March 17, 1959

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2,877,476

WAX APPLICATOR

Filed March 5, 1958

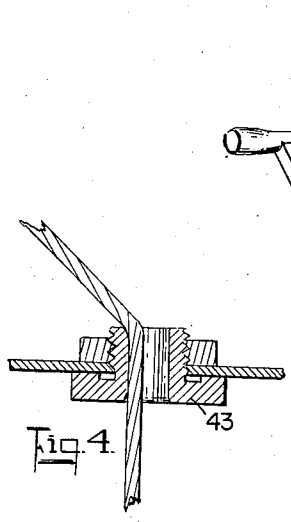


Fig. 4.

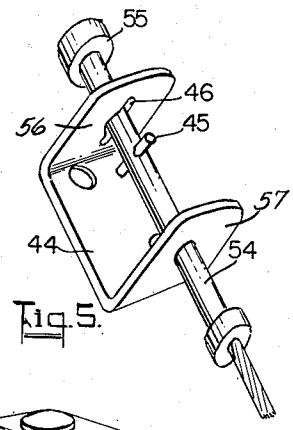


Fig. 5.

Fig. 1.

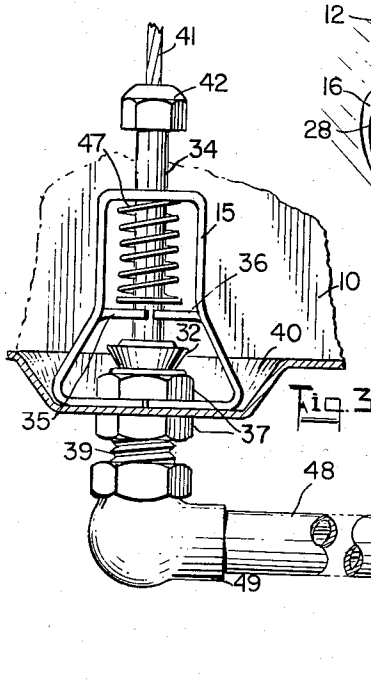


Fig. 3.

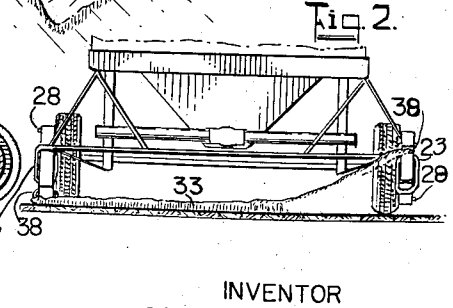


Fig. 2.

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United States Patent Office 2,877,476
Patented Mar. 17, 1959

2,877,476

WAX APPLICATOR

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Application March 5, 1958, Serial No. 719,373

3 Claims. (Cl. 15—98)

This invention relates to apparatus for the application of films to floor surfaces, and particularly relates to a wheeled applicator including a towed swab for applying and spreading a film of a wax emulsion.

Known means for applying liquid floor wax generally permit the liquid to flow freely onto the floor from a number of relatively small orifices in a chamber containing the liquid, a spreader swab surrounding the orifices serving to smooth the applied layer. For dealing with large areas such devices are cumbersome and uncertain of laying down a film free from streaks, light patches, and excessive deposits.

In the care of a floor surface having extended area, such as in a community centre, dance hall or the like building wherein a hardwood or other finished floor surface requires periodic cleaning and waxing, the maintenance cost both in direct labor charges due to time expended and cost of liquid wax applied is one of the largest single charges involved. It may readily be appreciated that the most efficient rate of application would obtain wherein a band or strip of wet film of suitable width and of uniform thickness is applied at a speed of advance corresponding to a brisk walk. Accordingly, a rapid rate of flow of the liquid upon the floor is indicated as necessary in order to supply the coverage intended, in terms of volume of emulsion applied per thousand square feet of floor. However, direct flowage upon a floor surface of liquid wax is entirely unsatisfactory from the point of view of obtaining an even application, due to the characteristics of wax emulsions, the variable nature of the surface to which the emulsion is applied, and the difficulty of tracking on adjacent strip. A simple swab or pad when towed or dragged over such directly spilled liquid deposit does not achieve a satisfactory film of uniform thickness, particularly in the area overlapped between adjacent strips.

