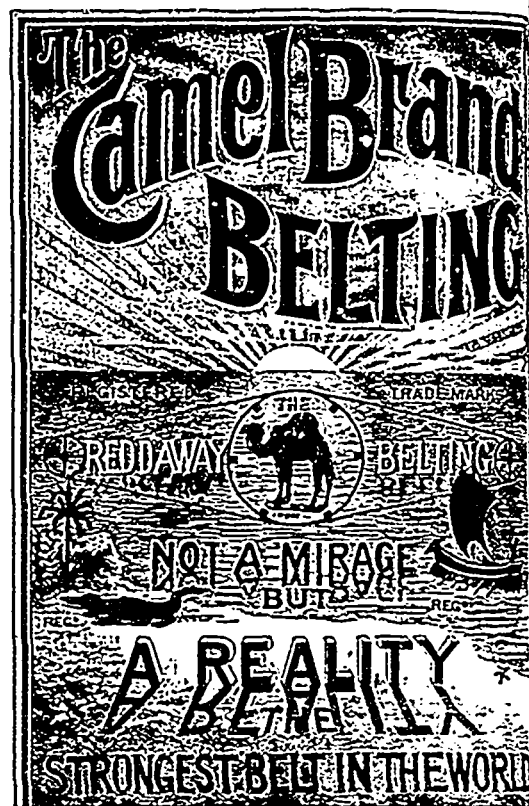
In my process I provide means for overcoming all three of these difficulties. The small yield of fibre by the ordinary soda process is due to its being too drastic when applied to sawdust on account of the state of the subdivision of the wood. Cellulose is chemically very inert and yet under the severe treatment of the ordinary soda, boiling considerable cellulose, is dissolved and wasted. My treatment is comparatively mild in connection with my method of washing the resulting fibre.

Ordinarily wood is entirely submerged in soda solution during boiling. Owing to the light and bulky nature of shavings and sawdust this requires a very large volume of solution, but I have ascertained by trial in the laboratory that this is not necessary and that a much smaller volume of a weaker solution will do the work. Finally I wash the resulting fibre in the boiler by means of steam generated within the boiler, and thus the soda is removed from the fibre and a concentrated solution obtained.

Now, just what I do is as follows: I have found that shavings and sawdust will hold from three to four times their weight of water without showing any visible excess of liquid. Therefore I mix them with about this amount of soda solu-

tion and charge the mixture into a closed boiler of special construction. The charge rests on a perforated false bottom. Into the space below the false bottom is put water or weak soda solution, leaving a clear space above the liquid. There is also a clear space above the charge. There is an open passage through the charge by means of a tube communicating between these two open spaces. There is also an ordinary vomiting arrangement to circulate the solution through the charge.

The boiler being charged and closed, the liquid in the bottom is heated to give steam pressure and a solution is circulated for a sufficient length of time. The circulation is then stopped and steam from the liquid in the bottom of the boiler is used to wash the soda solution out of the fibre.



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For this purpose it passes up through the open tube to the top of the boiler, where there is a condensation and the water passes back through the fibre to the bottom of the boiler, removing in its passage the soda and dissolved intercellular matter from the fibre. This can be continued until all the soda is removed, but it would undoubtedly be more economical to stop the boiling before the complete removal of the soda, and finishing the washing outside of the boiler in the usual way. The weak soda solutions thus produced could be returned to the bottom of the boiler in a subsequent charge. By this method of operating the soda is obtained in a concentrated solution with but slight mechanical losses.

The advantages of this proceeding are these: The wood can be disintegrated with a minimum amount of soda and the soda obtained at the end of the operation in a concentrated solution. The steam treatment not only removes the soda solution from the fibre, but the completion of the process takes place under comparatively mild conditions, favorable to saving cellulose from being dissolved. The boiler can be heated by a direct fire at a considerable saving.

