

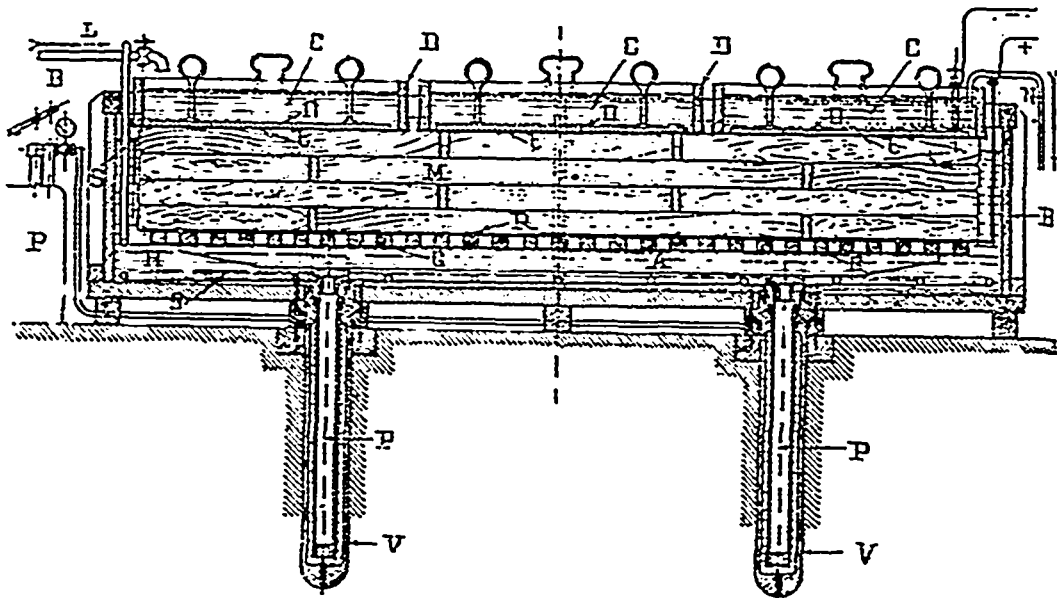
THE RETAILER AND Wood-Worker

NEW PROCESS OF FIRE-PROOFING WOOD.

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

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

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



THE NODON-BRETONNEAU PROCESS OF SEASONING TIMBER BY ELECTRICITY.

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

The firm of Buckel, Bechtler & Hemsstock are building a new saw mill at Nipissing, Ont.

SEASONING TIMBER BY ELECTRICITY.

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

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

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