

K. K. SCHMIDT, H. WISLICENUS & M. KLEINSTÜCK.
 PROCESS OF COLORING WOOD.
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1,012,283.

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Fig. 1.

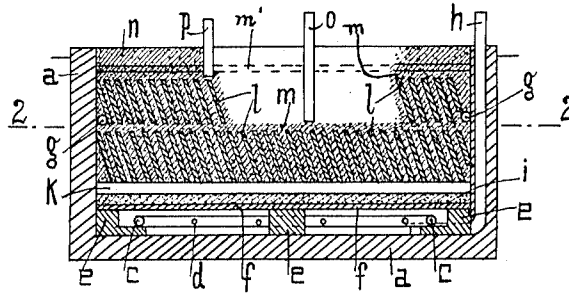
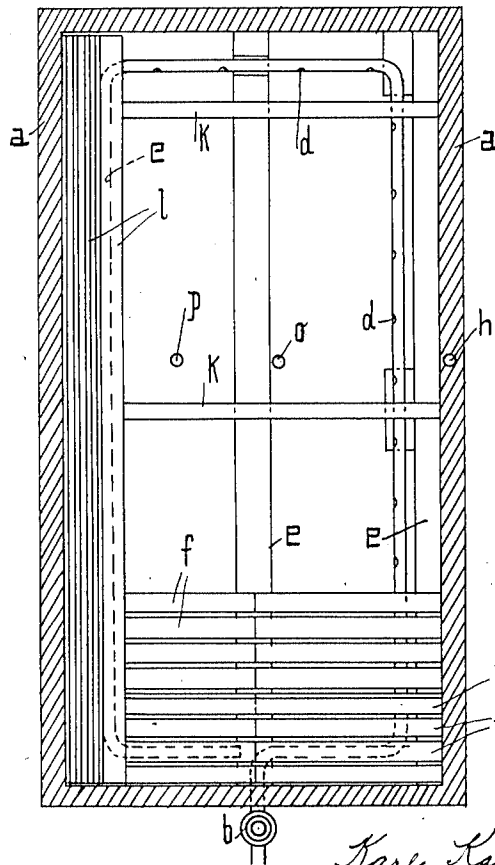


Fig. 2.



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UNITED STATES PATENT OFFICE.

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PROCESS OF COLORING WOOD.

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To all whom it may concern:

Be it known that we, KARL KAMILLO SCHMIDT, a subject of the Emperor of Germany, and a resident of Dresden-Hellerau, Germany, HANS WISLICENUS, a subject of the Emperor of Germany, and a resident of Tharandt, Germany, and MARTIN KLEINSTÜCK, a subject of the Emperor of Germany, and a resident of Dresden, Germany, have invented certain new and useful Improvements in Processes of Coloring Wood, of which the following is a specification.

This invention relates to an improved process of coloring wood so as to give it a darker or aged appearance.

A process of coloring wood for artistic furniture and the like by subjecting it to humification or artificial aging by keeping the wood in moistened earth mixed with alkaline lyes, is well known. This process, however, required the storing of the wood for several months for producing the changing of the unsatisfactory color of the raw wood into an agreeable and artistic color with the additional advantage that the wood by the action of the lye on the organic substances contained therein becomes harder and more resistant against exterior influences.

The present invention relates to an improvement of the old process referred to in such a manner that the time for treating the wood is very much shortened and reduced to two or three weeks. This is attained by subjecting the wood and the material in which it is embedded to moisture and a gradually-increasing heat, and also by subjecting the wood with a filling material consisting of crushed furnace-slag, a calcium compound capable of neutralizing acids and a substance containing nitrogen, such as an ammonia-salt, to the action of heat and moisture. The heat and moisture is supplied in the simplest manner by introducing live steam and steam-heat to the wood and filling material. Under the action of the heat and moisture the development of free ammonia-gas takes place, due to the reaction of the substances mixed with the slag, the ammonia being taken up by the wood for effectively coloring or aging the same.

Carbonate of lime in the form of powdered limestone, is preferably used on account of the cheapness as the calcium-compound, and sulfate of ammonia is preferred

as the carrier of nitrogen. Obviously other suitable calcium-compounds instead of the carbonate of lime, and other suitable nitrogen-compounds instead of sulfate of ammonia, may be used.

The process is described in connection with the apparatus illustrated in the accompanying drawings in which—

Figure 1 shows a vertical transverse section through a vat adapted for this purpose, and Fig. 2 is a horizontal section, taken on the line 2—2 of Fig. 1.

Similar letters of reference indicate corresponding parts throughout the several figures of the drawings.

