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THE CANADA LUMBERMAN

WOODWORKERS' MANUFACTURERS' AND MILLERS' GAZETTE

TORONTO, ONT., JUNE, 1898

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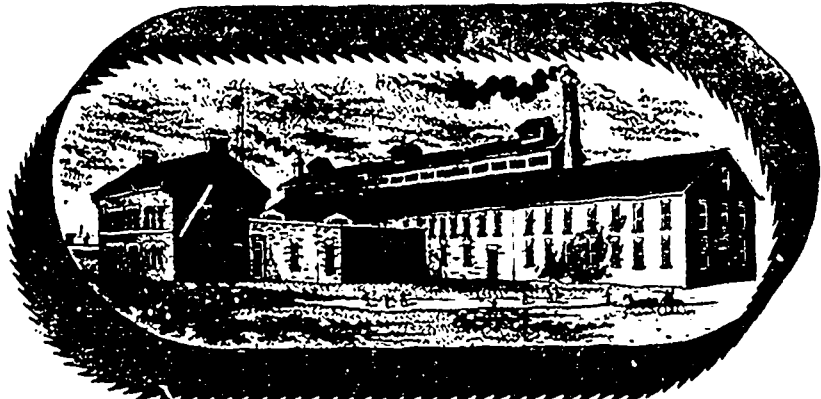
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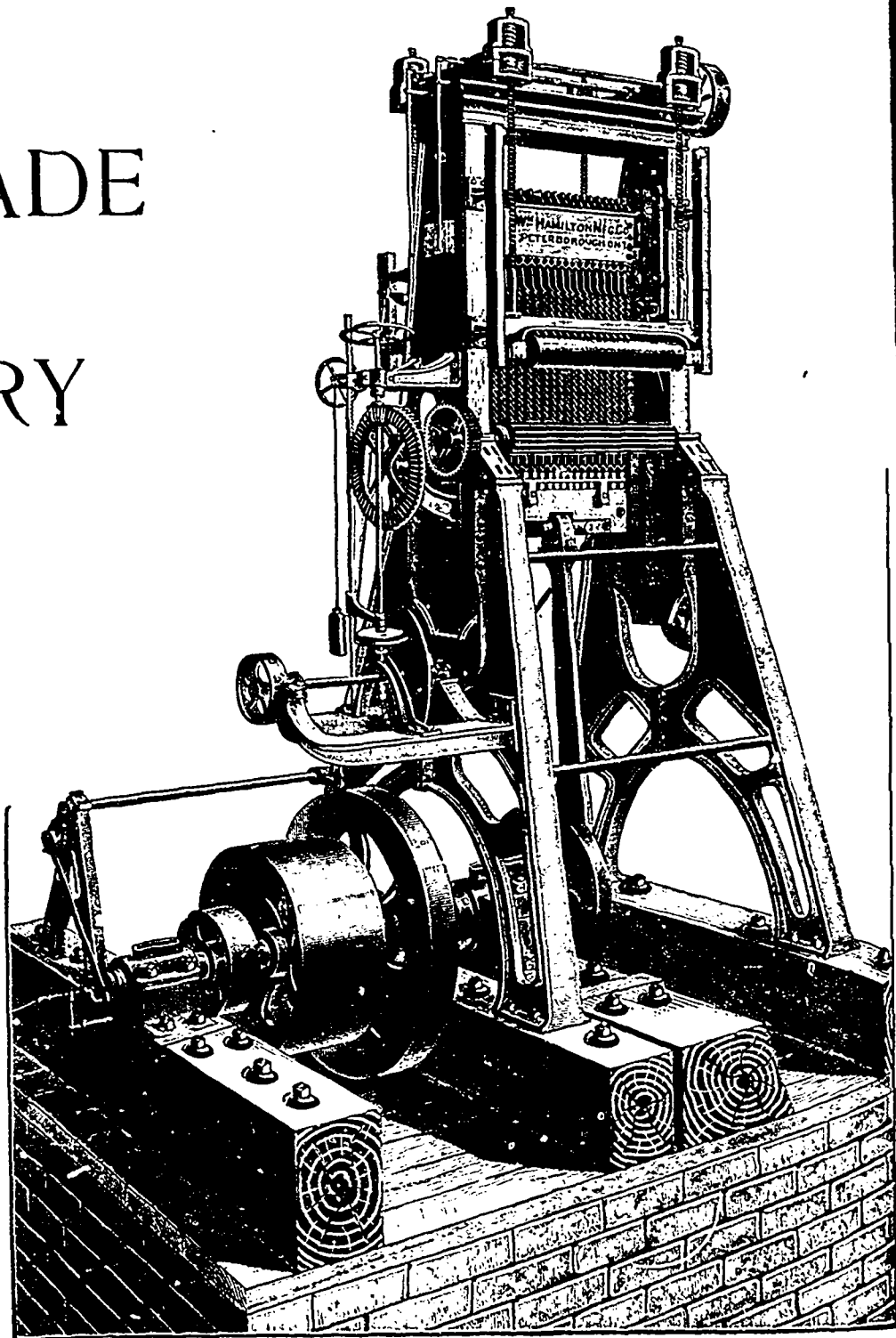
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THE CANADA LUMBERMAN

FIGURE XIX.
PAGE 6.

TORONTO, ONT., JUNE, 1898

TERMS, \$1.00 PER YEAR.
Single Copies, 10 CENTS.

A DISTINGUISHED LUMBER DEALER.

ONLY twelve years ago Mr. E. H. Lemay, whose portrait appears on this page, established himself as a wholesale lumber dealer, yet in that brief period he has risen to a position almost of preeminence in the white pine trade of Canada. To-day he stands as one of the leading exporters, with a record which could only have been attained by unceasing perseverance, sound judgment, and close attention to business.

On the first of January last Mr. Lemay celebrated the fiftieth anniversary of his birthday. For years previous to 1886 he was in the employ of the E. B. Eddy Company, of Hull, Que., who, as our readers know, were among the pioneers in the lumbering industry in Canada. While thus engaged he obtained much practical experience which was found very valuable in after years, and to which is due, in some degree, the success which he has attained. He also enjoys the distinction of being one of the best salesmen in Canada.

It is said that Mr. Lemay carries the largest stock of lumber in Canada, often holding as much as thirty million feet, representing a valuation of half a million dollars. Although operating no saw mills, he frequently purchases the entire cut of large mills in the Ottawa valley and elsewhere, shipping the stock to Great Britain and the United States. At the present time his attention is mostly devoted to the former market, owing to the depression in the United States trade incidental to war complications. His selling agents in New York are Messrs. W. M. Crombie & Co.

The progress which has been made of late years in the export of lumber from Canada to European countries is due to the enterprise of a comparatively few exporters, none of whom deserve greater credit than Mr. Lemay. It is hoped that for many years to come he will continue to enjoy the prosperity which has characterized his trade during the past twelve years. Personally, he is held in high esteem, and many warm friends have been made by his kindly and charitable disposition. His headquarters are in Montreal, where he is a member of the Harbor Commissioners, appointed by the Canadian government, a member of the Board of Trade and Corn Exchange, and a director in several large companies.

The Winnipeg Commercial says that a side industry of the Rat Portage Lumber Company is the sash and door factory, yet it has a capacity of 100 doors and 250 windows per day, having almost doubled its output in the last year by the addition of more machinery. The machinery is all specially made, of most approved type, and is constantly being added to. It is charge of C. A. Moore, formerly of Brandon, Man., and some 20 or 25 men and boys are employed. The requirements of the trade keep the staff constantly busy to keep up with orders, and it is quite possible that eastern or imported stock will be practically shut out.

PETITION FOR AN IMPORT DUTY ON LUMBER.

We are pleased to notice that the recently re-organized Lumbermen's Association of Ontario has promptly set to work to try to remedy some of the disabilities from which the trade is suffering. The large importations of cheap grades of lumber from the United States are seriously affecting the interests of Canadian lumber manufacturers in western Ontario and the western provinces, and it is fitting therefore that the Association should have immediately turned its attention to this important subject, by forwarding to Sir Wilfred Laurier the following memorial:

TORONTO, ONT., April 18th, 1898.

To The Right Honorable Sir Wilfrid Laurier, G.C.M.G.,
C.B., Ottawa, Ont.

DEAR SIR,—At a recent meeting of the Lumbermen's Association of Ontario, a resolution was passed unani-



MR. E. H. LEMAY.

mously approving of the principle of charging the same duty on lumber entering Canada as charged by the United States on lumber entering their country, viz., \$2 per M. feet on sawn lumber, 30 cents on shingles and 25 cents on lath, the same as in the wood schedule of the Dingley Bill.

But in order that the change may be made in our tariff with as little friction as possible, we offer for your approval an amendment to clauses 328, 329 and 611, as set forth in the enclosed memorandum. The members of the Association expressed their willingness to have free trade in lumber, but under existing circumstances of a \$2 duty on lumber entering the United States market, and the Canadian market free, the conditions are too onerous and one-sided to be endured with equanimity for any length of time. The situation is aggravated by geographical and transportation problems incident to our extended frontier and by the import and export of saw logs. After mature consideration, and giving due weight to all the interests involved, we pray that your government may take action by amending the three clauses in the Canadian Tariff now submitted to you.

A strong feeling of injustice rests in the mind of lumbermen since the passing of the Dingley Bill," and as the

time has come round when redress may be obtained, we have the honor to ask that you will be pleased to consider favorably the request now submitted by the Lumbermen's Association of Ontario.

A copy of the suggested amendments to the tariff appeared in the CANADA LUMBERMAN for May.

A memorial has also been sent to the Dominion government by the legislature of British Columbia asking that an import duty be imposed on lumber.

As no changes whatever have been made in the tariff at the present session of the Dominion Parliament, the lumbermen's views have not been met. It is to be hoped, however, that in the near future the government will remove the disadvantage which Canadian lumbermen are now placed under by reason of the free admission of lumber from the United States.

The duty of the lumbermen whose interests are affected is clear. They should strengthen the hands of the Association which is fighting their battles. The evils which affect the trade can be righted only by united effort. The time has arrived when lumbermen should cultivate each other's acquaintance, and in matters of this kind affecting their welfare, act in association rather than as units. In all other branches of manufacture and commerce the wisdom of this course has been recognized and acted upon. The lumber trade must either fall into line or suffer the consequences.

The first step in this direction has been taken in the re-organization of the Ontario Lumbermen's Association. The machinery is now available for united action, but more than this is required. The Association cannot successfully accomplish its purposes in behalf of the trade unless large numbers of the lumbermen of the province become members and take a personal interest in its affairs. The Association aims to promote the interests of the trade as a whole and as far as possible of every man in the trade—hence it should receive the active support of all.

The work of the Association must not be thrown entirely on the shoulders of the officers and a few enthusiastic members. If that is done, these men will in time become weary and discouraged under their unnecessarily heavy burden, and the Association will collapse or relapse into desuetude. An association with a weak and half-hearted membership will fail to command respect or to exert much influence. On the other hand there are few objects that cannot be accomplished by an association which has the active support of a majority of the best men in the trade, and which does not act spasmodically as the result of a suddenly threatening danger, but is constantly on the look-out and putting forth efforts for the welfare of the interests of its members and the trade which it represents. With the assistance of all progressive lumbermen the Ontario Lumbermen's Association may become such an organization.

THE LIFE OF BAND SAWS.

By A. J. BURTON, Algonquin Park, Ont.

[ARTICLE II.]

THE length of time a band saw will live and do good work depends much on the care in handling; they are much like a man or a horse—if you feed them properly and they are well taken care of, they will usually last a long time. If a saw is all right on being received from the maker, and if the filer looks it over every second or third time it comes off the mill, and keeps it all the time in proper shape it will run until worn out, without a crack, and cut at the rate of 50 M per day, providing it does not meet with accidents.

I ran four saws one year on a Clark band mill in Pennsylvania, cutting from 50 to 55 M per day of hemlock, and left them all in good order less the wear, except that one of the saws had two cracks in front edge, which was my own fault, as I let the tension get out too near the front edge. But saws cutting logs containing iron or stones, or getting pulled off wheels, or ill-used in the file room or by reckless sawyers, will last and do good work only in proportion to the care they receive. The filer must keep the tension even, the saw flat and straight, crown in back even, use right amount of swage, not allow case hardening from any cause, see that the lap is always straight, not run too long or too slim teeth, see that the mill is in line with the track, and the wheels in line with each other, and success will follow the mill owner and filer also.

THE SPEED OF BAND SAWS.

As a result of my experience with band saws for log sawing, having fitted saws to cut almost all kinds of timber grown in Canada, United States, Central and South America, I would recommend that saws run 10,000 feet per minute in white pine, fir, spruce, poplar, cucumber, chestnut, linnwood, basswood, whitewood and any other soft woods; 9,000 feet per minute in hemlock, cherry, red oak, beech, birch, tulip, palmetto, North Carolina pine, yellow pine, red pine, cypress and any other medium soft woods; 8,000 feet per minute in maple, white oak, blue oak, gum, horn beam, ironwood, elm, yellow ash, Hungarian ash, South American mahogany, box wood, Spanish cedar, satin wood, amaranth, cecamore, black walnut, North Carolina red birch and all similar hardwoods. Use a short tooth, with $1\frac{1}{4}$ inch space and not much hook, and do not run over 6,000 feet per minute in rosewood, lignum vitae, cocobola, black ebony, Cuban mahogany, palmarose, black palm, leopard wood, pelansee, or vermilion wood, etc. I have filed band saws to cut all the above woods and can speak from experience.

You will observe that in my letter in the May issue I spoke of saw makers not being expected to furnish saws to be used for from six to nine months and then condemned, and I wish to say that saw makers as a rule, are not half careful enough in finishing up a saw before shipping it to the mill, for I doubt if there is one saw manufacturer in the United States or Canada that turns out a band saw in proper condition to run on the mill. I find that new saws from the factory are not flat either lengthwise or crosswise, but there are usually more lumps running crosswise of the plate. This is due to the excessive use of the crossface hammer while smithing, and saw makers do all their work on the anvil. In order to level a saw as it should be, it requires a good solid leveling table, say 4 inches thick, 6 feet long and 12 inches wide; then, with a high hammer, say 2 pounds, all the little lumps or ridges could be taken out. Another reason that new saws are not in proper shape to run is because they are very uneven in tension and there are tight and loose spots; they are tensioned too near the edges in some places, and in other places are too stiff, and the back edge is not always perfectly true. This will cause a saw to oscillate on the wheels, and this, with the unevenness of the plate, is the cause of so many new saws cracking the first or second time they are used, and then condemned as no good by the mill man and filer; where, if the saw had been properly put up when it left the factory, it would have run and cut well without cracks.

If the filer finds the saws in good order when received from the maker, he will advise the manager to so order from the same company. Now, suppose a lot of new saws are received at the mill, and they are not at all in proper condition to run without cracking. The filer will most likely look them over to see how they are put up, supposing that because they are new they are perfect, and if the filer is not a thoroughly practical man, it is ten to one if he does not try to hammer the saws just as they were when they came from the factory, and in a short time the saws will be full of cracks, and the filer will tell his employer that the saws are worthless. The result is that the saw maker is written to about it; he writes back to the mill man that the saws were made of good steel, well tempered, etc., and claims that the cracks were due to the fault of the filer, but all in vain, the saws are returned, and the saw maker loses the sale and the filer his reputation, while the mill

man loses both time and money in trying to run his mill with a lot of inferior saws. If the truth was known the trouble is with the saw maker, because he did not have a thoroughly experienced band saw filer to look over his saws and see that they were in the best possible condition to do good work before shipment. Saw makers will say that they employ men who have had a long experience in making saws, and who are good with the hammer. This may all be, but it does not make them capable of putting a saw in good shape to run on the mill, for they have not had the experience in the mill, and none but a good practical band filer can do it.

In my eleven years experience with band saws, I have filed saws for twelve different makes of mills, and the course I have outlined is the one I follow, which I find gives the best results, and a saw put up as described will do good work and not be likely to crack. I would be pleased to hear from other filers also as to their ideas and methods of working. I am always ready to try anything new that will have a tendency to improve the cutting of my saws.

TRADE PROSPECTS IN JAPAN.