The operation as I have above described it forms a complete process, but I think that it would be cheaper to subject the shavings to a preliminary treatment to remove a large part of the intercellular matter as follows: I mix the

shavings and sawdust with three or four times their weight of the soda liquors from the closed boiler and heat the mixture in an open boiler. I have found by actual trial that such a mixture can be heated several hours above the boiling point of water, and yet retain a large part of the water, and that about half of the intercellular matter is thereby rendered soluble. On the large scale I would proceed as follows: I would have a large upright boiler, open at the top and arranged at the bottom somewhat like an iron ore roaster (I am familiar with ore roasting), and provided with steam coils or jackets for heating. I would charge the mixture of shavings and soda liquor into this open boiler, and heat it at the bottom. With a moderate height of boiler I am sure the bottom could be heated to 230° to 240° F. The water that is given off as steam at the bottom is condensed in the cooler part of the charge. When the charge at the bottom is sufficiently cooked it is withdrawn and fresh mixture added at the open top, and these operations are repeated. This process is then carried on as a continuous operation. The product of this process is to be put into a press and a limited amount of water added. On applying pressure nearly all the soda is removed in the form of a concentrated solution, which can be evaporated for the recovery of the soda. Or it may be put into a centrifugal machine and slightly washed. The material is

then put into the closed boiler and subjected to the operation.

All the points in the complete process as I have described it, except the circulation of the liquid in the enclosed boiler, have been demonstrated in my laboratory in a small way, and I know that they are operative. I can, if you wish, give a mass of details of these tests, for I keep full records of such work, but perhaps it will be sufficient at present to say that they show that the strength and amount of soda solution required are both low, and that the yield of fibre would be comparatively high.

Of course, planer shavings and sawdust, being waste products, are much cheaper than pulp wood. Nearly all my experimental work has been upon white pine shavings and sawdust. A further advantage is the fact that they are produced in abundance at and near many cities where there are local paper mills which could use the fibre produced to good advantage.

While I have described this process as applied to sawdust and shavings, I think that the principles of the closed boiler cooking could be applied with profit in the ordinary process of boiling wood chips in soda solution. I have tried to set this matter before you clearly and concisely, but if I have not done so I would be glad to make any additions or to answer any questions that I can."

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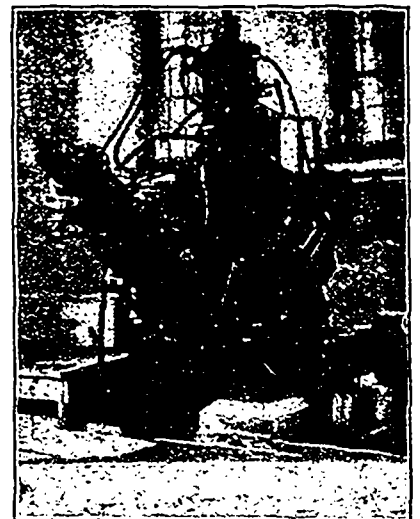
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ITALIAN PULP TRADE.

ACCORDING to the official returns for the first two months of this year (the latest available), the importation of wood pulp into Italy is largely upon the increase, says the Paper Mill. During the period mentioned, 64,714 quintals of "cellulose" (presumably chemical pulps) of a value of 1,941,420 lire, or about \$77,659, were imported. For the corresponding period of 1898 the figures were 50,747 quintals, valued at 1,522,410 lire (\$64,096), so that the increase during the twelve months is well over 20 per cent. The two months' import of mechanical pulps amounted to 1,372 quintals of moist (50 per cent.) and 11,086 of dry, respectively valued at £823 and £6,651. No moist pulp was imported during January and February, 1898, and only 10,047 quintals of dry, valued at £6,028, so that in this latter branch the annual increase is about 10 per cent.

The South Gardener pulp mill at Gardner, Me., is announced to have shut down owing to scarcity of logs.

PULP NOTES.

In 1898 Norway supplied Great Britain with 141,455 tons of ground wood pulp, Canada 36,359 tons, Sweden 24,043 tons, United States 13,475 tons, and Holland 2,584 tons.

The imports of wood pulp by Great Britain during the past five years were as follows: 1894, 279,765 tons, £1,432,400; 1895, 297,295 tons, £1,574,302; 1896, 327,080 tons, £1,684,667; 1897, 388,304 tons, £1,930,761; 1898, 404,842 tons, £1,894,394.

