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APPARATUS FOR FLOOR FINISHING

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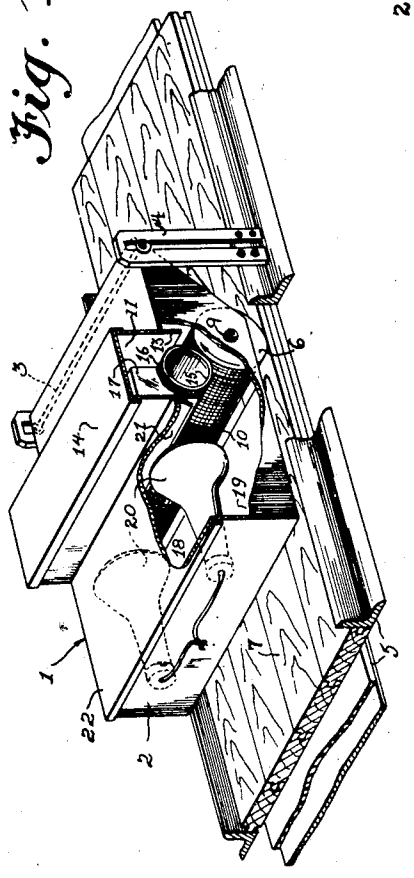


Fig. 1.

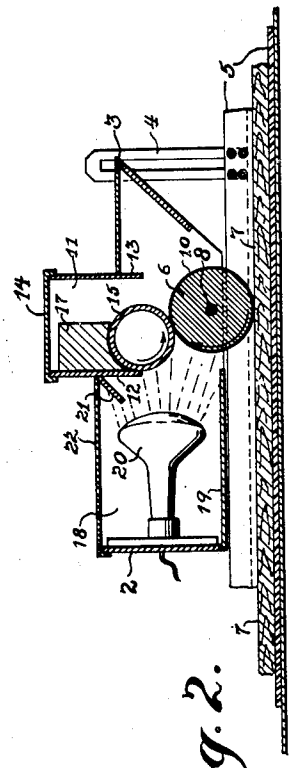


Fig. 2.

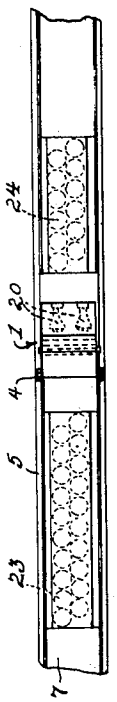


Fig. 3.

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APPARATUS FOR FLOOR FINISHING

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5 Claims. (Cl. 91—48)

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This invention pertains to the finishing of wood flooring in a production line, as disclosed in U. S. Patent No. 2,341,161 to Partee and Gray, granted February 8, 1944. More particularly, the invention pertains to an apparatus and method for applying a wax composition or polishing material to the wood flooring as a step in the finishing process disclosed in the above mentioned patent. After the wax has been applied, it is polished by known methods which form no part of this invention.

The above mentioned patent includes in its disclosure the use of a soft wax, normally in paste form, as a polishing material for wood flooring. It is known, however, that hard wax compositions, having relative high melting or liquefying points, generally provide a tougher protective film for underlying finishes than that provided by paste or soft waxes. Such hard wax compositions usually comprise a blend of a hard wax, such as carnauba or ouricury, with a soft wax, such as paraffin or ceresin. The proportion of hard wax in the blend may be varied between 30% and 70% depending upon the hardness desired. Compositions of this nature are well known in the art and form no part of the applicant's invention. It is an object of this invention to provide a simple inexpensive apparatus for applying the above mentioned hard type of wax composition, in cake or solid form, without the necessity of melting the wax and maintaining a reservoir of the wax in liquid form.

Another object of the invention is to evenly apply the wax to the surface of the wood flooring so that after being polished by known means it will provide a smooth glossy coat without having a grainy appearance.

Other objects and novel results of the invention will appear in the following description and accompanying drawing in which:

Figure 1 is a partially cut away perspective view of the waxing apparatus.

Figure 2 is a cross sectional view of the apparatus shown in Figure 1 taken on the center line thereof.