THE complete report of Mr. George Anderson, Canadian Trade Commissioner to Japan, has been printed for distribution by the Department of Trade and Commerce. It occupies 42 pages of the usual size of the government blue-books, and contains much valuable information regarding the possibilities of trade with that country. Following are extracts from the report:

LUMBER.—The demand for lumber of all kinds is simply enormous, and this will certainly be one of Canada's largest exports to Japan, and the saw-mills of British Columbia should be eager to supply the eastern trade. The Japanese are constantly building, their houses being constructed entirely of wood. The specifications sometimes asked for are large sizes and long lengths, as the contractors desire to cut by hand-saw into the sizes required for building. Douglas fir (British Columbia pine) is considered very satisfactory, and cargoes of common lumber will find a market. There is also a large demand for large lumber for docks, ship-building, bridges and government works. The sizes required for railway ties are: length, 7 feet; width, $8\frac{1}{2}$ inches; depth, $4\frac{1}{4}$ inches. Pit props (round poles) for use in coal mines, vary in size from 6 to 12 feet in length, and from 5 to 10 inches in diameter, the annual consumption running into hundreds of thousands of pieces. Lumber is also required for all kinds of packing cases, box shooks, tea boxes and other purposes. Ornamental wood, such as maple, oak, red cedar, etc., for wainscoting, panellings, ceilings and interior decoration of houses, as well as for use in manufacturing furniture and railway carriages, would find a ready market at good prices. The Japanese are exceedingly tasteful in the interior decorations of their residences. The forests in the main islands are considerably denuded, and the government are insisting on the planting of trees for every one cut down. In quoting, Canadian correspondents cannot be too particular in showing the exact cost in gold at point of destination, and I would recommend sending a pro forma invoice naming price on rail of vessel at mill, and showing freight, exchange, insurance and interest while in transit.

SHINGLES are used extensively for roofing purposes, being nailed on the sheathing and then covered with mortar, tiles being put on over all. For this purpose No. 2 and 3 quality should find a very large sale. They are also used in the northern part of the Main Island and in Hokkaido, the Northern Island, in the same way as in our own country, with this difference, that bamboo strips are put across the row, the strips being held on by large flat stones, instead of each shingle being nailed. A better quality would be required for this latter purpose.

STAVES AND HEADING.—There is a very large number of people engaged in the cooperage business, manufacturing cement, sake and other barrels, tubs, firkins, pails and all classes of woodenware. Our large stave and heading manufacturers, who are shipping to other eastern countries, will, I am sure, find a large market in Japan, as the preparation of coopers' material by hand is very laborious work.

PULP.—Paper making is a large industry in Japan, and wood-pulp has already been received from Germany and Sweden. If satisfactory freight rates can be obtained, Canada can readily command this trade with the magnificent resources she possesses in this valuable product.

FURNITURE.—Furniture is cheaply made in Japan, but the wood being quite unseasoned, it is very unsatisfactory, and there would be a limited demand for all classes of furniture prepared in the white, shipped in the knock-down, and ready to be put together and finished on arrival in Japan. There is a demand for strong, cheap chairs; the backs and legs would require to be lower than usual to suit the Japanese stature, and two flat bars attached to the foot of the legs to protect the Tatami mats which are universally used in all Japanese residences. Office furniture and appliances, to a limited extent, could be introduced to European and Japanese merchants and manufacturers. Many of the better classes of Japanese, when building, are furnishing one European room, and I look for some considerable development in the furniture trade.

MACHINERY. A tremendous development in this direction and likely to increase rapidly, as machinery is being introduced at a very fast rate, and sure to continue. The business is done by Great Britain, Germany and the United States, and consists of engines, boilers, mining, paper-making, spinning, and all kinds of machinery. I would fondly hope our manufacturers would take steps to secure a fair share of orders for the particular lines which they manufacture. It can only be handled by a special and competent salesman well up in this particular branch.

WOOD-WORKING MACHINERY.—American firms are represented in this line. There will be considerable sale of planing, dove-tailing, band-sawing, mortising and all kinds of wood-working machines, as they are just commencing to be introduced.

PULLEYS. With the increasing introduction of machinery, there will be a large sale of all kinds of pulleys, and I am strongly of the impression that the light wood-split pulley will find a very extensive sale, if properly introduced by a specialist.

BOILERS.—Steam boilers are being imported in considerable quantities from England, and the demand will continue, as there is a strong desire on the part of the Japanese to establish manufactories of various kinds throughout the country. I would advise that rolled plates, marked, ready to be put together on arrival in Japan, would be the best means of transporting boilers, as space in vessels is rated at 40 cubic feet to the ton, and it would be desirable on items of this kind to save weight.

BOILER COVERING.—Manufacturers having steam plants are realizing the importance of retaining the heat in their boilers and pipes, and are using increased quantities of asbestos, mineral wool and mica coverings. The demand for these goods will be large.

BELTING.—With the very rapid introduction of all classes of general machinery, there is a very large sale of leather and rubber belting, and the demand is likely to increase from year to year as factories are established. Leather is imported, and belting made in Japan, as it is deemed more economical than to carry large stocks made up, but it is considered inferior to the imported article. There are no gutta percha or rubber goods manufactured in the country, and there is a promising future for the belting trade both in leather and rubber.

FREIGHT RATES FROM CANADIAN PORTS TO JAPAN.—On merchandise weighing 500 pounds or less per 40 cubic feet measurement, \$15 per ton measurement; 750 pounds or less, \$17.50; 1,000 pounds or less, \$20; 1,250 pounds or less, \$22; 1,500 pounds or less, \$24; 2,000 pounds or more per 40 cubic feet, \$1.25 per 100 pounds actual weight.

IMPORT DUTIES.—Steam boilers, engines and parts thereof, 25 per cent. ad valorem; machinery of all kinds not elsewhere specified, 10 per cent.; belting, 10 per cent.; furniture, 20 per cent.; pulp for paper-making, 5 per cent.; timber, lumber, boards and planks, etc., 5 per cent.

To show the growth of the Japanese market, Mr. Anderson states that in 1887 the imports into that country were valued at 44,304,251 yen, or about \$22,000,000, while in 1896 they reached more than 171,674,474 yen. (The yen is equal to 50 cents.) He also gives suggestions as to what course should be pursued by Canadian manufacturers to secure foreign trade.

Duncan A. McRae, of Wolfe Island, has been appointed government land agent and timber viewer at the Yukon district by the Dominion government.

RETIREMENT OF MR. ROBERT THACKRAY.

The friendly relations existing between Mr. Robert Thackray, of Ottawa, and his employees, were exemplified on the 30th of April last, when, upon the occasion of his retirement from active business life, he was presented by the employees of the firm with an address and a handsome gold watch. The address, which was read by Mr. E. P. McGrath, was as follows :

DEAR SIR, —On the occasion of your severing your connection with the active work of your factory we desire to express to you our sincere appreciation of the many kindresses which we have received at your hands during the years when we have been associated together and our regret that the pleasant connection between you, as our employer, and ourselves as employees, is about to be broken.

"Some of our number have been continually in your employ for twenty years, and others but a shorter time, but we can unite in saying that the relations which have



MR. ROBERT THACKRAY.

existed between master and men have always been of a most friendly character.

"Those of us who know you best have most to say in your praise and we can all recall many acts of kindness from you which showed your thought of your men was of a deeper character than our simple business connection.

"The understanding between us is shown by the fact that during all the years of our connection we have never had any unpleasant disagreements, which in other places have taken place between the working men and their employers.

"And now when the time has come when these pleasant relations are to cease, we ask your acceptance of the accompanying small token of our regard for you, feeling that though not so closely connected in business, that in any time of need, we can find a friend in the one who has so long been our employer.

"We unite in extending to you our best wishes and our hope that you may be spared to years of usefulness and to the performance of those kindly acts which have always made your employees look to you as a friend."

Mr. Thackray expressed his gratitude for the gift, and for the kindly words contained in the address, in the following poetical fashion :

Words fail entirely to express
 My thanks to you for this address,
 So take the action for the word,
 I bow; to speak would be absurd.
 Well I remember in past years
 You shared my cares and hopes and fears,
 When friends were few, and I in need,
 You often proved a friend indeed.
 When fortune frowned upon our will,
 And fire disastrous burned our mill,
 Your sympathy expanded then
 And kindness made us better men.
 Farewell. May we forever be
 In bonds of closest sympathy;
 Let us each others burdens bear
 Until we reach that higher sphere.

PERSONAL SKETCH.

Mr. Robert Thackray was born at Leeds, England in the year of the Queen's coronation, 1837. At 15 years of age he was apprenticed in Leeds to the carpenter and joiner trade, and at the age of 21 years, on reading of the bright prospects for young men in Canada, and of the Queen's decision to make Ottawa the seat of government he decided to come west. Landing in Ottawa in 1858 with a small clothes box, a carpenter's tool chest and four English shillings in his pocket, Mr. Thackray worked at the carpenter's bench for five years. In the interval he married a Mrs. Davidson, a young widow, and by strict economy saved enough to start a small sash and door factory, which has now grown to be one of the most extensive and best equipped establishments in Canada, shipping large quantities of pine doors and box boards to Great Britain and other foreign countries. His business premises have twice been burned to the ground, entailing severe losses, but he has always managed to pay 100 cents on the dollar. The business at present employs 125 hands.

Some years ago Mr. Thackray bought timber limits on the Quyon river, Pontiac Co., Quebec, and built a saw mill there, the product of the mill being shipped to Ottawa to be manufactured into doors, sash, etc.

His family consists of one son, one daughter, and two step-sons, all married. He has now retired from active work, leaving the business in the sole control of his son and step-son. The name of the new firm is Davidson & Thackray.

THE SWEDISH TIMBER INDUSTRY.

In a recent special issue of Timber, London, Eng., Gustaf Peters has an interesting article entitled "A Short Survey of the Development of the Swedish Timber Industry," which is well written and very interesting. The export timber trade was commenced, according to this author, about sixty years ago, the first steam saw mill being erected in Sweden in 1848. It is said to have caused a complete revolution in the trade. At the time this mill was built the total export from Sweden of sawn wood was 132,000 standards, of the value of about 13,000,000 kroner (one kroner being equal to nearly 27 cents). Twenty years later it had reached 550,000 standards, valued at 50,000,000 kroner, while in 1896 about 1,100,000 standards were exported, of the value of more than 100,000,000 kroner. The export was chiefly to Great Britain. The freight from the Baltic to London varied during the first decades of this century from £5 to £10 per standard. The import duties in England from 1820 to 1831 were about £13 9s per standard for sawn timber and £9 15s for hewn timber; and in 1842 the duty was reduced to £5 and £3 12s respectively, and ten years later it was further reduced to £1 10s and £1 2s 6d. In 1866 it was abolished altogether. To show how little of the high price paid went into the pockets of the producer, the following details of a shipment made in 1820 are given :

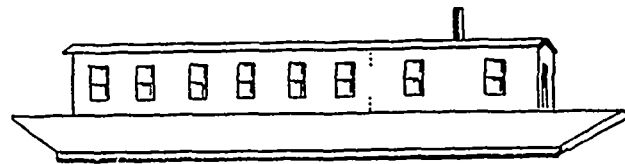
100 standards deals sold to London..	£2,864
Deductions :	
Freight.....	£ 448
Duty.....	1,990
Sundry expenses in London.....	102
Commission and del credere.....	143
	£2,683
Surplus.....	£181

In olden days immense quantities of waste timber and refuse were burnt in specially built furnaces, whereas now the smallest laths are used, and the remaining refuse is converted into charcoal, a by-product which now brings into the mills from £4,000,000 to £6,000,000 per annum. The first planing mill for export purposes was built about 1858, and the first joinery mill about the same time.

The wood pulp industry is of recent origin, but is, nevertheless, a very important business. The first mill for mechanical pulp was erected in 1857, and the first mill to produce chemical pulp in 1872. The annual export of mechanical pulp now amounts to about 80,000 tons, valued at 5,000,000 kroner, and of chemical pulp more than 100,000 tons, of the value of more than 15,000,000 kroner.

OTTAWA RIVER HOUSE BOAT.

Messrs. Bannerman & Findlater, of Ottawa, Ont., have recently completed four lumbermen's "house boats" for the Upper Ottawa Improvement Company. These are claimed to be the first iron house boats in Canada, two being for use at Quio (Chats Lake) and two on the Ottawa river at Pembroke. These boats—a drawing of which is given herewith—are scow-shaped, each 51½ feet long over all, with a keel of about 42 feet; 12 feet wide at the top, and 11 feet across the bottom and 3 feet deep. The bow tapers to an extent of about 6 feet, and the stern 4 feet. The keel is formed of a piece of timber 7 inches deep and 6 inches wide, and is protected by an iron shoe. The house stands 6 feet above the top of the hull, making a height of ceiling of about 9 feet. The kitchen and cabin occupies about one-third of the house, the rest being occupied by sleeping berths, of which there are two



OTTAWA RIVER HOUSE BOAT.

tiers, a tier on each side of the boat with a gangway through the middle, making accommodation for a crew of twenty-four. The house is clap-boarded with an iron roof.

The Japanese market bids fair to be a large consumer of American and European lumber in the near future. The development that is going on in the land of the Geisha is bound to have the effect of increasing the consumption of American lumber. Brick buildings are not common in Japan owing to the frequent earthquakes, and the native lumber is irregular in size and difficult to handle. A few steam saw mills have been erected, and there is reported to be an opening for high class machinery for those who will introduce and handle it, to be used in the sawing of native woods. A great deal of lumber has been shipped from Japan to the Pacific coast, and it is likely that in the future Japan will be a larger user of west coast lumber. Japan is a populous country of close upon 55,000,000 inhabitants, all rapidly becoming civilized and copying Americans and Europeans in their manner of living. The buildings are becoming more modern, and their industries are being rapidly developed.

THE COMPARATIVE ADVANTAGES OF STEAM AND WATER POWER.

By "ECONOMY"

Now that the attention of the public is being closely directed to the possible utilization of the many valuable water powers which we have in Canada, it may be of interest and advantage to consider their value in comparison with the best known alternative method of generating energy, viz., by steam. The practical side of the question may almost be neglected, because modern science has so improved hydraulic machinery that the best classes of water wheels may be placed about on a par with steam engines as regards regularity of service and general satisfactoriness. The main interest will center in the commercial features of the comparison and might take the form of the question, "Under what circumstances is water power a more economical prime mover than a steam engine?" which leads to the next question, "Can there be conditions which will cause steam power to be more economical than water power?" Both steam and water power, in what may be called their "raw" state, must be rendered available for use by more or less expensive processes, including in many cases the transmission of the energy from the point of production to the point of utilization; and it will be evident that there may be many conditions, physical and commercial, which may have considerable effect in modifying the value of one form of energy in comparison with the other.

Our rivers and streams are most of them short, and the country through which they run being denuded rapidly of forests. Hence they are very sensitive to the precipitation and respond very rapidly to it, being swollen shortly after rains, and carrying off large volumes of water in a short space of time. Similarly, after a period of dry weather they shrink to sometimes a very small proportion of their maximum flow. Even those streams which rise in marshy localities which absorb and retain moisture better, largely depend on the character of the fall weather. Should there be a considerable snowfall before the severe cold sets in to freeze the ground, then the stream will keep a more steady, even flow during the winter than it will if the hard frost sets in before the snow. And if the somewhat exceptional condition be met with of a dry summer, with little precipitation, followed by an early and severe frost without snow until late in the fall, then it is probable that many streams would dry up almost completely for several weeks, if not months. Water, therefore, as a source of power, can not be considered always satisfactory in point of reliability, unless some means can be taken for averaging up the flow; storing up the excess in times of flood, and letting it go in times of low water. This expedient is well recognized and frequently adopted; but the expense of the storage reservoirs is likely to be so great that only peculiar commercial conditions would justify it. The cost of development of a water power also is an item that may become very serious. It is but seldom that the favorable condition is found of plenty water and a large direct fall. As a rule the large streams, particularly in Ontario, have a somewhat slow current, and a high head could be obtained only by carrying the water in a long canal, which would cost heavily.

