

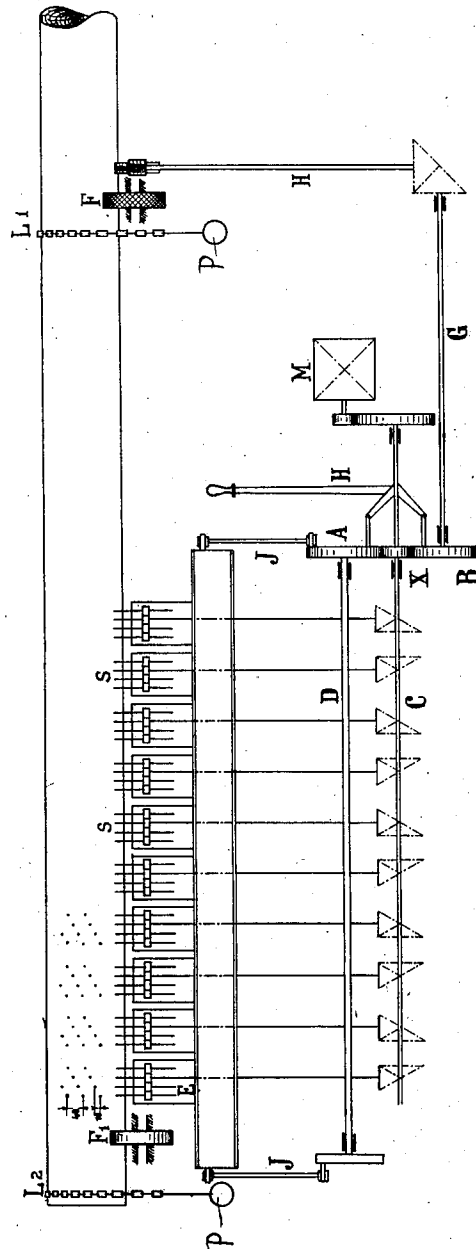
A. KOLOSSVÁRY, S. HALTENBERGER & E. BERDENICH.

PROCESS OF IMPREGNATING TIMBER.

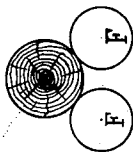
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WITNESSES
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ANDREAS KOLOSSVÁRY AND SAMUEL HALTENBERGER, OF BUDAPEST, AND ERNST BERDENICH, OF PÜSPÖK-LADÁNY, AUSTRIA-HUNGARY; SAID KOLOSSVÁRY, AS SIGNOR TO SAID HALTENBERGER AND BERDENICH.

PROCESS OF IMPREGNATING TIMBER.

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Specification of Letters Patent.

Patented Dec. 19, 1911.

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To all whom it may concern:

Be it known that we, ANDREAS KOLOSSVÁRY and SAMUEL HALTENBERGER, residing at Budapest, Austria-Hungary, and ERNST BERDENICH, residing at Püspök-Ladány, Austria-Hungary, subjects of the King of Hungary, have invented a new and useful Economical Process of Impregnating Timber; and we do hereby declare the following to be a full, clear, and exact description of the same.

In most impregnating process the impregnating liquid is forced in through the outer longitudinal surface of the timber. The penetration of the liquid takes place in that case only through the radial bundles of cells or the so-called medullary rays. In the interior of the wood, the distribution of the liquid takes place considerably more quickly through the axial bundles of vessels. In that way the quality and the cost of impregnation are dependent on the structure of the timber to be impregnated, and more particularly on the number, size and distribution of the medullary cells. It will be obvious that the impregnation of a compact kind of wood which has few medullary cells, would require considerably greater expenditure of pressure, time and money, than that of a kind of wood with numerous medullary cells.

This invention consists in increasing the number of the medullary rays which render possible the penetration of liquid, by means of small openings or pricks leading from the surface into the interior of the wood, artificially produced in any desired manner and acting as artificial medullary rays and facilitating the penetration of the liquid to a greater or less extent which can be determined beforehand by the number, size, depth and distribution of the said openings. These artificial medullary rays must be, however, produced in such manner that they should form only so to say intermediate spaces between the cells, that is to say, the tool producing the pricks must as far as possible only push aside the cells, without removing considerable quantities of the wood material. Holes produced by removing material, for instance by drilling, owing to the destruction of the fibers of the place treated, reduce to a great extent the strength of the stem, while pricks produced as far as possi-

ble without destruction of the fibers, only by pushing aside or shifting the fibers, do not affect the strength at all, as the fibers are not broken, but only shifted.

It is already known to make incisions or to bore holes in wood before impregnation, but all these openings were effected by severing or removing the wood fibers, while according to the present invention the "pricks" are expressly made by pricking with sharp needles, so that here the fibers are only displaced, but neither severed nor removed. The pricks are best produced by rotating steel needles approximately the size and shape of sewing machine needles, and for ordinary telegraph poles the pricks need only be about one inch deep. The pricks produced in this manner close completely after the impregnation, since due to their elasticity, the merely displaced fibers return during the impregnation to their original position. Consequently the wood is not weakened in the least by these pricks.