Applicant has made the discovery that, contrary to what would be expected from allowing liquid wax to stream freely under gravity and hydraulic head directly upon a floor, an even film of wax may be successfully laid down by pouring the liquid from a line of closely spaced small holes in a moving distributor pipe and by dragging over the liquid a swab to which is imparted both transverse horizontal movement of the trailing edge and a combined pivoting and rocking of the front or leading edge about its midpoint. By causing the swab to have a composite motion whereby the trailing edge is periodically swung or oscillated across the line of advance and the leading edge has its corners moved along circular orbits parallel with the direction of advance and subject to phase difference, an effective smoothing of the liquid film may be realized. Such composite motion has been observed to be markedly superior when compared under identical conditions with direct towage of a pad along the line of advance, particularly in minimizing ridging or streaking at the boundaries of adjacent strips or bands, while at the same time permitting of less precise tracking of the strip previously laid down. This advantage is

especially significant where the area to be waxed is so large that sufficient time elapses between consecutive circuits about the room for the previous strip to have substantially dried.

A further significant advantage derives from the smoothing and spreading action which the pad effects upon a liquid deposit which may be of variable thickness transversely of the strip, particularly where one or more adjacent orifices may become blocked.

Essentially the invention consists in a construction of a wheeled applicator having a pair of wheels fixed to an axle journalling in a frame, the frame supporting a tank in which a quantity of flowable liquid wax emulsion is carried, and an extended distributing pipe spaced above the floor and below the tank is provided with a number of relatively small holes spaced along its length on its underside for discharging streams of the emulsion from the tank by direct gravity flow upon the floor between and to the rear of the wheels; there being provided a suitable flow-regulating device within the tank for admitting fluid to the orifices and control means therefor carried upon a towing handle fixed forwardly of the frame; a rearward extension of the frame supports eyes through which pitmans engaging cranks extending from the sides of the wheels pass, the cranks of the respective wheels being located 180 degrees apart so that as the crank of one pitman is uppermost the crank end of the other pitman is at its lowest point; and a swab which is slightly wider than the irrigating duct is towed behind and has its forward corners attached to the ends of the pitmans.

By the practice of the invention a relatively simple light-weight and low cost applicator is realized without employing elaborate metering and distributing means or pumps, and which uses standard plumbing and constructional elements in its manufacture.

The features and purposes of the invention may be the better perceived by study of the following description with reference to the accompanying figures of drawing showing preferred embodiments, and in which,

Fig. 1 is a perspective view of a complete portable applicator according to the invention, partly cut away;

Fig. 2 is a rear elevation view of the apparatus of Fig. 1 in reduced scale showing the swab partly cut away and omitting the pitman joining bar;

Fig. 3 is a partial cross-section taken on the line 3—3 of Fig. 1 particularly illustrating only liquid conveying lines and the valve;

Fig. 4 is a detail of a guide; and

Fig. 5 illustrates one form of a latch for manual control of the flow valve.

A wheeled portable applicator as illustrated in Fig. 1 comprises a supporting frame **10** sustaining a liquid containing tank **11** carried upon brackets **12** and **13**, above axle **14** journalling in the lower ends of the brackets. A pair of wheels **16** and **17** are secured fast upon the ends of the axle outwardly of the brackets. Suitably fixed to the forward side of the tray frame **10** is a towing bar **18** including a handle **19**, and braces **20**, **21**, affixed between sides of the bar and the forward corners of the tray frame.

A pair of guide eyes **22** and **23** are secured upon the ends of a system of struts **24** and **25** extending rearwardly of the frame, to locate the eyes at approximately axle height above the floor when the applicator is in its operative position. The eyes are spaced apart to lie behind and slightly outwardly of each of the wheels **16** and **17**, by a rod **26**, and the framework is further braced by rod struts **27** fixed between the rear corners of the tray and points intermediate the ends of rod **26**. Crank arms **28** are fixed into the outer faces of the wheels, at positions which are 180 degrees apart relatively with

respect to the axle. Pitmans **30** and **31** are pivotably secured upon the cranks by their one ends and pass through the respective guide eyes, whose inner surfaces are preferably smoothed and coated with a non-galling plastic film such as a linear synthetic polyamide as sold under the trade name of Nylon 66.

The ends of the pitmans are joined to the ends of a rough wiper bar **29** loosely as by cords or other flexible means, to allow the bar to drag on the floor and oscillate about a vertical axis located at its midlength, whereby to brush the freshly dripped material into a film. Suitable pad or brush means are affixed to the underside of the bar to facilitate spreading a film.

A towed swab **33** is relatively closely coupled the corners of its forward edge with the ends of the pitmans, as by wire hooks **38**, or other suitable detachable attachment means, which afford a flexible linkage. The swab may be restrained from pronounced swinging without altering the corner-lifting action produced, by additionally joining it as by cords or wires **59** with the frame tray **10**. The swab **33** preferably extends laterally a distance slightly greater than the distance between the eyes, and has a length as measured in the direction of advance of from one to one and a half times the width.