It is therefore evident that, taking everything into consideration, the first cost of a water power plant to render available a certain definite, continuous horse power, depends on the cost of machinery, dams, and perhaps storage reservoirs. If the power required does not exceed the minimum flow, then the reservoirs are not required; but they will be if the average flow is necessary. Hence it is quite possible that the total first cost of a water power enterprise, including the wheels, may be even largely in excess of the total first cost of a steam plant of the same horse power capacity. In fact, unless the circumstances be altogether exceptional, it is not likely that water first cost will compare at all favorably with steam first cost. After the first cost of the two systems comes in a very important consideration—purely commercial in its character. Manufacturing establishments using power require transporting facilities for their raw material, and for their finished product; and just in proportion as these are bulky or heavy, so does the cost of their transport become a more potent factor in deciding whether cheap power or low freight is of greater importance. More especially is this so in establishments that do a principally foreign trade, and hence require convenient access to a sea or lake port. It is a somewhat unfortunate circumstance, but in the nature of things, that the largest commercial and transporting centers are far from any considerable

and swift streams. We all know of the observant traveller who remarked on the peculiar coincidence that there was always a navigable stream close to a large manufacturing city, and therein lies the answer to the question why cities are not near water powers; because navigable waters are very generally of greater importance than very inexpensive power. Hence the value of a water power largely depends on its position with regard to railways, canals, or navigable streams. Here, however, comes the very important fact that we have several distinct means of transmitting power over considerable distances; so that although the best place for generating hydraulic power may be distant from the most convenient shipping point, the intervening space may be bridged.

Power laid down in form convenient for use at any particular spot costs money to develop, and more money to operate; and whether steam or water power is the better for any particular case can only be arrived at after careful estimate of their respective total costs per year. These total costs may be divided into fixed and variable expenses. Among the former are interest on money invested, maintenance and depreciation, insurance, wages, and the like; among the latter are fuel, oil, and the like. Every enterprise is expected to pay a fair rate of interest on the investment; most have some bonded indebtedness which is a first charge on income, and therefore interest on investment is a fair charge in making the comparison. No machinery, building, construction, or apparatus of any kind can be expected to last forever, so that estimating its life at whatever length may be proper in the light of experience, it is only sound business to lay by every year out of the gross income a sum equal to the yearly deterioration in value, so that at the end of the plant's useful life it may be found to have paid back the money invested in it. This yearly sum may be expressed in terms of a percentage of the total cost, the actual percentage varying with the class of construction or apparatus. A sum must always be allowed for maintenance, repairs, &c., and for insurance, and the wage account is always a very considerable proportion of the expenses of operation. All the above items can be calculated very closely, and placed at a pretty accurate yearly sum. Variable expenses can also be estimated sufficiently close for purposes of estimate. This is an expense which is saved in water power enterprises for the most part, and as fuel is generally one of the larger expenses, the great advantage of water comes in here. To compare the above item by item: Whether steam or water power be used, the interest percentage will be the same, so that the respective charges on this account depend entirely and solely on the respective costs of the two methods. If the whole hydraulic construction be more expensive than the equivalent steam plant, then the hydraulic interest charge will be greater than steam interest charge, and similarly. This requires a mere comparison of estimates of investment. In the depreciation account this equality is not preserved. The hydraulic plant will probably be far more durable than the equivalent steam plant. The dams will last all the longer as they are more solidly built, and a small sum spent yearly in inspection and repairs will cause them to last indefinitely. Besides which a "second hand" dam and water privilege is just as valuable as one brand new, if it has been properly maintained, which cannot be said for a second hand steam plant. Probably a fair depreciation on the whole dam, gates, tail race, &c., can be placed at 2%. Of the hydraulic plant, wheels, regulators, shafting, &c., a reasonable life of 25 years may be expected, with the consequent depreciation percentage of 4%; building 2%, if of solid brick or masonry construction. The insurance charge will be considerably less in a hydraulic than in a steam plant, and will be smaller as the building is less fireproof. It must also be remembered that the first cost of the hydraulic building will very probably be quite appreciably less than that of the steam building.

The same items in a steam plant may be reasonably taken at: For boilers, a life of 10 to 15 years, depreciation percentage, 10%; engines, shafting, journals, piping, 20 years, percentage 5%; insurance probably 25 cents per \$100 higher than with water. As to the wages charge, it is probable that a hydraulic plant can be operated just as efficiently as a steam plant, with fewer men, and consequently smaller wages expense. The larger the plants the better for the hydraulic, for while one man cannot properly attend to more than so many boilers and keep good steam, owing to the work increasing as the battery is large, the additional size or number of water

wheels imposes no greater work on the operators. It may be fairly pointed out that there are labor-saving devices, such as automatic stokers, which increase the work efficiency of the firemen very greatly, enabling one man to keep good steam on a number of boilers, but at the same time it is wise to remember that all such devices increase the complexity of a steam plant, raise the probability of accident, and render advisable the employment of higher class engineers at greater expense. In plants of a certain capacity it is necessary to employ both engineer and fireman, one man not being sufficient. In a water power one man would be quite capable of looking after the entire plant, hence the other man's wages are saved; and one superior mechanic can do the work of two and save considerable. The great importance of this item will be evident when it is considered that the saving of \$1 per day or \$300 per year (about the usual wages of a fireman) will pay the interest at 5% on \$6,000. This means that a water power plant may cost \$6,000 more than a steam plant of equal size, and be an equally good investment, if thereby one fireman's wages can be saved.

The most important item among the variable expenses is undoubtedly the fuel, which will vary very greatly according to locality, kind of business, state of markets, etc. In coal mining localities refuse can be obtained for almost nothing—for the expense perhaps of carting it from the pile; in others good steam coal costs as high as \$6, \$7 or \$8 per ton. Wood varies according to locality from 75 cents to \$2.50 a cord. Oil or gas fuel can be obtained in certain favored localities. It is of course obvious that as fuel—whether coal, wood, oil or gas—is less expensive, so does the value of a water power become less in comparison with that of steam. Another very important commercial consideration—coal fields are always well supplied with railroad facilities, sometimes even with canals—so that the two most important manufacturing advantages are found together: easy transport and cheap power. Nature herself seems to place obstacles in the way of hydraulic power, for just as a large stream has a greater fall along its course, so does it become more difficult for railways to follow it, owing to the grades. Hence it is generally necessary to transmit hydraulic power for some considerable distance to a convenient shipping point, and this means larger fixed charges to offset the entire elimination of the fuel charge. It is obvious that assuming a sufficiently low cost of fuel at the shipping point, and an expensive water power plant, there may easily be conditions which will make a water power of no value whatever in comparison with steam. For instance, in a recent case, to develop and render available a certain water power for use 12 hours a day for 365 days a year, required the damming of some storage lakes, and the transmission electrically of about 150 h. p., in all about \$20,000. The expenses in connection with this enterprise, for interest, depreciation, wages, etc., were estimated at \$2,700 per year. The cost of a steam plant to do the same service was estimated at \$8,000. Now, taking the above percentages and allowing two men for the steam at \$800 wages, the same expenses without fuel would come to about \$1,500. Thus \$1,200 are allowable for fuel in order that steam and water (electrically transmitted) may be equally good investments. This allows \$8 per horse power year for fuel. Or allowing 4 lbs. of coal per h. p. h. (condensing) comes to the equivalent of 1080 tons of coal per year. Coal, or equivalent, at \$1.11 per ton would make either plant an equally good investment; at \$1.12 would be more expensive than water power; at \$1.10 would be more economical than water.

Now, if this water power had been situated about 100 miles from where it was, and placed as near a Nova Scotian coal mine as it was to its distributing point, then culm could have been obtained at 25 cents per ton, and allowing even 4 tons of culm to give as good effects as one ton of good steam coal, even then the steam plant would have been the better investment. At the distance of 32 miles from the above coal mine, culm cost \$1 laid down, so that the fuel for the above plant would have greatly exceeded the \$1,200 allowed. Here we have a very clear illustration of the way in which the comparative values of steam and water power vary. At one end of a 32 mile line the water power was worth nothing at all; at the other end it would have been a good investment for \$25,000.

The kind of business to be done will also largely affect the comparison. There are many products that require heat in the various processes, for bleaching, cleaning, bending, drying, and what not. In the present state of

knowledge of electrical matters, it is not wise to predict what may or may not be done in the next few years in the way of electrical heating, but we do know that water power will not develop heat without its transformation into electrical energy; so that unless this transformation is made, a water power plant will have to be supplemented by a steam heating plant in all cases where heat is required. If not a steam heating, then hot air, stoves, &c., which all mean fuel.

Now, if steam is to be used at all, it might just as well be used as economically as possible, and to raise steam at a high pressure costs less proportionally than it does to generate a low pressure. If, therefore, high pressure steam be used in steam engines, and their exhaust be utilized for drying or heating purposes, it might very well be that the expense incurred would compare very favorably with the total interest and other expenses of a combined water power and steam heating plant. And the comparison would be all the more favorable to steam as steam became necessary in larger quantities for drying and less comparatively for power. There are other industries again which necessarily produce combustible refuse, which they must consume in some way, such as sawmills, planing and saw mills, and other wood-working industries. Unless they have some local demand for such refuse it becomes very necessary to burn it up to get it out of the way. In all such cases it is questionable whether water power would have any value at all.

In appraising the comparative values, therefore, of a water privilege in relation to steam working, it becomes necessary to regard the whole question from a strictly commercial standpoint. The total first cost by the two methods must be reliably estimated, with their probable maintenance and operating costs. Due consideration must be given to the cost of extra haulage and handling, where the water power is not on the transport line, and be debited against it. The heating problem is a factor, and the cost of fuel, and if the careful discussion of the matter leads to the result that steam is the more economical, then no arguments based on the "sin of wasting power at our doors" should be allowed to influence it. It is obvious that no particular rules can be laid down by the application of which the value of water power can be determined from tables like a logarithm. Every case must be determined on its merits, and the above illustration showing how the merits may vary widely in 32 miles, serves to emphasize the importance of careful investigation and logical calculation.

AUTOMATIC BOX MACHINE.

A MARVELOUS piece of automatic machinery for the purpose of making boxes has been invented by W. T. McKee, of Philadelphia, Pa., and recently set up for a practical test, after working five years on its perfection, says the Philadelphia Record. It is known as the "Eureka," is novel in its design, and does its work in an entirely new way as compared to the old machines designed for this work. It is fed from four sides with boards which have been previously cut the desired size; and a box is turned out at every revolution of the machine, the wooden cubes being thrown off at an astonishing rate. A single operator, who need not be a skilled person by any means, can work off 1,000 boxes an hour, the work of the attendant being only to feed the press with the wood. The machine may be readily adjusted in a few minutes to make a box of any size within reasonable limits. One press, for instance, is made to take in all the various sizes of cigar boxes; while for larger ones another size machine is made. After the machine is started its action is automatic, and at each revolution a box is shot out, one following the other so rapidly that the question of carrying them off becomes an embarrassing one. The box as turned out is complete, with the exception of the lid. Lock-corner boxes are as readily handled as the straight-edged one, the hammers used in nailing them being taken off and plates substituted which squeeze the parts together instead of nailing them. The capacity of this machine is said to be nearly ten times that of the box-making machines now in use.

The Review of Reviews makes a striking assemblage of cartoons illustrating the war question. The reproduction of Spanish, Cuban and Mexican cartoons are especially interesting. The pages of the May Review devoted to this department will have a unique historical significance in years to come.

THE SPRUCE GALL-LOUSE.

Prepared for the Bureau of Forestry by Wm. Brown, Toronto.

In the spring of 1897 many spruce trees in and around Toronto were found to be more or less injured by a pseudo-gall insect. The galls were enlarged and deformed buds of the previous year, usually towards the tips of the twigs. Investigation showed that these galls were formed by a small insect, popularly called the spruce gall-louse, the *Chermes abietes* of entomologists. A short account of this destructive pest, as then known in Ontario, appeared in the annual report of the Clerk of Forestry for the Province of Ontario for 1897. Since then it has spread with astonishing rapidity and has been detected at many points, from Peterborough to the County of Bruce, where it was lately detected by Dr. Hunter on native spruce trees in a swamp in the township of Culross. It has also been found on native spruces in Muskoka, near Utterson station. So far it would appear that unless this insect is checked by some artificial means it will soon destroy our ornamental spruce trees and hedges and, ex-

"gall" instead of a normal twig. The lice in the galls give birth to other living lice so that about thirty individuals are found under each scale of the gall. The galls are usually irregularly spherical and often more than a half inch in diameter. When growing they are of a yellowish green color, but during the winter they assume a reddish brown tint, which they retain until the end of May, when they usually fall from the tree. This is the usual form of this gall, but there is another form, not a gall, in which the injury is done in the leaf axils. As these insects in the feeding stage are within the gall, and the gall is perfectly water tight, so that no fluid can penetrate, poisoning is out of the question, and as in the migrating larval stage, they do not eat, poison is equally useless. Of course in this larval stage soap emulsions might be of some use, if applied abundantly at the proper time. But without any doubt the cheapest and best plan as yet tried in Ontario is to clip off the galls as soon as they are noticed—say in June and always before the first of August, while the producers are in the galls, and

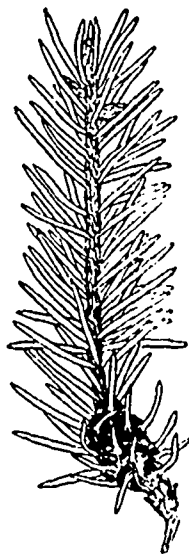


FIG. 1.

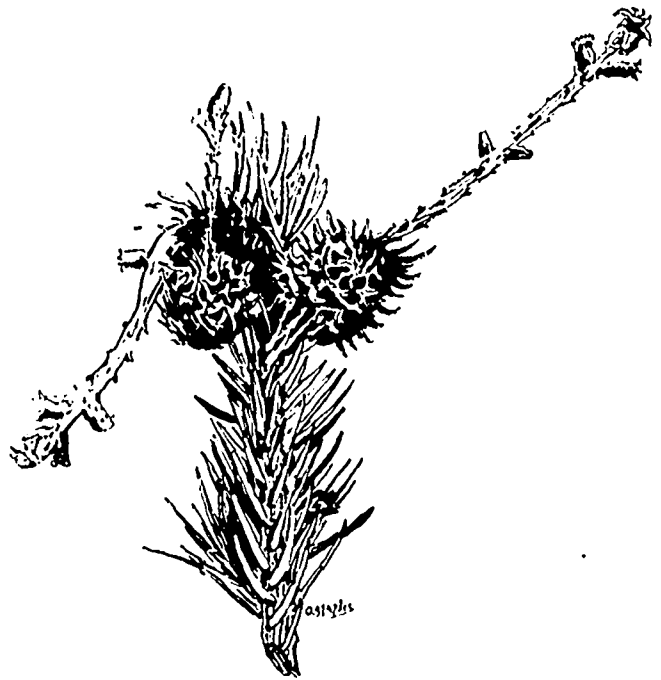


FIG. 2.

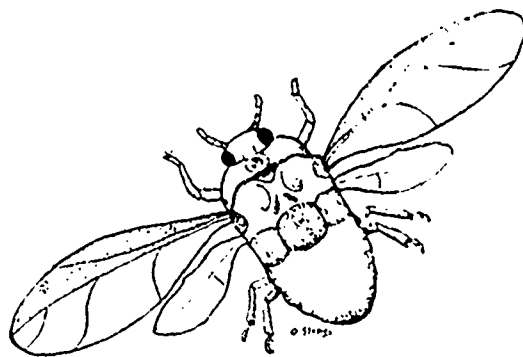


FIG. 3.

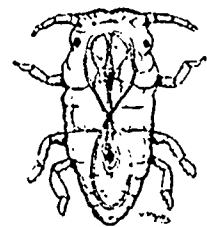


FIG. 4.

tending northwards, do immense injury to our spruce forests.

The trees already attacked by this spruce gall-louse in Ontario are the European spruce, *Picea excelsa*, the double spruce or black spruce, *Picea nigra*, the white spruce, *Picea alba*, and the balsam fir, *Abies balsamea*, and it may also be found on the hemlock, *Tsuga Canadensis*. This insect is native to Northern Europe and was introduced into the United States on imported spruce trees and thence into Ontario, or it may have been introduced here direct from Europe, as for many years there has been an annual importation of young European spruce trees into Ontario.