Figure 3 is a plan view of a section of a conveyor production line for floor finishing showing the waxing apparatus in use thereon.

Referring now to Figure 1, the waxing apparatus, indicated generally by 1, is shown as being contained in a housing or box 2. The housing is pivotally supported at one end on an axle or rod 3 extending through opposite sides of the housing. The axle 3 is supported on uprights 4 fastened on each side of a flooring conveyor

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line 5. An adjustment may be provided to raise or lower the axle if desired. The conveyor line 5 is like that described in the above mentioned patent, which may be referred to for a further description. The supporting arrangement allows the wax applicator roll 6 to rest on the surface of the moving flooring 7 with considerable pressure since almost the entire weight of the waxing apparatus is borne by the applicator roll.

The applicator roll 6 revolves about an axle 8 journaled at 9 on opposite sides of the housing. The surface of applicator roll preferably is covered with a layer of felt 10 or other similar material suitable for evenly applying coating material to a moving surface. Above and off center from the applicator roll, the housing is provided with an open-bottom wax compartment 11 formed by transverse depending walls 12 and 13. The compartment 11 is provided with a removable closure 14 to allow access to the interior thereof. Positioned in the lower portion of compartment 11 and projecting below the compartment is a distributor roll 15, which rests on the upper surface of the applicator roll 6 and bears against the depending wall 12. The cylindrical surface of the distributor roll has a knurled or otherwise roughened surface as indicated at 16. Resting on the upper surface of the distributor roll 15, is a cake or solid bar 17 of wax composition or similar polishing material. The wax bar 17 is retained in position by the walls 12 and 13. Both rolls preferably are made of steel or similar metal.

The end of the housing opposite the supporting axle 3 is provided with a heating compartment 18, formed by the wall 12 and a floor 19. Mounted on the end wall of the heating compartment are reflector type infra-red lamps 20 which have suitable electrical connections extending to the exterior of the box for connection to any available source of power. Both the distributor roll 15 and the applicator roll 6 are heated by direct radiation from the lamps 20. The heating compartment also is provided with a shield or guard plate 21 extending downwardly at an angle from the junction of the wall 12 with the top of the heating compartment. The function of the shield plate 21 is to prevent the heat rays from the lamps 20 from impinging directly on the wall 12 and thus heating it excessively. During the waxing operation, the wax 17 is in contact with the wall 12 and excessive heating of this wall would cause the cake to melt and drip downward on the moving flooring 7 with resulting unevenness in

the final wax coat. The heating compartment also is provided with a removable closure 22 to allow access to the compartment for inspection or replacement of the lamps 20.

Referring now to Figure 3, which shows a larger section of the conveyor line 5, it will be seen that the waxing apparatus 1 is positioned over the conveyor line between two banks of reflector type infra-red lamps 23 and 24. The bank of infra-red lamps 23 is mounted over the line 5 to heat the flooring 7 moving on the conveyor before it reaches the waxing apparatus. The manner of mounting the lamps 23 is illustrated in Figure 3 of the above mentioned patent. Depending on the rate of travel of the flooring, a sufficient number of infra-red lamps 23 are used to heat the surface of the flooring to a temperature of the order of 200°–275° F. before it reaches the waxing apparatus. Such a temperature is sufficient to liquefy a hard wax composition of the type hereinbefore mentioned. It has been found that approximately twenty 250 watt infra-red lamps 23 are sufficient to raise the surface of the flooring to this temperature. This heating is necessary in order to avoid chilling and consequent solidifying of the wax composition as it is applied to the flooring. Chilling of the wax results in fine particles of solidified or semi-solid wax being present in the applied coating, and also prevents even spreading or flowing of the wax over the surface of the wood. The second bank of infra-red lamps 24 is mounted over the line after the flooring leaves the waxing apparatus for a purpose hereinafter described.