Prof. Grover, of Orono, Me., finished last month his hydraulic survey to the Tobique river, in New Brunswick, from its mouth to a point about three miles above the narrows. It is believed that upon his report will depend the carrying out or otherwise of the proposed paper and pulp mill project, in which A.H. Hilyard, of St. John, and others are interested.

The Pensacola Paper Mills have started in successful operation, manufacturing a high grade of manila paper from pitch pine pulp. The material used is waste from saw-mills, heretofore burned in slab piles. The mills have a capacity of five tons a day, and will give employment to fifty men. The pulp is made by a secret chemical process owned by the company, a discovery of R. Thomas, manager of the mills.

The Paper Mill comments as follows regarding a shipment of pulp from Canada:—The recent shipment from Canada to England of the largest cargo of wood pulp that ever crossed the sea, has aroused the enthusiasm of our English contemporaries. We are pleased to learn from one of these enthusiasts that "the discharging of this immense wood pulp cargo was effected in a comparatively short time, and that the cargo has turned out to be perfectly sound condition."

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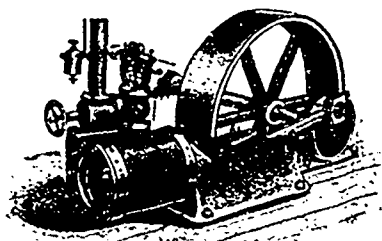
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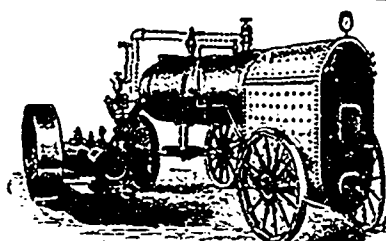
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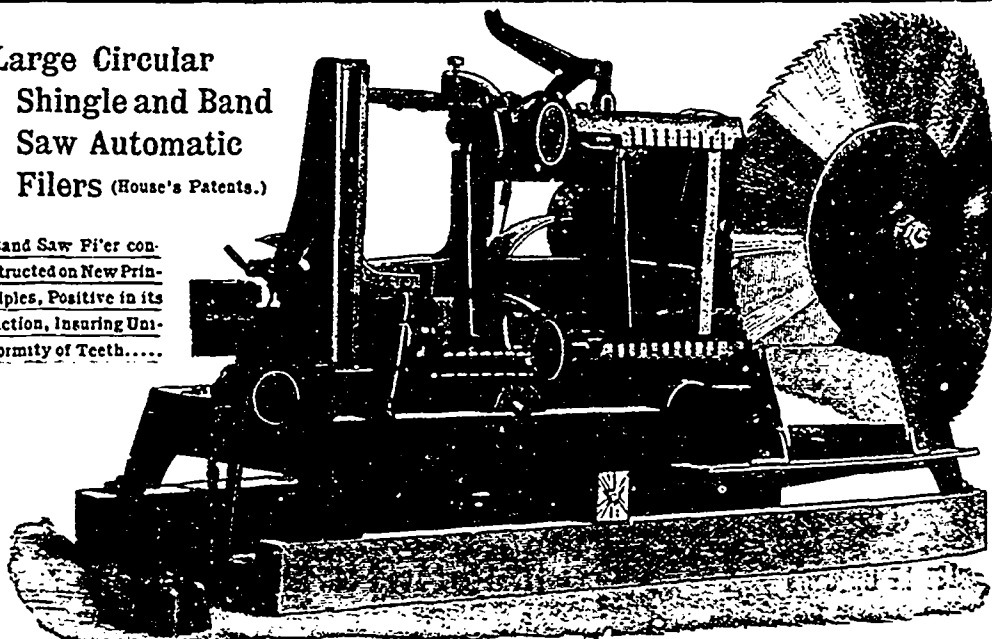
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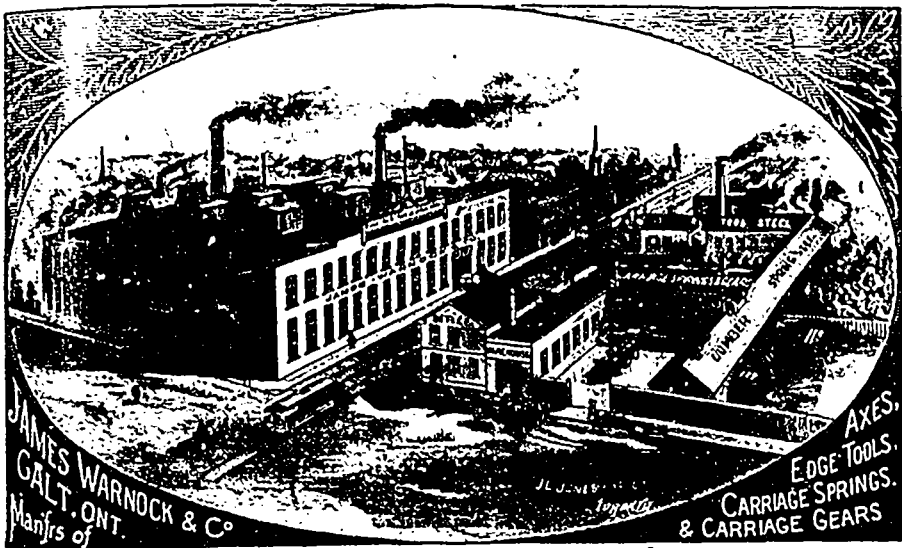
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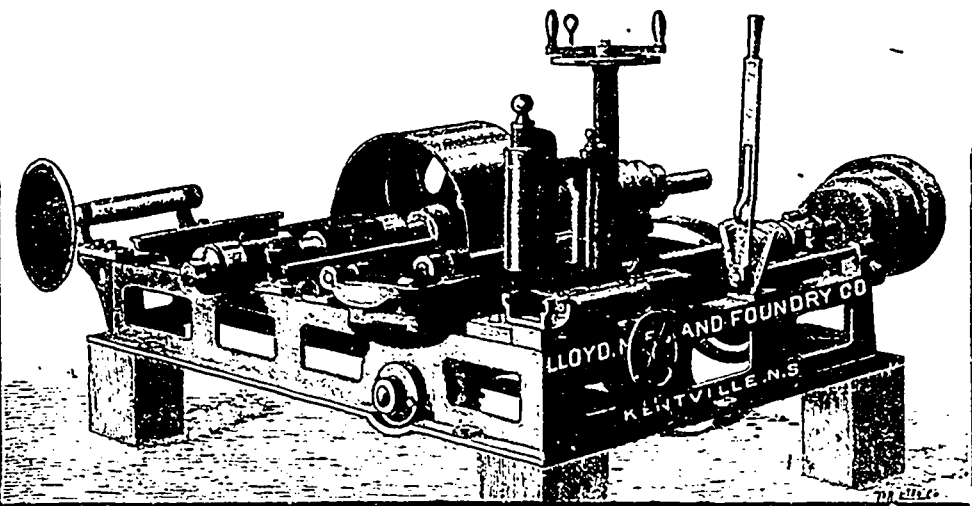