The vat *a* is about 1.50 meters deep, its length and width depending on the size and quantity of wood to be treated at one operation. The walls and floor of the vat are constructed of masonry, wood or other suitable material. On the bottom of the vat *a* is arranged, preferably parallel with the walls of the same, a steam-pipe *c*, through which the flow of steam is regulated by a stop-cock *b*. The pipe *c* is provided at certain distances apart from each other with outlet-openings *d*, which, gradually increase in size from the valve stop-cock *b* toward the closed end of the pipe, said openings being from two to four millimeters in diameter. On longitudinal blocks *e* of stone or cement, placed on the bottom of the vat, rest transverse slats *f*, which form a false bottom for the space or chamber below in which the steam-pipe *c* is located. Above the false bottom is arranged a second non-perforated heating coil *g*, which extends along the side and end-walls of the vat and which serves for supplying additional heat to the interior of the vat. On one side of the vat is a vertical pipe *h* which extends downwardly to the bottom of the vat in order to ascertain the temperature in the lower part of the same. On the false bottom *f* is placed a layer *i* of coarsely-crushed blast furnace slag or the like. On the layer *i* are placed cross-slats *k* which serve as a support for the boards or planks *l* to be treated. These are placed closely to each other with the edges up and with spaces there-between, which spaces are retained by interposing small strips of wood or the like between the boards or planks.

In order that the boards or planks *l* may not fall over, the first one is placed in a

somewhat inclined position toward the longitudinal side-wall of the vat and the remaining planks are placed parallel therewith by the aid of the intermediate strips.

5 The spaces between the boards or planks are then filled up with finely-screened furnace-slag, mineral wool or the like, which is mixed with a calcium-compound capable of neutralizing acids and an ammonia-salt in

10 the proportions of one part of pulverized lime-stone and two parts of sulfate of ammonia for one-hundred parts of slag. After the interstices between the boards or planks are filled with this mixture, the

15 small strips of wood are withdrawn and the boards or planks held in the desired position by the filling. Over the boards and planks and the filling between the same is then placed layer *m* of the filling mixture,

20 on which is placed a second set of inclined planks, with filling material between the same as before, and so on according to the depth of the vat and size of the boards. The uppermost set of boards or planks is

25 then covered with a layer *m* of the filling material, then with a layer *m'* of coarsely-crushed slag and the latter with a layer *n* of sand, which may eventually be covered with ordinary boarding or roofing paper.

30 Additional vertical pipes as *o* and *p* of greater or smaller depth may be provided for ascertaining the temperature at various levels in the vat.

The temperature in the vat is at first held

35 very low, about from 20 to 30 degrees C. In the second week, the temperature is gradually increased and, depending upon the progress of the coloration at the end of the second week or at the beginning of the

40 third week, for several days full steam is turned on so that the temperature is increased to 80° C. and higher. The necessity for continuing the treatment of the wood may be determined by means of small

45 test-boards which are previously placed in the vat in such a manner that they can be taken out from time to time without disturbing the position of the planks or their filling material.

50 We claim:

1. The process herein described of color-

ing or aging wood which consists in embedding the wood in a filling mixture containing furnace-slag, a calcium-compound capable of neutralizing acids and an ammonia-salt, then subjecting the wood and filling mixture to the action of heat and moisture at a gradually-increasing temperature until the required coloration of the wood is obtained. 55

2. The process herein described of coloring or aging wood, which consists in embedding the wood in a filling mixture containing furnace-slag, a calcium-compound capable of neutralizing acids and an ammonia-salt, then subjecting the wood and filling mixture to the action of steam at a low temperature, and then to a gradually-increasing higher temperature until the required degree of coloration of the wood is obtained. 60 65 70

3. The process herein described of coloring wood, which consists in embedding the wood in a filling mixture containing furnace-slag, a calcium-compound capable of neutralizing acids, and an ammonia-salt, heating the wood and filling slightly for some time, then gradually heating the wood and filling mixture to a much higher temperature, and continuing the treatment until the desired coloration of the wood is obtained. 75 80

4. The process herein described of coloring wood, which consists in embedding the wood in a filling-mixture containing furnace-slag, a calcium-compound capable of neutralizing acids and an ammonia-salt, heating the wood and filling under addition of moisture to about 20°-30° C., then heating the wood and filling gradually to about 80° C., and continuing the treatment until the desired coloration of the wood is obtained. 85 90

In testimony that we claim the foregoing as our invention, we have signed our names in presence of two subscribing witnesses. 95

KARL KAMILLO SCHMIDT.
HANS WISLICENUS.
MARTIN KLEINSTÜCK.

Witnesses:

OTTO WOLF,
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