Artificial medullary rays facilitate and accelerate the penetration of the liquid, and on the other hand enable tougher impregnating solutions to be used, and impregnation to be carried down to any desired depth. As, however, the degree of impregnation depends on the number and size of the artificial medullary rays, it is possible, according to this invention, to impregnate to a different extent the portions of one and the same stem exposed in a different degree to rotting. As is well known, the exposed upper portion, and the bottom portion of electric poles embedded in the earth, rot very slowly, while the portions adjoining the surface of the ground (both above and below the surface) owing to the changing moisture and to the mushroom or fungi growth, rot exceedingly quickly. According to old processes, it was necessary to impregnate the whole of the pole strongly in order to render the above mentioned sensitive zone capable of resisting rotting for a long time. As, however, the said zone could not be impregnated to a greater extent than the other portions of the same pole, the upper and bottom portions which are less sensitive, were impregnated to a wasteful and unnecessary degree. According to this invention, the more sensitive portions of the longitudinal timber to be impregnated, are provided

with a larger number of, or with deeper, artificial medullary rays, while the other portions are treated only to a smaller extent or not at all, so that during the impregnation the liquid will penetrate into the more sensitive portions to a greater depth and in a larger quantity, while the other portions will take up only as much liquid as required for their slight protection. By suitable distribution of artificial medullary rays, it is therefore possible to impregnate the dangerous zone to a greater depth, and nevertheless to effect a considerable saving, as the portions which are exposed to less danger are impregnated only in accordance with the actual requirements, independently of the depth of impregnation of the dangerous portion.

The holes constituting artificial medullary rays can be produced either by means of suitable hand tools or by machines.

The accompanying drawing shows in a diagrammatical view the preferred form of a machine for piercing the pricks, which machine however does not form part of the present invention. The pole rests on the rolls $F F_1$. The motor M drives continually the arbor C , which rotates the needles S , mounted in the slide E . The arm H is connected with a coupling, by which either gear A or gear B can be brought in mesh with the gear X of arbor C . If A meshes with X , the sledge E will be driven forward by the crank-rods I , (so that the needles pierce the wood, as shown in the drawing) and then backward. If now the arm H is moved to disconnect A and X and connect B and X , the shafts G and H will by means of a suitable transmission rotate the rolls F and by it the pole, so that a new portion of wood will come over the needles in position. The weights P on chains $L_1 L_2$ prevent the pole to be lifted by the simultaneous effect of the needles.

The additional expenditure of labor is amply compensated by the fact that (a) the impregnation is completed much more quickly, so that the installation is utilized to a better advantage; (b) the hitherto unattained high impregnation of the dangerous portion increases to an extraordinary degree the durability and consequently the value of the whole article; (c) in spite of the deep impregnation of the dangerous portions, a considerable saving, up to 75%, of impregnating liquid is effected, as the zones exposed to a smaller danger are impreg-

nated only to a depth corresponding to the actual requirements.

What we claim as our invention and desire to secure by Letters Patent is:—

1. An economical process for impregnating timber, such as poles for aerial lines and the like, such process consisting in piercing small radial pricks in the wood by merely displacing the fibers thereof without severing them and without removal of material, and impregnating this pricked timber with a preserving fluid, by pressure.

2. An economical process for impregnating timber, such as poles for aerial lines and the like, such process consisting in piercing small radial pricks in the wood by sharp rotating needles without severing the fibers and without removal of material and impregnating this pricked timber with a preserving fluid, by pressure.

3. An economical process for impregnating timber, such as poles for aerial lines and the like, such process consisting in piercing small radial pricks in the wood by merely displacing the fibers thereof without severing them and without removal of material, a larger number of pricks being provided where the wood is more exposed to decomposition, and impregnating this pricked timber with a preserving fluid, by pressure.

4. An economical process for impregnating timber, such as poles for aerial lines and the like, such process consisting in piercing small radial pricks in the wood by merely displacing the fibers thereof, said pricks being made only where the wood is more exposed to decomposition, and impregnating this timber with a preserving fluid, by pressure.

5. An economical process for impregnating timber, such as poles for aerial lines and the like, such process consisting in piercing small radial pricks in the wood by merely displacing the fibers thereof, a larger number of and deeper pricks being made where the wood is more exposed to decomposition and impregnating this timber with a preserving fluid by pressure.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

ANDREAS KOLOSSVÁRY.
SAMUEL HALTENBERGER.
ERNST BERDENICH.

Witnesses:

CHARLES MESSENGER,
HUGH KEMENY.