At Toronto the full grown insects—the producers—emerge from the galls, the scales of which open to give them exit, about August 1st. On emerging they are slightly imperfect, but in one day ample wings are developed which enable them to fly long distances. After distribution the female settles on a spruce leaf and lays under herself—about thirty-five eggs and then dies, resting on the eggs. In about a week the young six-footed larvae are hatched. They crawl about and find immature buds into which they burrow and of course remain quiescent during the winter. But in the following spring their presence in the bud causes it to develop into a

immediately burn them up. When a tree is too much infested to be dealt with in this way it should be cut down and burnt at once. Of course there is no use in doing this after the producers are out of the galls. Several cases are known where this plan was carried out with very satisfactory results, and it is respectfully recommended that all those having spruce trees in charge should carefully see to the clearing of the trees and the extermination of this formidable insect pest. As some of our nurseries are affected, buyers of evergreen nursery stock should be very careful to see that the young trees are perfectly free from this insect pest.

DESCRIPTION OF PLATES.

Fig. 1. Gall infested twig as usually seen in the fall season before the death of the part of the twig above the gall.

Fig. 2. Infested twig of European spruce, two-thirds natural size, collected April 16, 1898, from a badly infested tree growing in one of the Toronto public parks, showing the parts of the twigs above the gall dead, the leaves having fallen off, the usual condition found in the spring season.

Fig. 3. Mature, winged fertile form, from a microscope mount, enlarged 25 dia., collected September 1, 1897. In this final stage of development they do not eat, but their ample wings enable them to fly long distances before ovipositing, and hence the alarmingly rapid distribution.

Fig. 4. Immature gall producer, from a microscope mount, enlarged 25 dia., immediately after issuing from under the scales of the gall, August 18, 1897.



MONTHLY AND WEEKLY EDITIONS

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ADVERTISING RATES FURNISHED ON APPLICATION

OUR EXPORT TRADE.

THE visit to Canada of representatives of several European importing houses, for the purpose of forming a closer connection with our lumber manufacturers, is a circumstance of no little importance to the trade. It signifies a preference on the part of foreign importers, more especially those of Great Britain, to trade with this country. This, in view of the conservatism of the English people, augurs well for the prospects of future business. While our exports of lumber to the British Isles have greatly increased of late years, we do not think that the limit has yet been reached. There is reason to believe, however, that before any appreciable expansion of business is witnessed, the export trade will undergo some notable changes.

Heretofore, as our readers know, practically all the lumber exported to Great Britain has been handled by a dozen or more large shippers, who make the bulk of their shipments from Montreal, Quebec, St. John and Halifax. Their trade has largely been confined to deals and square timber, and having cultivated a market for these, they naturally discourage any attempt to digress from the beaten path.

It is only fair to say that manufacturers have found this method of selling to shippers entirely satisfactory. But there is another aspect of the case, viz., that the development of our lumber industry on the lines which would prove most profitable to the country has thereby been retarded. Our manufacturers have learned but little of the requirements of the British market, and consequently a considerable trade in specialties and partially manufactured goods has been lost. It is with a view to securing a portion of this trade that we welcome the present sentiment in favor of closer relations between the Canadian manufacturer and the importer in the foreign market. That this sentiment is recognized on this side of the water is shown by the number of manufacturers who have visited Great Britain during the past year.

The question of the best method of handling the export trade is one which has been given much careful study by the leading manufacturers in nearly every line of industry; it is one difficult of solution. In the marketing of timber products there would seem to be more obstacles

than are met with in other lines, yet it is a problem which must be dealt with in a business like manner at an early date. A movement is now on foot in the Southern States to form an association to export pitch pine, particulars of which may be of interest. It is proposed to form a joint stock company, with a capital of \$170,000, divided into \$1,700 shares, said shares being proportioned to the fifty mills included in the company according to export capacity. The company will submit every requirement to each and every mill for quotation, the lowest bidder to have the order if a sale is effected, less 2½ per cent., in consideration of which the company guarantees to pay for all purchases without other discount or commission. In making the sale the company will add at least one dollar per thousand feet to the prices quoted by the mill man. A daily bulletin of transactions, giving sales, price, shipments, etc., will be issued to each member of the company.

One objection to the above plan would seem to be that it fosters competition between the manufacturers, the removal of which would destroy entirely the working of the association. The commendable features are that it would afford an actual knowledge of the world's demand, reduce the cost of securing the business, and provide for prompt payment of stock.

UNIFORM GRADING OF LUMBER.

THE movement for uniform grading of lumber has obtained a strong foothold in the United States, and is rapidly spreading from section to section. Encouraged by the success of the Wisconsin Valley Lumberman's Association, the pioneer in the work, the southern lumber manufacturers have taken steps to inaugurate a similar system, by which to secure uniformity in grading and inspection of lumber. Nor is the movement confined to the pine trade. At the annual meeting of the Chicago Hardwood Lumber Exchange held recently, letters were read from the Cairo Hardwood Lumber Exchange and the Northwestern Hardwood Lumbermen's Association, asking that measures be taken to establish uniform rules of hardwood inspection.

Nowhere does there exist greater necessity for proper inspection rules than in Ontario, and we hope the Lumbermen's Association will prove its usefulness by taking up the work. The establishing of standard grades would undoubtedly have a beneficial effect upon prices, and would do a great deal to strengthen our position in foreign markets.

The lumber business of this province has in the past been conducted single-handed. Every manufacturer, whether pine or hardwood, has made his own inspection, and as a result there is a wide divergence as to what constitutes a certain grade. One manufacturer sets the standard higher than another, who, as a consequence, finds difficulty in disposing of his lumber. Neither can a dealer order a certain grade and know exactly what he is going to get, as should be the case.

The Wisconsin Valley Lumbermen's Association, referred to above, represents a total lumber production of 400,000,000 feet a year. An inspector is employed to visit the different plants at stated intervals and report to the management all items not in line with the rules, as well as to

instruct the individual graders in their duties. The expense of maintaining this system is raised by a tax of one cent on every thousand feet actually shipped, which has so far been found sufficient.

THE UTILIZATION OF WASTE TIMBER PRODUCTS.

LUMBERMEN should be interested in the project which is being promoted by the Rathbun Company for the establishment of charcoal iron smelting works at Deseronto. This step is being taken in pursuance of a policy decided upon by the company, as far back as 1866, to seek to find methods of manufacture that would convert the rough logs and the coarse cuttings of the mills into products that the public would buy at a profit. In furtherance of this idea, the manufacture of porous terra cotta fire-proof building material from sawdust was commenced; cedar mills were established at Deseronto, Campbellford, Lindsay and Gravenhurst, so that such coarse forest material as could not be safely floated or railed to Deseronto might be manufactured in transit; a cement manufactory was started which utilizes for fuel 3,500 cords of coarse material from forest and mills per year; chemical or wood distilling works were erected, where gas from sawdust was made for lighting the factories and town, following which came extensive charcoal works. These various industries consume a vast quantity of the by-products of the forest and mills, give employment to 1,500 men, and their products find a market in Canada, the United States and Great Britain.

By this policy the Rathbun Company have been enabled to greatly prolong their forest operations by cutting their timber carefully within prescribed bounds, at the same time, by removal of waste timber, affording protection against fire and permitting the rapid growth of young pines for future supply.

Owing to the duty imposed by the United States on Canadian charcoal, and the reduction in price of wood spirits by the Dominion government, it has been found necessary for the preservation of the charcoal industry to establish a charcoal iron blast furnace in the Bay of Quinte district, and arrangements to this end are well advanced. It is expected that a market can be found for the charcoal iron in Great Britain, Norway and Sweden.

This blast furnace, which will have a capacity of 35 tons per day, will require yearly 20,000 cords of charcoal timber, representing 20 cords of coarse timber per acre, from 1,000 acres per year. Employment will be given to about 225 men for an average of about five months during the cold weather in getting out this timber.

In view of the steady decrease in the available supply of first-class timber, and the increasing quantity of coarse material, there is no question of greater importance before lumbermen to-day than that of finding means of utilizing the present waste material from the forest and the mill and the promotion of new forest growth. Hence, as we have said, the projected enterprise at Deseronto, which appears to combine these objects, is one in which lumbermen should feel a deep interest, as in the event of success attending the venture and a sufficient market being found for Canadian charcoal iron, similar works might be established in different parts of the Dominion, with

great advantage to the general welfare of the country and the lumber industry in particular.

EDITORIAL NOTES.

THE methods adopted by some municipalities in awarding contracts for lumber and other supplies are, to say the least, very unbusinesslike. The authorities appear to ignore entirely the rights of tenderers. A striking example of injustice is found in the action of the Winnipeg City Council in awarding the contract for the annual supply of lumber. Tenders were invited publicly for the supply of from 500,000 to 1,500,000 feet, that submitted by Messrs. Dick, Banning & Co. being accepted. On being notified of the acceptance of their tender, they made arrangements with the manufacturers for the supply required, and also for teams, etc., for delivering the lumber to the city, adjusting their financial affairs accordingly. Afterwards they were notified by the City Clerk that the action of the Council had been vetoed by the Mayor, on the ground that sufficient time was not allowed between the first appearance of the advertisement calling for tenders and the date limit. At a subsequent meeting of the Council new tenders were ordered to be asked for. The injustice done to Messrs. Dick, Banning & Co. was in no way recognized, notwithstanding that they had arranged for their lumber supply and that their prices had been made public for the benefit of competitors who would submit new tenders. If a mistake was made, the onus thereof should rest upon those in error, not upon an irresponsible party. The city should either have carried out its obligation with the firm, or effected a settlement before inviting new tenders.

As the figures to be found on another page, showing the lumber consumption of the Northwest and the relative quantities supplied by Canadian and United States manufacturers, there is food for reflection. In the year 1896 there were consumed in Manitoba and the district extending as far west as Regina, approximately, 80,000,000 feet, of which 12,000,000 feet was the product of United States mills. Last year the consumption in the same territory increased to 92,000,000 feet, but of this nearly 17,000,000 feet was imported from the United States. Thus, of the increased consumption of some 12,000,000 feet during 1897, the Canadian mill men only benefitted to the extent of 7,000,000 feet, which clearly shows how serious has become the competition from our southern neighbors, who are protected in their own market and allowed free access to Canada. Four years ago the imports of lumber into the Northwest were of little account, being less than 2,000,000 feet, but, under the very favorable conditions, they have rapidly grown. While, from its geographical location perhaps more than anything else, our Northwest is not destined to be a manufacturing country, yet its lumber trade is gradually expanding, chiefly as a result of the improved condition of the farming community and the consequent increase in the volume of building operations. It is indeed encouraging to observe that one, at least, of our Georgian Bay manufacturers is endeavoring to penetrate into this market, notwithstanding obstacles in the way of high freight rates and such like. His success will no doubt be watched with interest.



A GENTLEMAN prominently connected with the erection of several large buildings in Toronto, in relating to me some of his experiences, referred to an incident which seems to point a moral. It was his duty to inspect all lumber. The specifications for flooring for a certain building called for first class material, and it was expected to pay a good price for the same. Arrangements were made with a local dealer to supply a portion of the required stock at a fixed price, but when the first carload arrived it was found so inferior as to be rejected entirely and the order cancelled. "The reason of this," said my informant, "was that the price which the mill man was being paid for the lumber was so low that he could not afford to supply the grade, and this notwithstanding that a fair price was being paid to the dealer, who could very well have paid a better price to the mill man. His desire to make a large profit cost him the contract." It is well to be content with a fair margin of profit.

* * *

THE fertile brain of Herr Cu. Bloch, of Berlin, Germany, has invented an apparatus for the manufacture of sawdust into cakes. These cakes, he seriously declares, may be used for food for cattle, horses, etc. Some experiments were made in Berlin in 1895 by the Tramway Company, which are claimed to have proved successful, though the manufacturing expenses were rather higher than expected. The new substance consists of a mixture of two parts of fine sawdust and one part of bran and muriatic acid. After fermentation the mixture is baked and takes the shape of a brick. It is then damped by means of water, when it makes an excellent substitute for hay and straw, and is also a good fodder for cattle and horses. Oak or walnut woods do not, on account of their tanning properties, give such good results as soft woods. The news of this invention has just been received in time to relieve the Ottawa valley lumbermen of worry over the disposal of their sawdust.

* * *

A REMARK made by Mr. Edward Still, manager of the European Exporters' Association of Toronto, shows the necessity of the formation by lumbermen of some organization to conduct the export trade. "When I was in Glasgow last," said Mr. Still, "a gentleman who is in the business said to me that he was at a loss to understand the system under which Canada and the United States shipped lumber to the British market; there did not seem to be any understanding as to the requirements, and at times there was a complete glut." Conditions such as these are likely to exist so long as there is no organization among lumbermen, and secrecy is the motto of the trade. Mr. Still informed me that he was about to leave on a business trip to Europe. He thought his association might be of considerable assistance in the formation of a

lumber exporters' association, if any action was to be taken. At my suggestion Mr. Still outlined the modus operandi of the European Exporters' Association, of which Sir W. P. Howland, K.C.M.G., is president. The association have experienced and high class representatives in the leading centres in Great Britain, Germany, France and other foreign countries. They do not act as middlemen in the manner of handling the goods, but place exporters in touch with reliable agents, who in turn effect the sale. The agency of the European Exporters' Association is one which seems to me worthy of the consideration of parties interested in opening up trading relations with Europe.

* * *

A CORRESPONDENT of the Toronto Globe, writing of the lumber industry of British Columbia says: "The lumber trade is inclined to favor a retaliatory policy toward the United States. As in Ontario, it is claimed that the export of logs and the import of lumber, shingles, etc., under the existing American tariff will be more profitable than the domestic manufacture. This is still a lumbering country. Mill refuse is burned, and soft wood in every form is lying along the shores and wasted as freely as in older Ontario 30 years ago. Square timber is turned out of the mills so long that it requires three flat cars together to carry its length, and such timber is often two feet square and more. An ordinary order for lumber is filled with boards twelve inches wide, and almost any required dimension in timber can be supplied. There are wooden eave troughs on the houses, and especially on Vancouver Island many of the finest and most ornate residences are built of wood. This forest wealth which seems to be thrown about everywhere in prodigal carelessness, the great timbers, the immense piles of long and wide boards, the heavy planking on wharves and docks, all without knot or flaw, always attract the attention of visitors from older Canada. The exhaustion of this supply is not yet within measurable distance, and it is treated as if such a result was an impossibility. The influences which make for a tariff protection, retaliatory and otherwise, on lumber are comparatively weak. With the freedom of the American market there would be an opening for British Columbia products in Skagway and Wrangel, and there would be an opening also in the western states. But so far as the market south of the boundary is concerned it is questionable if Canadian lumber could make much headway. The Pacific slope is as well timbered in American as in Canadian territory. The "slaughter market" argument, too, is heard in advocating a tariff on American lumber. The real market of the British Columbia product, however, is in Australia, Hawaii, the west coast and Europe, and there the great sailing vessels are continually carrying it. The home market is of comparatively little importance."

So-called wood tapestries are made by gluing sheets of veneer to a woven cloth back, then cutting the veneer as desired. The glue used to unite the cloth and wood is of a character to remain pliable after drying. The cutting of the veneer must be very nicely done, so as not to injure the fabric backing. The invention is of French origin.

NATIONAL HARDWOOD INSPECTION RULES.

The Chicago Hardwood Lumber Exchange called a meeting of hardwood lumber dealers for the 5th of April last, the chief object being to adopt a system of uniform grading. The meeting resulted in the formation of the National Hardwood Lumber Association, comprising the markets of Cincinnati, Memphis, St. Louis, Chicago, Racine, Milwaukee and Minneapolis, and it is expected that other markets will also become identified with the organization. Uniform inspection rules for the grading of hardwood lumber were adopted, and in view of the importance of the subject, we give some of the rules below:

STANDARD GRADES. The standard grades of hardwood lumber are firsts, seconds, commons and culls, except as otherwise specified. When firsts and seconds are combined as one grade, there shall be at least 33 $\frac{1}{3}$ per cent. of firsts. Lumber below the grade of culls shall be classed as mill culls.

STANDARD LENGTHS. The standard lengths are 6, 8, 10, 12, 14, 16, 18 and 20 feet, except as otherwise specified. Most lumber is handled in lengths of 10, 12, 14 and 16 feet. Odd lengths, such as 9, 11 and 13 feet, shall be measured back to the next even length, except when otherwise specified. In the grade of firsts and seconds the lengths are from 7 to 16 feet, but there must not be over 10 per cent. of 10 foot lengths, unless otherwise stated.