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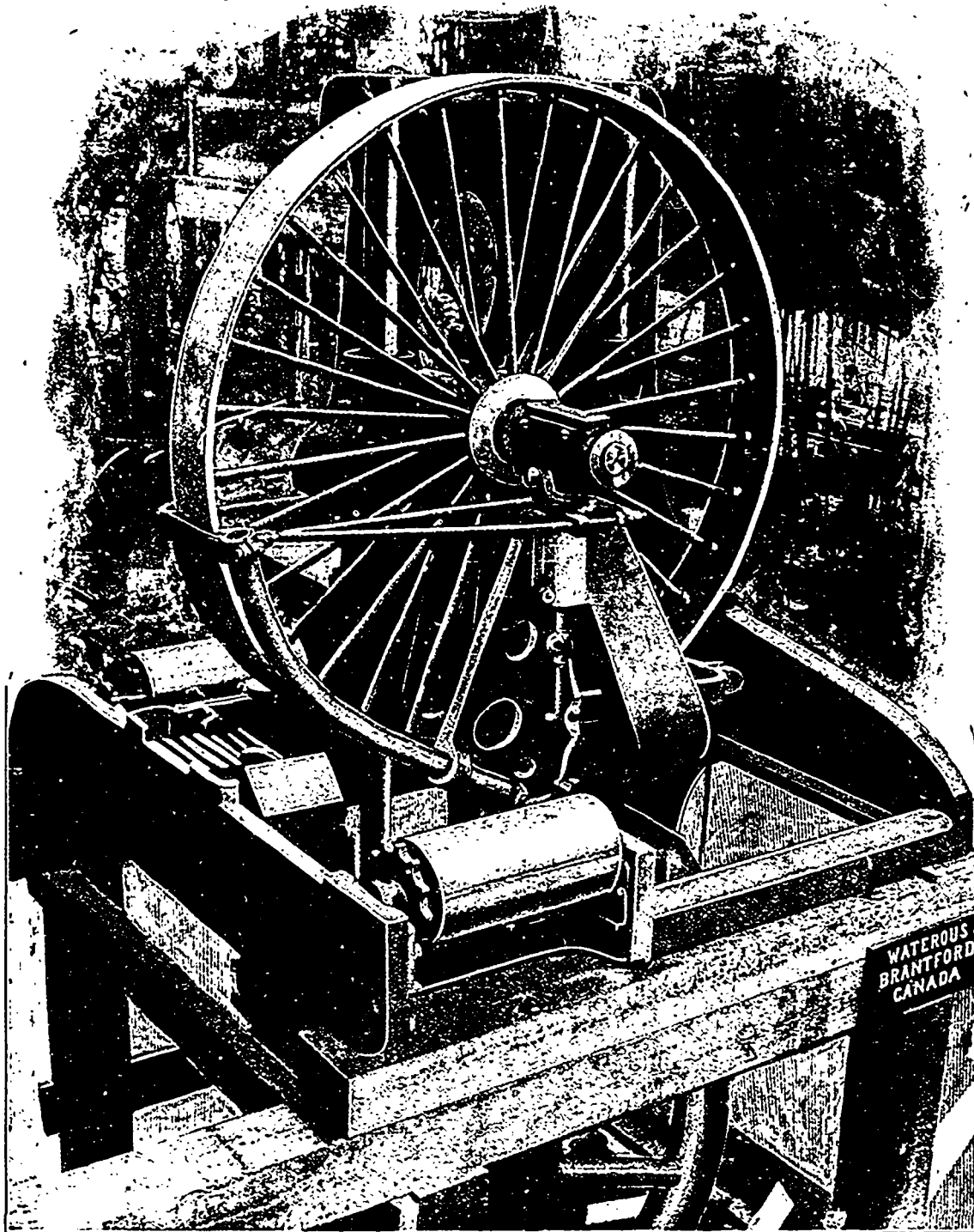
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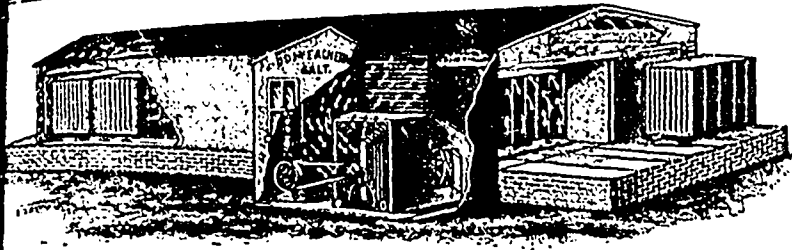
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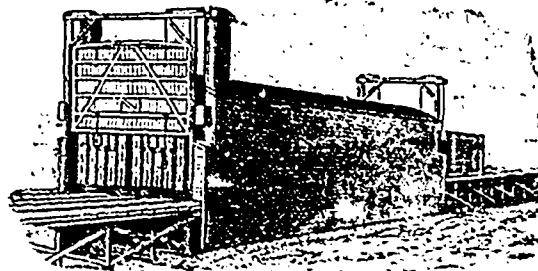
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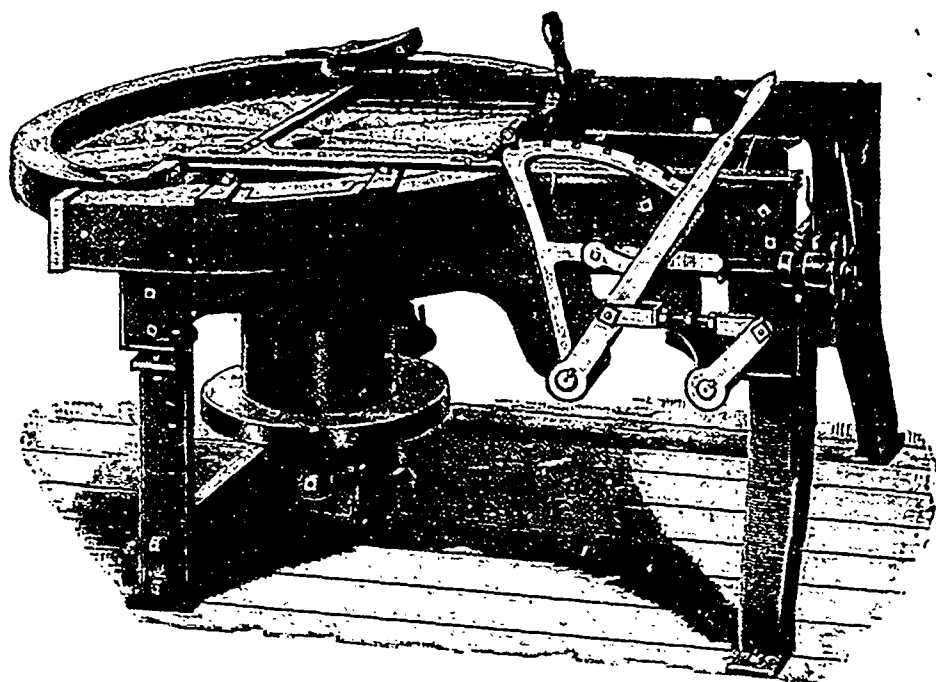
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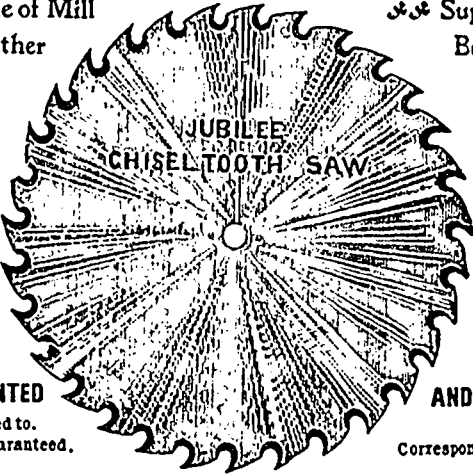
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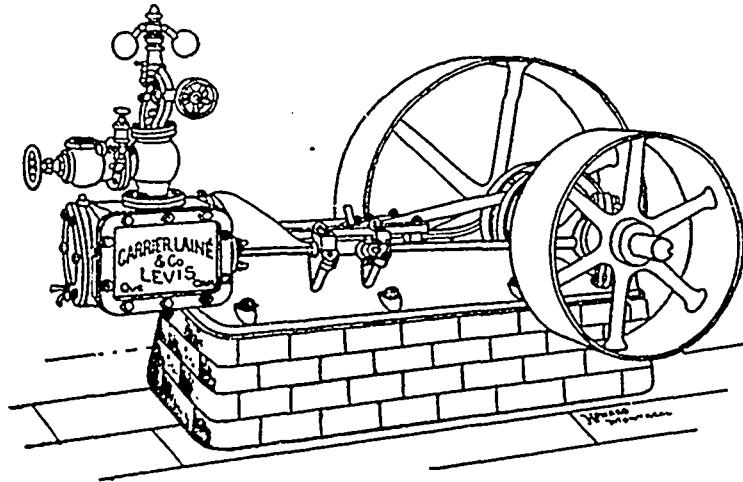
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