The operation of the waxing apparatus is as follows. Since the applicator roll 6 rests with appreciable pressure upon the flooring 7 moving in the conveyor line, the applicator roll is frictionally engaged and rotated by the moving flooring. The rotation of the applicator roll in turn causes the distributor roll 15 to rotate. The rotating distributor roll, which has been heated by the infra-red lamps 20, both melts and abrades away the under surface of the wax cake 17. The wall 12, against which the distributor roll rests, acts to spread and smooth the wax evenly over the surface of the roll. The wax is present on the roll and in the grooves of its roughened surface 16 partly as a liquid and partly as wax particles in a melting condition which probably have a solid core and a liquid or semi-liquid surface. The heated felt surface 10 of the applicator roll 6, which is in rotating contact with the distributor roll, picks up wax from the distributor roll and in turn, because of its rotating contact with the flooring 7, applies a coat of wax to the latter. The relatively short period of time the wax remains on both rolls is not sufficient to melt completely the wax particles mentioned above and the wax coat on the flooring consists of liquid wax and dispersed therein a number of small wax particles in melting condition, i. e., in solid and semi-liquid state.

Referring again to Figure 3, and the second bank of infra-red lamps 24 mounted over the flooring 7 after its leaves the waxing apparatus, a sufficient number of lamps are used in this bank to maintain the wax coat on the flooring at a temperature of the order of 200°–275° F., long enough to melt completely any solid or semi-liquid wax particles and form an even coat of wax of substantially uniform thickness and condition over the surface of the flooring. It has been found that approximately twelve 250 watt infra-red lamps 24 are sufficient to maintain this

temperature. Thereafter, the coating may be cooled and solidified by air blasts and polished in a well known manner.

Although a specific embodiment of our invention has been described and shown for coating wood flooring, it is not desired to be limited thereby. Accordingly, the scope and principles of the invention are defined in the appended claims.

We claim:

1. Apparatus for applying a surface coating of wax composition to wood flooring comprising: a first radiant heating means for heating the flooring surface to be coated to a temperature at least as high as the liquefying point of the wax composition to be applied thereto, means rotatably supporting an applicator roll, means maintaining a distributor roll in rotatable contact with said applicator roll, means maintaining a solid wax composition in frictional contact with said distributor roll, a second radiant heating means positioned to heat the surface of both said rolls to a temperature sufficient to liquefy said wax composition as it is applied to the flooring by said applicator roll, a third radiant heating means for heating the coated surface of the flooring to a temperature at least as high as the liquefying point of the applied wax composition, and means for conveying the flooring past said first radiant heating means, past said applicator roll with said surface to be coated in contact therewith, and past said third radiant heating means in immediate succession in the order stated, whereby said surface becomes smoothly and uniformly coated with said wax composition.

2. The structure set forth in claim 1 in which all of the radiant heating means comprise infra-red lamps of the built-in reflector type positioned to direct heat onto the surface of the flooring, the rolls, and applied coat of wax composition.

3. Apparatus for coating the surface of wood flooring with a wax composition while the flooring moves continuously along on a conveyor comprising: a housing pivotally supported at one end thereof to over-lie said conveyor and having an applicator roll rotatably mounted therein, said applicator roll being adapted to rest on said surface of the flooring for frictionally driven engagement therewith, a compartment in said housing above said applicator roll having a distributor roll and wax composition in solid form therein, said distributor roll resting on an upper portion of said applicator roll for rotatable driven engagement therewith and said wax composition resting on an upper portion of said distributor roll for abrasive contact therewith, an infra-red lamp means in said housing positioned to heat both said rolls.

4. Apparatus for applying a surface coating of wax composition to wood flooring comprising: a first radiant heating means for heating the flooring surface to be coated to a temperature at least as high as the liquefying point of the wax composition to be applied thereto, means rotatably supporting an applicator roll, means maintaining a distributor roll in rotatable contact with said applicator roll, means maintaining a solid wax composition in frictional contact with said distributor roll, a second radiant heating means positioned to heat the surface of both said rolls to a temperature sufficient to liquefy said wax composition as it is applied to the flooring by said applicator roll, and means for conveying the flooring in immediate succession past said first radiant heating means to heat the surface to be

coated and past said applicator roll with said surface to be coated in contact therewith, whereby said surface becomes smoothly and uniformly coated with said wax composition.

5. The structure defined by claim 4 in which all of the radiant heating means comprise infrared lamps of the built-in reflector type positioned to direct heat onto the surface of the flooring and the rolls.

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