STANDARD THICKNESS.—The standard thicknesses of lumber are $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

STANDARD DEFECTS.—One knot 1 $\frac{1}{4}$ inches in diameter. Two sound knots not exceeding in extent or damage 1 $\frac{1}{4}$ in. knot. One inch of bright sap, except when otherwise specified. One straight split, not exceeding in length, in inches, the surface measure of the piece in feet, except as otherwise specified. Worm or grub holes not exceeding in extent or damage one 1 $\frac{1}{4}$ inch knot, except as otherwise specified. Ordinary season checks are not considered defects. Black stains, heart shakes, rots, dote and unsound knots over 1 $\frac{1}{4}$ inches in diameter are considered serious defects, reducing to a grade lower than firsts and seconds.

In the following rules all widths and lengths mentioned shall be inclusive.

SPECIAL INSPECTION. Log run means the full run of log with mill culls out. Common and better means the full run of the log with culls and mill culls out. Merchantable means the full run of the log with mill culls out, and that the common and better shall be measured full and culls one-half.

INSPECTION OF LUMBER SAWED FOR SPECIFIC PURPOSES.—Lumber sawed for specific purposes, such as axles, bolsters, tongues, reaches, etc., must be inspected with a view to the adaptability of the piece for its intended use, because in most cases it cannot be used for other purposes. Such stock shall be inspected clear and culls.

MAPLE.

Grades: Firsts, Seconds, Common and Culls.

Widths, 3 inches and up.

Lengths, 6 to 16 feet.

Thicknesses, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

Bright sap is no defect.

Firsts shall be 8 inches and up wide, 12, 14 and 16 feet long, and free from all defects, except in pieces 10 inches and over wide, which may have one sound standard defect.

Seconds shall be 6 inches and over wide, 10 to 16 feet long. Pieces 6 and 7 inches wide are clear. Pieces 8 and 9 inches wide may have one standard defect. Pieces 10 and 11 inches wide may have two standard defects or their equivalent. Pieces 12 inches and over wide may have three standard defects or their equivalent.

Commons are 3 inches and over wide, 8 to 16 feet long; 3 and 4 inch pieces must have one face clear and two square edges; 5 inch pieces one face clear. Pieces 6 inches and over wide must work three-fourths clear in not over two pieces.

Culls are three inches and over wide, 6 to 16 feet long, and include all lumber not equal to the grade of common that will work one-half clear without waste, in not to ex-

ceed three pieces. Pieces 3, 4 and 5 inches wide must be sound.

Maple strips are 2, 4, 5 and 6 inches wide, 6 to 16 feet long.

Grades: Clear, Commons and Culls.

Clear strips are 10 to 16 feet long and must show one face clear and two good edges.

Commons are 8 to 16 feet long, not to exceed 20 per cent. shorter than 12 feet, and will admit of one standard defect showing on both faces.

Culls are 6 feet and over long and shall work one half clear in not more than three cuttings. No cutting to be less than 2 feet in length.

ROCK ELM.

Grades: Firsts, Seconds, Commons and Culls.

Lengths, 6 to 16 feet.

Widths, 4 inches and over.

Thicknesses, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

Bright sap is no defect.

Firsts and seconds are 4 inches and up wide, 8 to 16 feet long, not to exceed 20 per cent. shorter than 12 feet; 4 and 5 inch pieces must be clear. Pieces 6 inches and up wide must be sound and work 80 per cent. clear in not more than two pieces. The grade of firsts and seconds must have 25 per cent. of clear lumber, 6 inches and up wide and 10 feet and up long. Straight splits the width of the piece will be admitted into the grade of clear.

Commons must be 4 inches and up wide, 6 to 16 feet, not to exceed 20 per cent. shorter than 12 feet, and must work two-thirds clear in not more than three pieces.

Culls must not exceed 30 per cent. less than 12 feet, and work 50 per cent. clear in not more than four pieces.

SOFT ELM.

Grades: Firsts, Seconds, Commons and Culls.

Lengths, 6 to 16 feet.

Widths, 3 inches and over.

Thicknesses, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

Bright sap is no defect.

Firsts are 8 inches and over wide, 12, 14 and 16 feet long and free from all defects, except in pieces 10 inches and over wide, which may contain one sound standard defect.

Seconds are 6 inches and over wide 10 to 16 feet long. Pieces 6 and 7 inches wide are clear. Pieces 8 and 9 inches wide may have one standard defect. Pieces 10 and 11 inches wide may have two standard defects or their equivalent. Pieces 12 inches and over wide may have three standard defects or their equivalent.

Commons are 4 inches and over wide, 8 to 16 feet long. Four inch pieces must have one face clear and two square edges. Pieces 5 inches wide must have one clear face. Pieces 6 inches and over wide must work three-fourths clear in not over three pieces.

Culls are 3 inches and over wide, 6 to 16 feet long, and include all lumber not equal to the grade of common that will work one-half without waste of sound cuttings in not more than three pieces.

NOTE. Black spots or streaks are serious defects, and inspectors shall be careful in estimating their damage. If they are excessive they will reduce the piece one or more grades.

BEECH.

Grades: Firsts, Seconds, Commons and Culls.

Lengths, 6 to 16 feet.

Widths, 3 inches and over.

Thicknesses, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

Bright sap is no defect.

Firsts are 8 inches and over wide, 12, 14 and 16 feet long, and free from all defects, except in pieces 10 inches and over wide, which may have one sound standard defect.

Seconds are 6 inches and over wide, 10 to 16 feet long. Pieces 6 and 7 inches wide are clear. Pieces 8 and 9 inches wide may have one standard defect. Pieces 10 and 11 inches wide may have two standard defects or their equivalent. Pieces 12 inches and over wide may have three standard defects or their equivalent.

Commons are 3 inches and over wide, 8 to 16 feet long, 3 and 4 inch pieces must have one face clear and two square edges, 5 inch pieces one face clear. Pieces 6 inches and over wide must be of sound character and work three-fourths clear in not more than two pieces.

Culls are three inches and over wide, 6 to 16 feet long, and include all lumber not equal to the grade of common that will work one-half clear, not to exceed three clear cuttings. No piece to be less than 3 inches wide nor less than 2 feet long. Pieces 3, 4 and 5 wide must be sound.

BIRCH.

Grades: Firsts, Seconds, Commons and Culls.

Lengths, 6 to 16 feet.

Widths, 3 inches and over.

Thicknesses, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

Bright sap is no defect.

Firsts are 8 inches and over wide, 12, 14 and 16 feet long, and free from all defect, except in pieces 10 inches and over wide, which may have one sound standard defect.

Seconds are 6 inches and over wide, 10 to 16 feet long. Pieces 6 and 7 inches wide are clear. Pieces 8 and 9 inches wide may have one standard defect. Pieces 10 and 11 inches wide may have two standard defects or their equivalent. Pieces 12 inches and over wide may have three standard defects or their equivalent.

Commons are 3 inches and over wide, 8 to 16 feet long, 3 and 4 inch pieces must have one face clear and two square edges, 5 inch pieces one face clear. Pieces 6 inches and over wide must be of sound character and work three-fourths clear in not more than two pieces.

Culls are 3 inches and over wide, 6 to 16 feet long, and include all lumber not equal to the grade of common that will work one-half clear, not to exceed three clear cuttings, no piece to be less than 3 inches wide nor less than two feet long. Pieces 3, 4 and 5 inches wide must be sound.

Red birch shall be not less than 75 per cent. red on one side. Four and 5 inch strips shall have one face all red. Otherwise the grade shall be governed by the rules of ordinary birch.

BASSWOOD.

Grades: Firsts, Seconds, Commons and Culls.

Lengths, 6 to 16 feet.

Widths, 3 inches and over.

Thicknesses, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

Bright sap is no defect.

Firsts are 8 inches and over wide, 12, 14 and 16 feet long and free from all defects, except in pieces 10 inches and over wide, which may contain one sound standard defect.

Seconds are 6 inches and over wide, 10 to 16 feet long. Pieces 6 and 7 inches wide are clear. Pieces 8 and 9 inches wide may have one standard defect. Pieces 10 and 11 inches wide may have two standard defects or their equivalent. Pieces 12 inches and over wide may have three standard defects or their equivalent.

Commons are four inches and over wide, 8 to 16 feet long. Four inch pieces must have one face clear and two clear edges. Pieces 5 inches wide must have one clear face. Pieces 6 inches and over wide must work three-fourths clear in not over three pieces.

Culls are 3 inches and over wide, 6 to 16 feet long, and include all lumber not equal to the grade of common that will work one-half without waste, of sound cutting, in not more than three pieces.

Note.—Black spots or streaks are a serious defect, and inspectors shall be careful in estimating their damage. If they are excessive they will reduce the piece one or more grades.

ASH.

Grades: Firsts, Seconds, Commons and Culls.

Lengths, 6 to 16 feet.

Widths, 3 inches and over.

Thicknesses, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3 and 4 inches.

Bright sap is no defect.

Firsts are 8 inches and over wide, 12, 14 and 16 feet long, and free from all defects, except in pieces 10 inches and over wide, which may contain one standard defect.

Seconds are 6 inches and over wide, 10 to 16 feet long. Pieces 6 and 7 inches wide are clear. Pieces 8 and 9 inches wide may have one standard defect. Pieces 10 and 11 inches wide may have two standard defects or their equivalent. Pieces 12 inches and over wide may have three standard defects or their equivalent.

Firsts and seconds 18 feet and over long will admit of 3 inch widths.

Firsts and seconds will admit of 10 per cent. of 10 foot length.

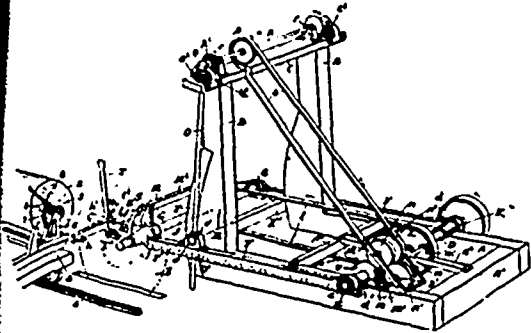
All tapering lumber 20 feet and over long to be measured one-third of the distance from the narrow end.

Commons are 3 inches and over wide, 8 feet and over long. Five inch pieces must have one face clear. Pieces 6 inches and over wide must be of sound character and work three-fourths clear.

Culls are 3 inches and over wide, 6 feet and over long, and include all lumber not equal to the grade of common that will work one-half without waste.

RECENT CANADIAN PATENTS.

THOMAS Bearman, of Owen Sound, Ont., has been granted a patent, No. 58,754, for a circular saw machine, herewith illustrated. The claim is for a lumber sawing machine, in combination, a suitable frame, a swinging frame, a saw located at the outer end thereof on the end of a suitable shaft, suitable uprights supported on the frame having suitable bearings on the side bars of the swinging frame, slots in the bearings, screw spindles screwed through the trunnions, means for retaining the screw spindle, means for raising and lowering the outer end of the swinging frame, a supplemental swinging frame, pivoted on an extension of the frame and extending



CIRCULAR SAWING MACHINE.

on each side of the cutting edge of the saw, and means for adjusting and holding the supplemental frame in any desired position; also having bevel pinions at the upper ends of the screw spindles, a ball and socket bearing for the upper end of the screw spindles, a countershaft provided with bevel pinions meshing with the bevel pinions at the upper end of the screw spindles, the pulley on the countershaft, the pulley on the main shaft, the minor swinging frame having two spindles with abutting friction pulleys, a supplemental pulley on one of the spindles of the abutting friction pulleys, and a belt connecting such supplemental pulley to the pulley on the countershaft. The combination with the circular saw, suitably supported and driven, and means for adjusting the same above and below the centre of the log, of the carriage, the lathe points for supporting the log, the lever secured on the square end of the lathe point, and the quadrant with which the lever is designed to co-act, etc., etc.

A patent has been granted to Mr. John Sharp, of Grand Hurst, Ont., for a water wheel, as shown by the accompanying cut. The claim is for a wheel secured to a vertically journalled shaft, and a series of radial buckets inclined from the vertical at substantially an angle of forty-five degrees, and secured to the rim, in combination with a frame surrounding the buckets, a cover herefor provided with a series of openings, each extending over two or more buckets, and a curved conductor

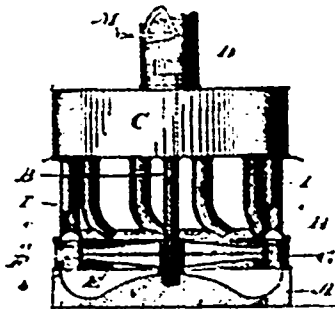


Fig. 1.



Fig. 2.

TURBINE WATER WHEEL.

connected with each of the said openings and with a source of water supply, the arms in the conductors being such as to discharge the water at substantially a right angle to the surfaces of the buckets; a curved conductor connected with each of above said openings, a tank with which the said conductors are connected, a flume connected with the tank, a cut-off valve in the said flume, and a cut-off valve for each conductor, substantially as set forth.

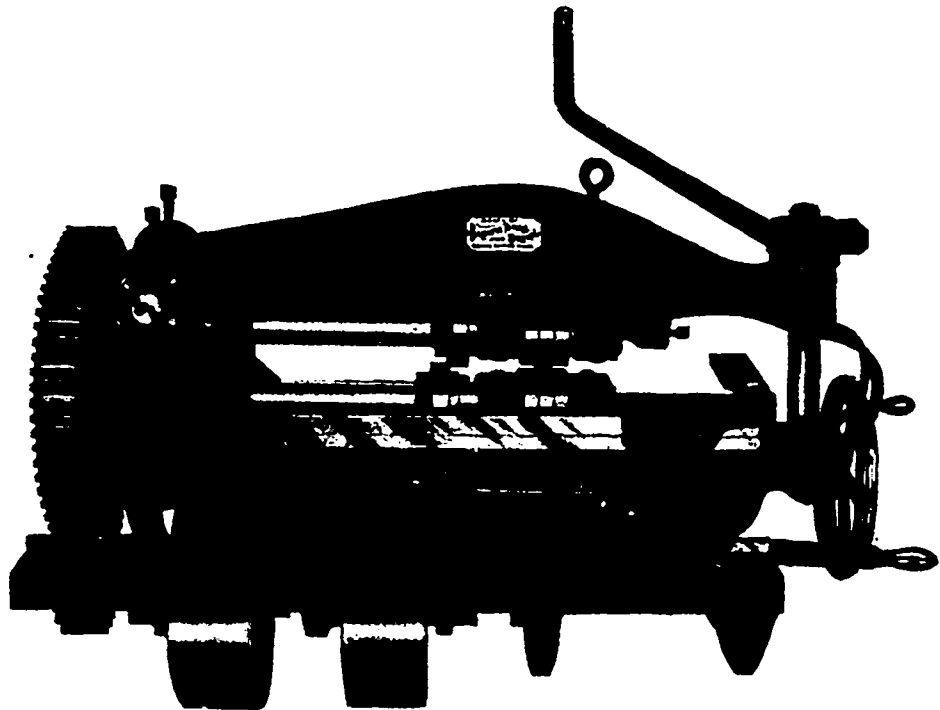
BOLTON COMBINATION MOVEABLE SAW STRETCHER AND SHEAR.

THE fine tensioning of band saws being so essential to the best results in their operation, it stands to reason that a good machine for this purpose is indispensable. The Bolton 12-inch combination movable saw stretcher and shear, No. 5, herewith illustrated, is manufactured by Messrs. Baldwin, Tuthill & Bolton, of Grand Rapids, Mich., and is claimed to be the finest thing on the market for tensioning band saws. A few of the features of advantage claimed by the makers are enumerated below.

The Bolton stretcher No. 5 has geared rolls for tensioning, and a pair of shearing disks adapted to shear either the back or toothed edge of a band or gang saw. It is equipped with reverse motion to drive the rolls instantly in either direction. The entire machine is mounted on a heavy bed plate, with two V tracks, over which the machine is moveable laterally by hand wheel to adapt the rolls to act on any part of the width of the saw. Pressure of rolls is obtained by lever and coarse lead screw, and maximum pressure of rolls is obtained by less than one-quarter turn of the lever. This affords quick application or removal of pressure, advantages that will be apparent to every saw filer.