While a wide variety of substances may be employed with more or less satisfactory results, I prefer to use a fairly thick swab of wool fibers in unfelted form, and the best results are believed to be obtained by employing a sheep skin soft tanned with the fleece on, wherein the length of the fibers is at least one inch, the wool side being applied against the floor. Additional weighting layers as of canvas or rug material may be laminated upon the skin side as desired.

While the exact form of valve employed for opening and shutting off the flow of the liquid may be varied widely, a relatively simple and effective arrangement for this purpose as described in Fig. 3 comprises a cone washer **32** fixed to the lower end of a spring-pressed shaft **34**, seating on the end of a nipple **39**. The assembly is retained in a frame generally designated **15**, which comprises a single length of metal strip having its ends aligned in a common plane and shaped in stirrup form, a pair of tabs **35**, **36** being bent horizontally inwards to form a guide for the lower end of shaft **34** and the upper horizontal portion being pierced to allow the shaft to move vertically in the aperture. The assembly is engaged with the short threaded nipple **39** which passes vertically through an opening formed in the bottom of tank **11** in a well **40** formed therein, being retained by a pair of nuts **37** between which the stirrup and the tank are gripped. Suitable sealing means (not shown) is interposed between the nuts to prevent leakage. The upper end of shaft **34** is threaded to receive a cap nut **42** within which an end of cord **41** is fastened. It will be readily understood that when cord **41** is pulled to overcome the force of spring **47**, the cone body **32** will be raised from its seat within the end of the nipple to permit fluid to run out of the tank.

A pipe **48** disposed horizontally is connected with nipple **39** by elbow fitting **49** and passes through an aperture formed in a depending skirt **51** fixed to the rear of the tray frame. A pair of distributing pipes **52** have a plurality of drip holes **53** formed in a line along their bottoms, equal lengths of the pipe extending in opposite directions from a T fitting **50** joined to the end of pipe **48**. The outer ends of the pipes have their ends suitably closed, as by plugs **58**.

The sizes and spacing of holes **53** may be varied considerably, and it is to be understood that a total cross-sectional area of orifices is provided such as will produce

adequate thickness of liquid layer on the floor at the rate of advance intended to be maintained. For example, a series of holes each having a diameter of 0.065 inch spaced one inch apart may be found suitable at a walking speed of about 3 feet per second for a wax emulsion of a given viscosity. For thicker deposits and where the emulsions are less free-flowing the sizes of the orifices may be increased or their spacing may be decreased, or both, to suit. To this end, sets of pipes **52** of different flow rates and having one end closed may be substituted, these being detachably connectible in the fitting **50** as by force fit or friction.

The operation of the applicator is substantially trouble-free and the full flow is permitted while the apparatus is wheeled around the room, by latching the valve in its fully opened position. A suitable arrangement may take the form of a fitting **44** as in Fig. 5 wherein the end of the cord **41** is held in a tube **54** having a knob **55** at one end and a pin **45** extending through the tube, the latter being slidably received in apertures formed in lugs **56**, **57**. The cord **41** is adjusted to such length and is guided as by a metal or plastic grommet **43** in the top wall of the tank to rest pin **45** between the lugs when the valve **15** is closed. The pin is pulled through the slotted aperture **46** and rotated to hold the valve in its latched-open position.

Due to the storage of liquid in pipes **52** and by virtue of the reservoir capacity of swab **33**, the flow may be cut off several seconds prior to arriving at the end of a round or track.

Numerous modifications of construction and design variation may be practiced in carrying the invention into effect without departing from the basic teachings of the invention, whose scope is more specifically defined in the appended claims.

I claim:

1. Floor treatment apparatus comprising a towable truck frame having a pair of floor-engaging wheels fixed on the ends of an axle journalling in the frame, a liquid retaining tank supported on said frame, a perforated spreader pipe secured transversely horizontally in the frame rearwardly of the axle, conduit means connecting said pipe with said tank, adjustable valve means in said tank for controlling discharge of liquid through said conduit and spreader upon the floor, a crank arm extending from each wheel, said cranks being angularly displaced substantially 180 degrees from each other, a pitman having an end journalled on each crank and extending rearwardly therefrom, guide means in the frame for slidably supporting said pitmans adjacent their free ends above the floor, a rigid padded floor-engaging towable wiper having its ends loosely joined with the free end of said pitmans, and a pliable absorbent swab having a width not less than the spacing of said truck wheels connected with the frame and adapted to be towed behind said wiper.

2. The combination of claim 1 wherein the corners of said swab are joined with the free ends of said pitmans for alternate elevation thereby, and said swab has a length in the towing direction at least equal to its width.

3. The combination of claim 1 wherein said guide means include downwardly depending support legs.

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