The shear feature is a very useful one, especially in mills that have to contend with gravel or iron in the logs. The shears feed the saw through the machine at the regular speed of rolls when run in tensioning, and make a

This stretcher is the heaviest and most powerful machine in the market. It will tension or act on the hardest spots in the heaviest gauged saws with absolute certainty of affording desired results. The rolls are made up of solid steel, ground mathematically true on the most approved segments, that never fail to please. In the makeup and grind of the rolls, which are vital elements to the success of a machine, this stretcher has given the best of satisfaction. It renders the use of hammers largely unnecessary, prevents crystallized spots with the resultant cracking and brazing of saws, makes no hammer marks, prolongs the life of the saws, economizes saw bills, saves the saw filer both time and labor, affects all parts of the blade uniformly according to pressure exerted, restores quickly and uniformly the tension lost by strain of too rapid feed, affords straight running saws that cut to a line, soon pays for itself by increased quantity and improved quality of output, makes possible the use of the thinnest blades, thus saving saw kerf and money, and does not require a skilled filer to operate it, but enables the unskilled filer to greatly improve his saws. The requisites of a good machine are a heavy body, shafts that will not spring, perfect alignment and tracking of the rolls, rolls ground on proper segments, and abundant power with short leverage. Given a machine as above described, the make and grind of the rolls are the vital parts. It is in this respect that some machines are defective. The rolls may not travel together, may not track



BOLTON 12-INCH COMBINATION MOVEABLE SAW STRETCHER AND SHEAR, No. 5.

straight, clean, smooth cut of any width. Three minutes, or less, are usually sufficient to shear a 50-foot saw. There is no mill that will not at times find this shear an invaluable device for use either in shearing a saw from which the teeth have been stripped or one with edge cracks, or for cutting a strip to proper width to braze in. When the shears are not required for use, they may be set to one side out of the way by use of the spanner wrench furnished with machine. The machine is equipped with guide for back or face of saw for use when shearing, a gauge for use when tensioning, elliptic springs for raising upper roll when pressure is diminished, very heavy, powerful cut gears, and two grip clutch pulleys for motion.

The movable feature, which gives the entire machine a 12-inch lateral movement across the bed plate or track, and so adapts the rolls instantly to act on any part of the width of saw, is a convenience of especial advantage on wide, heavy log band saws, because the filer has no occasion to move or change the position of the saw laterally, which is necessarily heavy and unhandy to move. It is manifest that this system of moving the entire machine bodily across the saw is vastly better than a lateral movement of only the shafts carrying the rolls. By this system we have absolute power, no possible lost motion, no change in the roll shaft bearings with respect to the rolls, while the rolls cannot fail to track perfectly, travel together, with the shafts always parallel and so heavy that they will not spring.

together, may be of different diameters and may not be properly crowned. This machine is free from such defects, the rolls being made up solid of the best imported steel by special process and ground on a grinding lathe built expressly for this work, by means of which they are ground absolutely perfect.

Further information may be obtained from the makers, Messrs. Baldwin, Tuthill & Bolton, Grand Rapids, Mich. Our readers are asked to write for their new 200-page catalogue, containing a valuable treatise on the fitting of all classes of saws, and "Economics for Millmen," which they will mail free to all saw filers and millmen.

Mr. N. D. Seaman, Owen Sound, Ont., in remitting for an advertisement in the WEEKLY LUMBERMAN, writes:—"I am well pleased with the returns for the investment. The returns for this 'ad' far exceeded my expectations." To lumber manufacturers and dealers having stock to dispose of, the moral is plain.

In the saw mills of Canada many different methods are employed for doing similar work, each one, perhaps, possessing certain points of merit. Superintendents, sawyers, filers, etc., are respectfully asked to contribute to this journal their views as to the best method of doing certain mechanical work, such as lining and setting up shafting, setting up rotary and other circular saws, rules for finding out and marking off the shape of circular saw teeth for guidance in grinding and filing.

THE NEWS.

Craig Bros. have purchased a saw mill at Midland, Ont.

J. M. Mackney is opening out in the lumber business at Morris, Man.

S. Salmon & Co. are building a sash and door factory at Avonmore, Ont.

The Assinboine Lumber Co., of Brandon, Man., have added a lath machine.

McIlhenny Bros. are building a steam saw mill at Richmond Corner, N.B.

The Gillies Bros. Co. are erecting a shingle mill between Araprior and Braeside.

R. Gave's planing mill at Kingston, Ont., was burned last month, the loss reaching \$10,000.

Sawyer Bros., planing mill, of Coldwater, Ont., have gone to Revelstoke, B.C., to engage in same business.

Frank Lavin has purchased the saw mill and lumber business of the Salmo Lumber Company at Salmo, B.C.

The business men of Baie St. Paul, Que., are endeavoring to organize a company to erect a chemical pulp mill.

Mr. Kerr, of Walkerton, is considering the erection of a factory at Parry Sound for the manufacture of wood-ware.

The Patent Cloth Board Company, of Parry Sound, Ont., are shipping cloth boards and veneer to Great Britain.

A. McPherson & Co.'s shingle mill at Longford Mills, Ont., is again in operation. Robert Marshall, of Washago, is in charge.

L. E. Parsons has removed his steam saw mill from Golden Lake to Barry's Bay, about one mile from the site of the O. A. & P. S. station.

The Rathbun Co. have sold out their stock of sash, doors, etc., in Winnipeg, to the Rat Portage Lumber Co. and Turnbull & McManus.

Mr. Savoye, of Brompton, Que., has made a proposition to the town of Sherbrooke, Que., to establish a box factory there, agreeing to employ 25 hands.

The Assinboine Lumber Co., of Brandon, Man., have closed their branch at Souris. T. H. Patrick, their manager, will start business there on his own account.

The Dickson Company, of Peterboro', Ont., have built a new saw mill at Lakefield. The burner in connection is 85 feet high, 23 feet in diameter and 72 feet in circumference.

J. P. Mosher, of St. Martins, N. B., has made improvements to his saw mill, including new rotary and patent edger, boiler and engine. He now has both steam and water power.

Joe Beeler is said to have been arrested for stealing government timber in North Idaho and rafting it across Kootenai Lake into Canada. His thefts amount to \$25,000 to \$30,000 in value.

Jonas Malott, of Tilbury East, has closed a contract with Frank W. Wilson, of Chatham, to start a nursery, and will plant 50,000 spruce trees on his farm. The trees will be ready for delivery in three years.

The Moodyville Saw Mill Co., Moodyville, B. C., gives its slabs to Chinamen, who take them away to a burner, where they are turned into charcoal. A market for the charcoal is found amongst the canneries.

A dispatch from Montreal, dated May 9th, stated that forest fires were raging in the district to the north of Montreal. The mountains and highlands from Ste. Agathe to Labelle were being swept by the fires.

The Cody saw mill, near Soudon, B. C., has been purchased by Mr. Bascom, and the machinery has been shipped to the line of the Crow Nest Pass railway, where it will be used in cutting construction timber.

Woodman & Miller, of St. John, purpose building a large mill on the boundary line between Quebec and New Brunswick, on Madawaska river. They intend having shingle, planing and turning lathes, also rotary, etc.

A western exchange says that when the Hastings mill people went to Vancouver, B. C., in 1864, to build a saw mill, they took along two cannon to keep off the Indians. The cannon still stand in front of the general office.

William Clark, of Galt, Ont., has patented a saw-setting machine, which is so constructed that it will automatically and regularly feed the saw to the setting dies, which are so arranged as to set the teeth at any desired angle to the blade.

Cornell University, Ithaca, New York, has established a college of forestry, with Professor B. E. Fernow, chief of the forestry division of the agricultural department of the government, as director. This university is said to be the first in America to take this important step.

Wm. Harris, of Dav's Mills, Algoma, Ont., offers power and mill site free, with small bonus, to any responsible party who will erect any kind of wood-working, furniture or handle factory. There is any amount of good hardwood and other timber near the site.

The Vancouver, B. C., World says: The Department of the Interior, by dodgers tacked up in the post-office, is calling for tenders for a timber berth, in this province, of 480 acres. By the merest chance these dodgers can be seen, and certainly not by those engaged in the lumbering trade.

Gilmour & Co. have just completed a new refuse burner at their Canoe Lake mills. They have lately added to their file-room outfit several new machines, of which one is a lap grinder purchased from Baldwin, Tutill & Bolton, of Grand Rapids, Mich. This machine is capable of grinding both laps on a 10-inch saw in eleven minutes, and no filing is required after its use.

West coast lumber is coming largely into use in the building of vessels and the new impetus that has been given to ship-building by the war. Fir for docking is especially in demand, and a United States Pacific coast concern has recently received an order from Philadelphia for a large order. The specifications call for material with not a knot or blemish of any kind, and the west coast lumber is the kind that can be furnished to comply exactly with such requirements.

CASUALTIES.

A young man named Ayotte recently had his leg broken in Gilmour & Co.'s mill at Algonquin Park.

John McDougall, of South River, a river driver for M. Brennan & Sons, was drowned while working on Mc-Brien's rapids.

James Daly, a mill hand at W. J. Carnwath's steam mill at Chapman Creek, Riverside, N. B., was severely injured. Over 100 logs rolled over his body, but hopes are entertained of his recovery.

PERSONAL.

Mr. William Gordon, lumber merchant, has been elected as alderman for the city of Stratford, Ont., to fill the vacancy caused by the resignation of Ald Mavor.

Hon. E. H. Bronson, of the Bronsons & Weston Lumber Co., has returned to his home in Ottawa much improved in health. He spent the past winter in California.

Robert Connolly, for many years a lumber operator in Cardwell and Sussex, N.B., has accepted the position of manager for C. M. Bostwick & Co. at Salmon river, St. John county, succeeding Mr. F. M. Anderson.

Mr. William Mackey, the well-known lumber merchant of Ottawa, has again contributed a gold medal to the Central Canada Exhibition, to be offered in this year's prize list live stock department as a special prize for the best team of general purpose horses.

The annual report of the Department of Interior states that Mr. James Leamy has been appointed Crown Timber Agent for British Columbia, in succession to Mr. Higginson, who was removed last year. Mr. Leamy's headquarters are at New Westminster, B.C.

Mr. J. H. Leonard, an esteemed resident of St. John, N.B., died last month after a few day's illness. He came to St. John from London, England, in 1848, being then 16 years old. He engaged in the lumber business with Mr. James Hunter and subsequently with Mr. James Wetmore.

Mr. J. M. Poitras, who entered the employ of the Rathbun Company of Deseronto—then Mill Point—nearly twenty-two years ago as general superintendent of their lumber department, in later years becoming general travelling agent, severed his connection with the firm on the 30th of April last to take a more responsible position with a leading Ottawa house.

It becomes our painful duty to chronicle the death of Mr. Walter McFarlane, of St. Mary's, N.B. Mr. McFarlane was well known in the lumber trade as a manufacturer of peavies and other lumbermen's tools. He had apparently fully recovered from a recent illness, and was attending to business as usual on the day preceding his death, but was suddenly stricken during the night. The deceased was held in high esteem in the community in which he spent the greater portion of his life, as well as by all who had the privilege of his acquaintance.

MAGNOLIA METAL.

The Magnolia Metal Co. begs to inform users of bearing metals and the trade generally that on the 20th of April, 1898, in the United States Circuit Court for the southern district of New York, before the Honorable William J. Wallace, circuit judge, they secured a permanent injunction against Benjamin and Moses Lowenstein, trading as B. Lowenstein and Brother and as the Nassau Smelting and Refining Co., New York, restraining them from offering for sale or advertising "Mongolia Anti-Friction Metal," which metal they were advertising and selling as Magnolia Anti-Friction Metal, and which was calculated to deceive the public. The following is an extract from the decree of Judge Wallace:

"Ordered, adjudged and decreed that the complainant, the Magnolia Metal Company, is the owner of a good and valid trade mark, consisting of the word "Magnolia" as applied to anti-friction metals and alloys made and sold by it, and is entitled to the sole and exclusive use thereof, and that the defendants Benjamin Lowenstein and Moses Lowenstein (trading as the Nassau Smelting and Refining Company) have by the use of the word "Mongolia" upon anti-friction metal made and sold by them, violated and infringed upon the exclusive rights of the complainant in the premises, and it is further ordered, adjudged and decreed that the defendants Benjamin Lowenstein and Moses Lowenstein and each of them, their and each of their attorneys, agents, servants, clerks, salesmen and employees and each of them and all persons acting under them or their authority be and they hereby are perpetually enjoined and restrained from infringing the complainant's said trade mark and right, and from marking, designating or describing any anti-friction or other like alloy or metal as "Mongolia," and from using on any alloy or metal for anti-friction or like purposes, or in conjunction with manufacture or sale thereof, the word "Mongolia" or any other word calculated to deceive the public by a like close imitation of the complainant's trade mark "Magnolia," and it is further ordered, adjudged and decreed that the complainant recover from the said defendants as well the damage sustained in or by reason of said infringement as the profits, gains and savings made or realized by the defendants thereby.

TRADE NOTES.

In a letter to the LUMBERMAN, Messrs. W. B. Mershon & Co., of Saginaw, Mich., state that the Mershon band resaws seem to be as popular as ever, and have now become a staple article. Sales keep up on a steady basis, and they have no reason to complain of a lack of orders in the band resaw department.

Messrs. R. B. Mowry & Son, of Gravenhurst, Ont., have been kept very busy fitting up local mills. The new mill of the Longford Lumber Company was supplied with a large quantity of machinery, including a pair of Morley steam niggers. Other shipments were made last month as follows: Boss shingle machine to D. Horte, Cheshamford; complete shingle cutting outfit to Cockburn & Sons, Cache Bay; shingle jointer to J. S. Playfair, Midland; match-making machine to the Rathbun Co., Deseronto.

Mr. Madison Williams, of Port Perry, Ont., reports that he is putting a 56 inch Lefell water-wheel into W. H. Johnston's mill, Pefferlaw, Ont.; a 30 inch Perfection, with shafting, gearing, pulleys, etc., into A. W. Carveth's roller mill, Orono, Ont.; feed grinder, to replace stones, with gears, shafting, etc., into E. Muir's roller mills, Pefferlaw, Ont., and has supplied a 40 ft. Lane saw mill carriage for Morris Shaver's mill, South Indian, Ont., and a 23 inch Vulcan wheel for J. Dugan, Gray's mill at Garden Hill, Ont.

Messrs. Baldwin, Tutill & Bolton, Grand Rapids, Mich., report that the Spanish-American difficulty is not interfering with their business in the least, as they have enough orders now booked to keep them running for a long time to come. They are doing fully twice the volume of business now that they were last year at this time. Among some of the larger orders on the book, and others which have been recently shipped, are complete large band saw filing room outfits to the following: Kane & Raine, Empire, Pa.; W. A. Jones & Co., Caledonia, Pa.; Erie Railroad Co., Buffalo, N.Y. Complete band resaw filing room outfits to Dewing & Son, Point Marion, Pa.; Jonathan Thomas, Topeka, Kans.; Harris Machinery Co., Minneapolis, Minne.; Thomas Merriam, Syracuse, N.Y.; Jones Lumber Co., Williamsburg, Ky.; R. G. Peter Lumber & Shingle Co., Benton Harbor, Mich. Three shingle gang filing room outfits to W. M. Wilkin, Erie, Pa. Single machines and partial outfits to Aranz Bros, Decatur, Ala.; Standard Oil Co., Oswego, N.Y.; Maley & May, Evansville, Ind.; F. W. Read & Co., Marquette, Mich.; C. C. Thompson Lumber Co., Washburn, Wis.; C. C. Mengel, Jr. & Bro. Co., Louisville, Ky.; Tatum & Bowen, Portland, Ore.; Estate of Thos. Nestor, Baraga, Mich.; W. B. Mershon & Co., Saginaw, Mich.; John A. White Co., Dover, N. H.; Chesbrough Bros., Emerson, Mich.; Howard Lumber Co., Lovett, Pa.; Ward Lumber Co., Whiting, Mo.; W. A. McLean, Cloverdale, Ind.; Paine Lumber Co., Oshkosh, Wis.; W. A. Davides Lumber Co., Nashville, Tenn.; E. W. Leech, Ltd., O' Peyton, Kimball & Barber, West Superior, Wis., etc.

TABLE OF LUMBER WEIGHTS.

BELOW we give a table of weights for hardwood lumber in the rough. In making such a table, says the Hardwood Record, of Chicago, we appreciate the fact that a won't exactly fit everywhere, owing to the difference in texture of the same kind of timber in different localities. In some cases where there is a wide difference in weight, as, for instance, between northern and southern oak, we have given two weights and classified them. In all hardwoods, excepting soft elm, butternut, black ash, basswood, cottonwood and poplar, it has been the usual custom of dealers on this market, in computing freight charges, to figure dry stock at four pounds and green stock at six pounds per foot, and make allowance as in their judgment the character of the wood and locality might warrant. Hardwoods in the south, particularly oaks, are harder and closer grained than in the north, and hence heavier.

We believe, however, that the table presented below is about a general average, and needs only a slight adjustment in a few of the hardwood producing states. The figures given are in pounds per 1,000 feet.

	Dry.	Green.
Ash, white...	3,200	5,000
Ash, black...	3,000	4,500
Basswood...	2,200	3,500
Beech...	3,500	5,500
Birch...	3,500	5,500
Butternut...	3,000	5,000
Cedar...	3,000	...
Cherry...	3,500	5,500
Chestnut...	4,000	6,000
Cottonwood...	2,800	4,000
Cypress...	3,000	5,000
Elm, rock...	4,000	6,000
Elm, soft...	3,000	5,000
Gum...	3,500	5,500
Hickory...	4,500	7,000
Maple, hard...	4,000	6,000
Maple, soft...	3,500	5,500
Oak, white, northern...	4,000	5,500
Oak, white, southern...	4,200	6,000
Oak, red, northern...	3,500	5,000
Oak, red, southern...	4,000	6,000
Poplar...	2,800	4,000
Sycamore...	3,000	4,500
Walnut...	4,000	6,000
Yellow Pine...	3,000	...

WOOD PULP DEPARTMENT

MANUFACTURE OF SULPHITE PULP.

A FEATURE of the paper making industry of Canada that has become very marked is the increasing production of chemical pulp. That, says the Canadian correspondent of the Paper Mill, is a departure of quite recent date. When the chemical mills of Chatham, N. B., were first started they appeared to have fair prospects, but, as a matter of fact, they had to pass through a comparatively long period before they began to earn a return on the capital invested. But their turn came at last. A new and more prosperous era opened for them some time before they were acquired by the company that now owns them, and has continued ever since. From a matter of merely domestic requirements, the demand expanded into one of large dimensions on export account.

The enterprise of the Chatham manufacturers secured so much British custom that they could scarcely attend to it all, and at the same time meet the call of paper mills at home. Having once turned this way the British demand opened out generously. The large capacity and good prices of the English market soon tempted other manufacturers into the business of making pulp sulphite. The several mills projected at St. John, N. B., and at other points in the maritime provinces are to make sulphite pulp. All aim to serve the British market.

Next the Ontario and Quebec manufacturers of sulphite pulp found that they, too, could ship to England at a profit, and they have been doing so. Then, to their surprise, a good healthy demand announced itself from the United States, and they were able to sell to customers in that market at a price which showed a long net advance in the values current at home. Hence, there has lately been a good deal of sulphite pulp manufactured in Ontario for export, both to England and to the United States. For example, the Riordon Paper Company, at Merriton, Ont., has for some time been giving special attention to the manufacture of chemical fibre. Its chemical mill has been greatly improved, driers have

been introduced and the most approved means of manufacture have been utilized, with the result that a very choice article has been placed on the market, an article, too, which it is paying the company handsomely to turn out.

The manufacture of sulphite pulp has proved far more profitable than the turning out of news. Sulphite pulp yields a big profit, news does not. Certain it is, however, the Riordon Paper Company is going into the manufacture of chemical pulp on a large scale, and it is agreed on all hands that this product pays better than ground pulp or news. Further, so satisfied is Mr. Charles Riordan that there is money in the manufacture of sulphite pulp that he is contemplating a still greater departure into it. He has just returned from the province of Quebec, where he has been prospecting along the left bank of the Ottawa river to find a site for a big pulp mill. What he wants is a large tract of the right kind of timber, with a conveniently situated water fall. Mr. Barber of the Georgetown paper mills, is associated with him in this quest.

THE CUSHING PULP MILL.

THE prospectus of the Cushing Sulphite Fibre Co., Limited, of St. John, N. B., has been issued. The directors are Joseph Allison, Thos. McAvity, W. H. Murray, George S. Cushing and Geo. S. Baird. With them as incorporators are George McKean and James Fleming. The solicitor and secretary is L. A. Currey, the consulting engineer James Beveridge, of London, Eng., and the bankers the Bank of Nova Scotia. The capital stock is \$500,000.

The incorporators have subscribed \$30,000 and as soon as the balance of the \$250,000 now sought is subscribed the erection of the mill at Fairville will be begun. Steps have also been taken to introduce the stock in the United States and in England, with what are believed to be excellent prospects of success.

It is announced that when the stock is subscribed buildings will be erected to accommodate plant to produce fifty-six (56) tons of dry pulp per day; but in the meantime machinery for twenty-eight (28) tons per day only will be put down. The company have now made satisfactory arrangements with the City of St. John as to water supply, and are ready to proceed with the work of construction as soon as they are financially in a position to do so.

PULP NOTES.

A meeting of the Nova Scotia Wood Pulp and Paper Company was recently held at Halifax, N.S., to consider the best method of paying off the present debts of the company.

Mr. Drew, a New Hampshire man, has purchased the seignior of Mille Vache, below Tadoussac, on the Saguenay, in Quebec, and will erect a pulp mill there. It is a splendid point for shipping.

The Cl. contour Pulp Company has asked the town for a bonus of \$30,000, in consideration of which they agree to build a large sulphite pulp mill, in addition to their present mill. They agree to expend in all some \$250,000.

It is announced that negotiations with the view of erecting a very large pulp and paper mill at Keewatin are pending, with a probability that before many months operations may begin on a plant that will produce 100 tons daily.

The Scandinavian market for pulp is very firm, which is attributed to a large extent to the hostilities now going on between the United States and Spain, it being considered likely that the exports from the former country will drop off considerably in the future.

Quebec and Montreal capitalists agreed to expend \$4,000,000 in establishing industries at Shawenagan Falls, Que., within thirty months from June, 1897, in return for certain water power privileges. Engineers are now surveying sites for new works, which may include pulp and paper mills.

It is said that Mr. Donald Fraser, of Fredericton, N.B., who is now in England, will endeavor to interest British capitalists in the establishment of a pulp mill near that city. Mr. Fraser has acquired considerable information on the subject, and feels satisfied that such an undertaking would prove a profitable investment.

The new pulp mills of the Laurentide Pulp Company at Grand Mere, Que., are expected to be completed about the first of July. An inspection of the buildings was made last month by Sir Wm. Van Horne, Mr. T. G. Shaughnessy, and others. The iron flume for conveying the water power to the mill is nearly completed. It is 14 1/2 feet in diameter.

The German papers are interested in the discussion as to quality of "news" and the relative values of the different blends of sulphite pulp and mechanical wood pulp, with some filling added if necessary. Some take 15 to 20 per cent. of strong sulphite, and remainder mechanical pulp, while others favor 30 to 40 per cent. cheaper sulphite and remainder mechanical. Some add 8 to 15 per cent. cotton waste to give more softness to the paper.



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20 years in the business - the first to make Felts in Canada; capacity 1,000 lbs. per day. All our Felts are woven endless, without a splice. Our Felts will last longer and make dryer Pulp. All up-to-date mills use our Felts. New mills, when in need, write for samples and prices.

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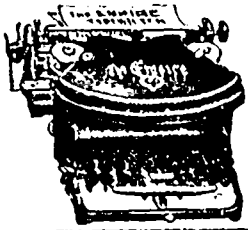
LUMBERING IN CHILE.

In Chile all the small timber is cut down in the winter and left lying where it falls. This is called making the "roze." After the dry season is passed fire is put to this and the ground is well burned off, killing the standing timber. On the ashes wheat is sowed, and the first roze on good ground generally gives a crop of 50 bushels to the acre. After the harvest all the rauli, linge, canela, roble, laurel, and pellin are cut down and "trozada"

(sawed in 12 ft. lengths), and logged to the mill. The branches and tops are then cut and strewed over the ground or piled up for the second roze.

The next year they are again burned off and again the ground is sown to wheat, giving an average, on good ground, of 50 bushels to the acre again. The year following, if any timber fit for the mill is left, it is cut down and logged, and a third roze is followed by wheat, giving generally 40 to 45 bushels to the acre. All timber still

standing, such as coihue, and a few other varieties of little value, is then cleared off, and a fourth roze is again being sown to wheat. This again gives over 40 bushels to the acre. The next year, when the yield has not fallen below 40 bushels, wheat is sown, and when this falls below 40 bushels the land is seeded down to grass for pasture for the working stock.



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HALF THE PRICE
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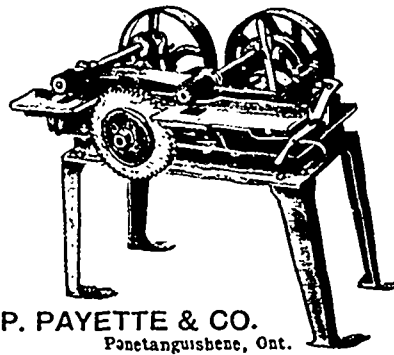
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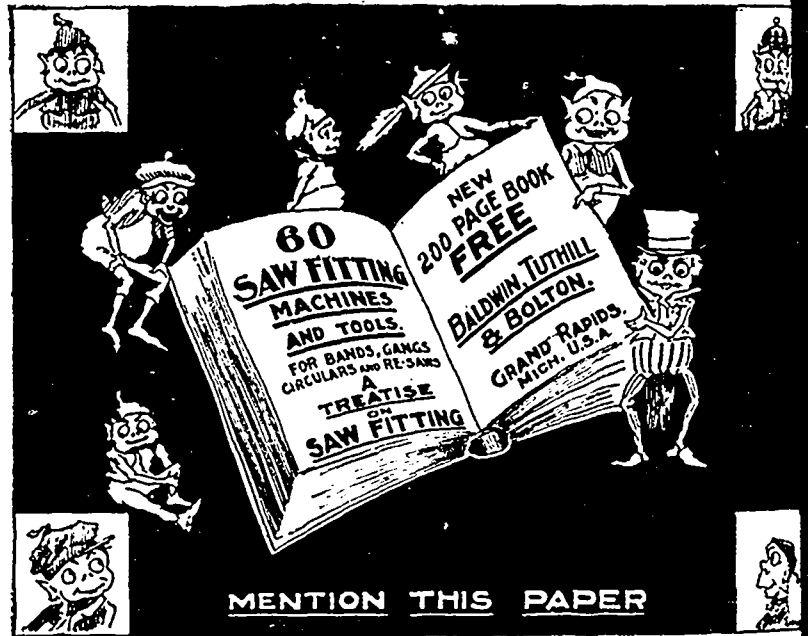
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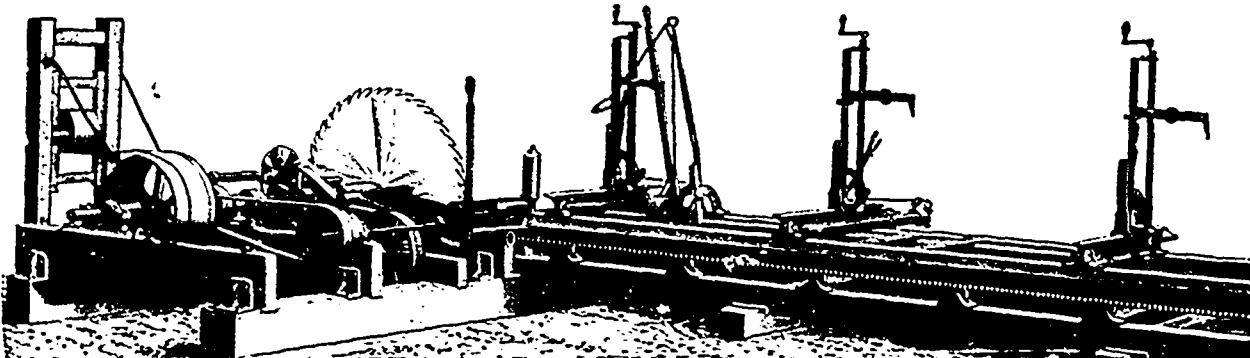
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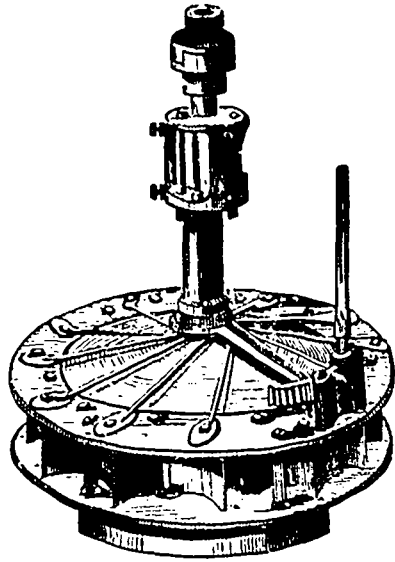
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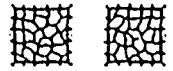
SEND FOR CATALOGUE

Readers are asked to contribute freely to the columns of the CANADA LUMBERMAN, and to send in items of news whenever possible. Let each subscriber resolve to report the news of his locality, such as changes of ownership, mill improvements, market conditions, etc., and the whole will give a valuable compendium of information.

Two thousand two hundred acres of pine trees are cut down every year in order to make the wood cases for lead pencils, of which more than two thousand cases are in Florida, says an exchange. There are twenty-six pencil works in Bavaria, of which twenty-three are in Nuremberg, the great European centre of the lead pencil trade. These factories employ from 500 to 10,000 workers, and produce 4,000,000 lead and chalk pencils every week. One factory alone has a weekly production of over 1,000,000 pencils.



DRY WEATHER WATER WHEELS



With abundance of water, and indifference regarding results, most any old wheel can be made to go—more or less.

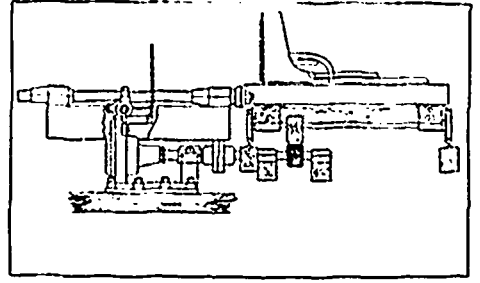
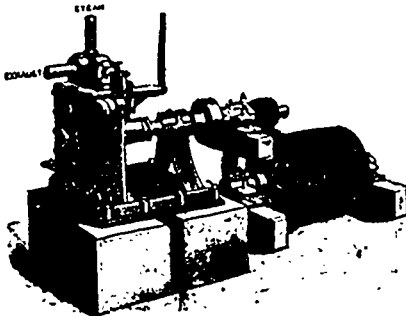
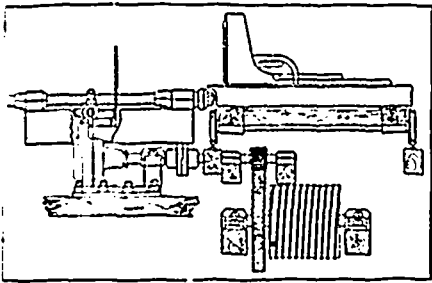
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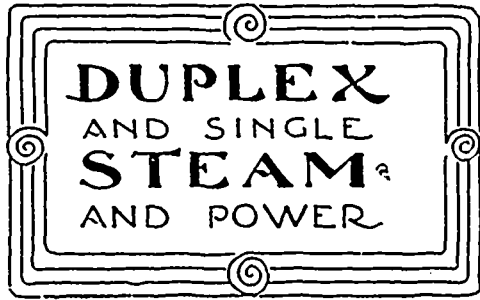
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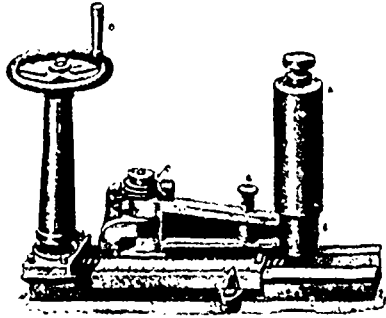
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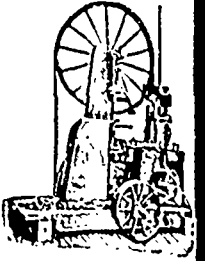
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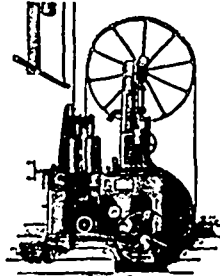
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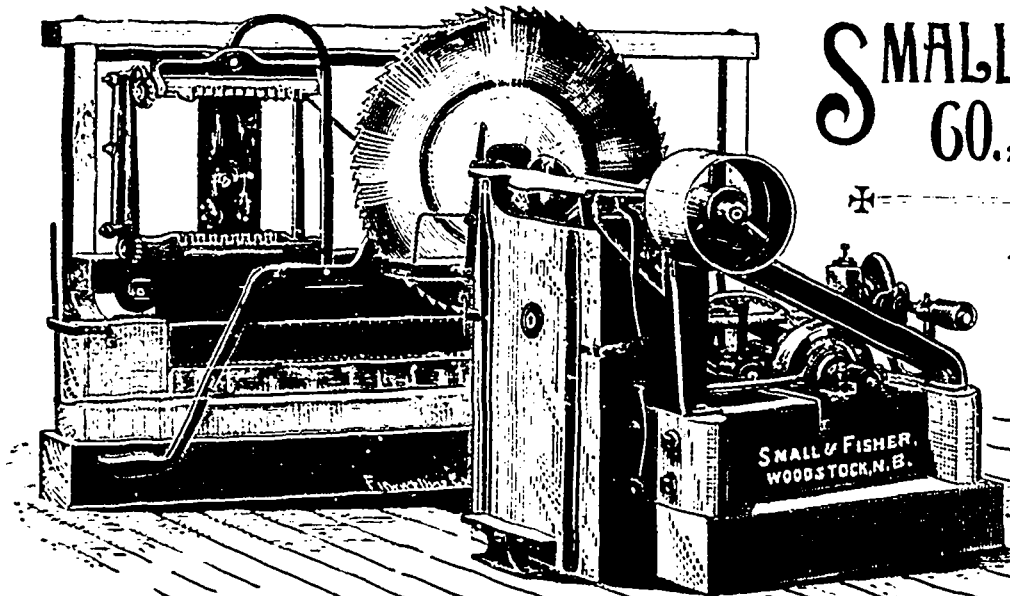
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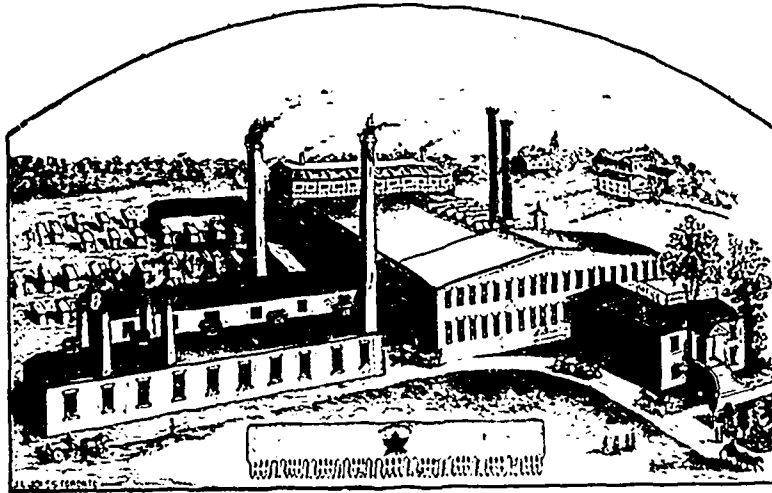
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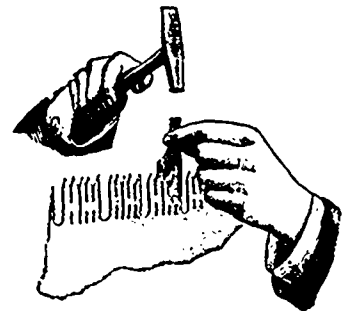
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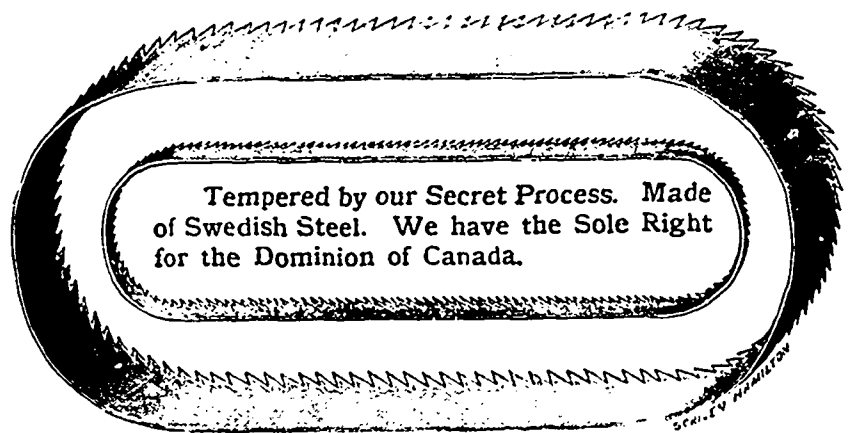
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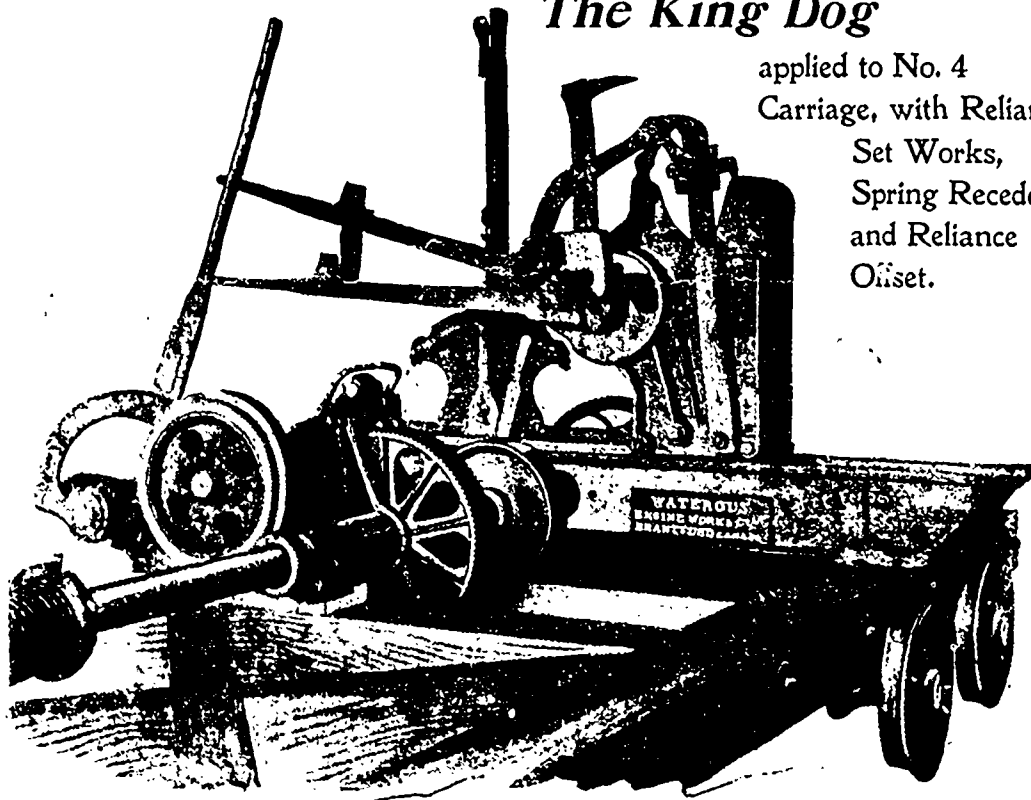
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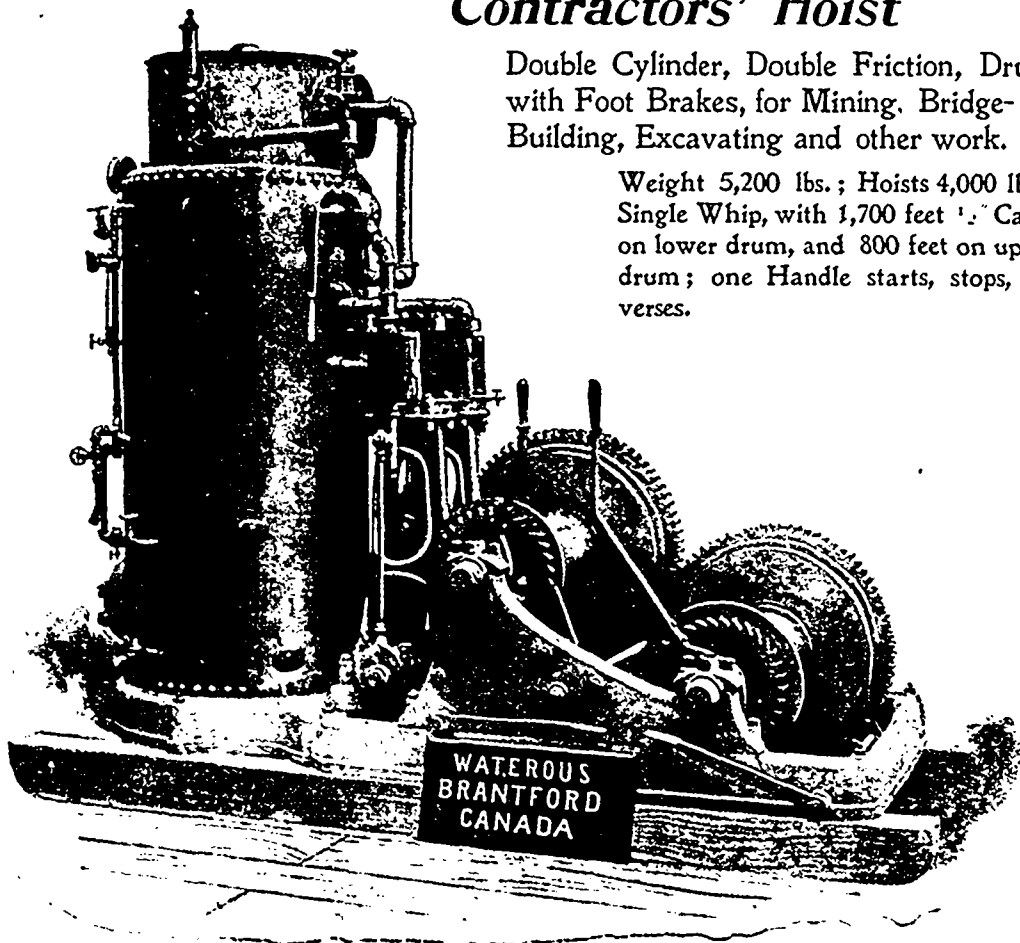
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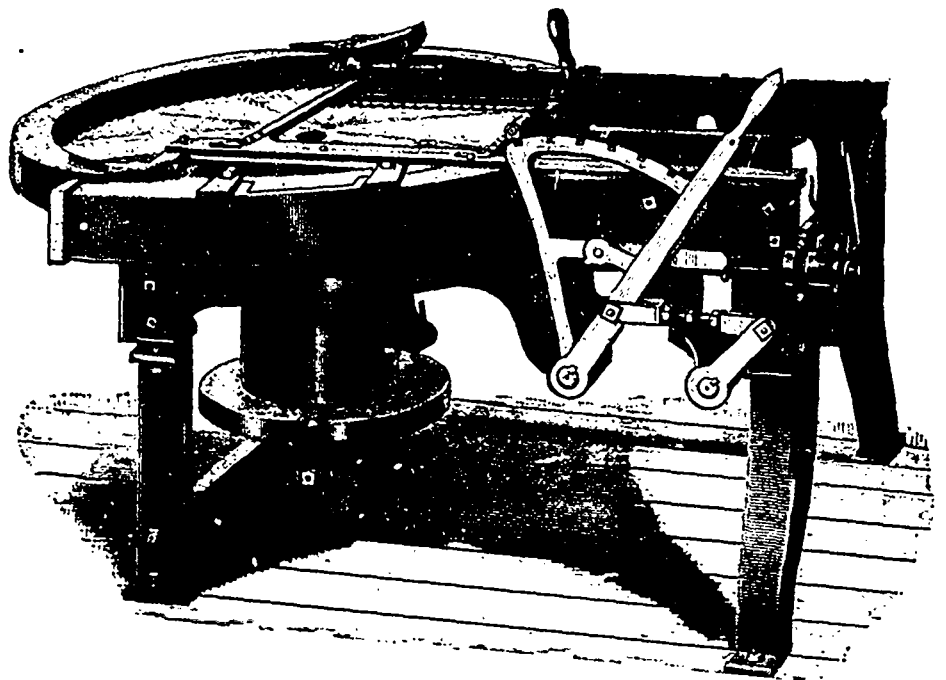
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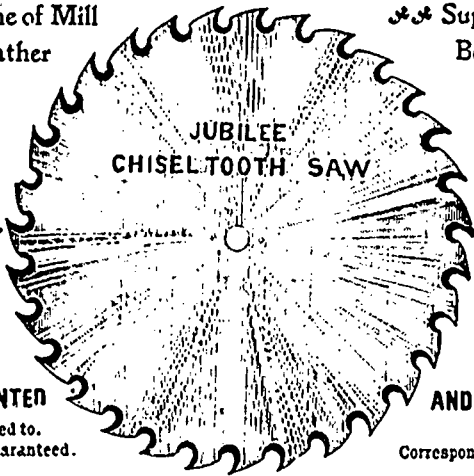
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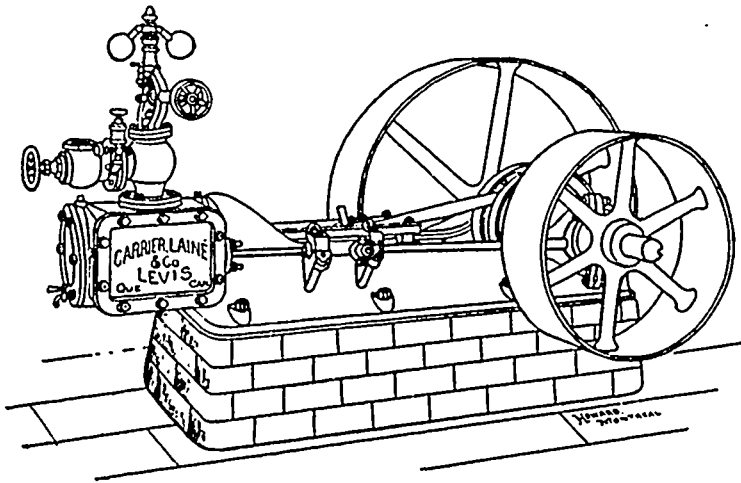
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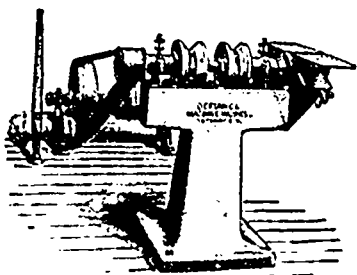
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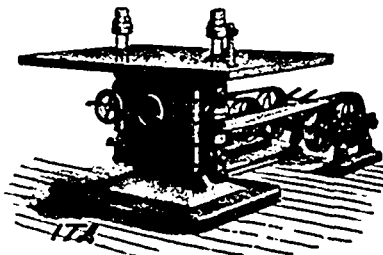
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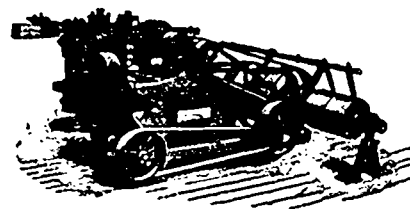
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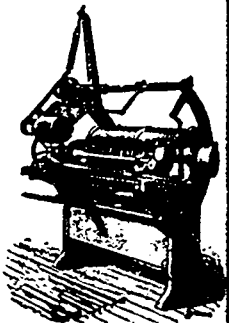
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