June 13, 1939. L. S. KORSEN 2,162,310

SPREADER FOR TREATING LIQUIDS

Filed Oct. 21, 1937

Fig. 2.

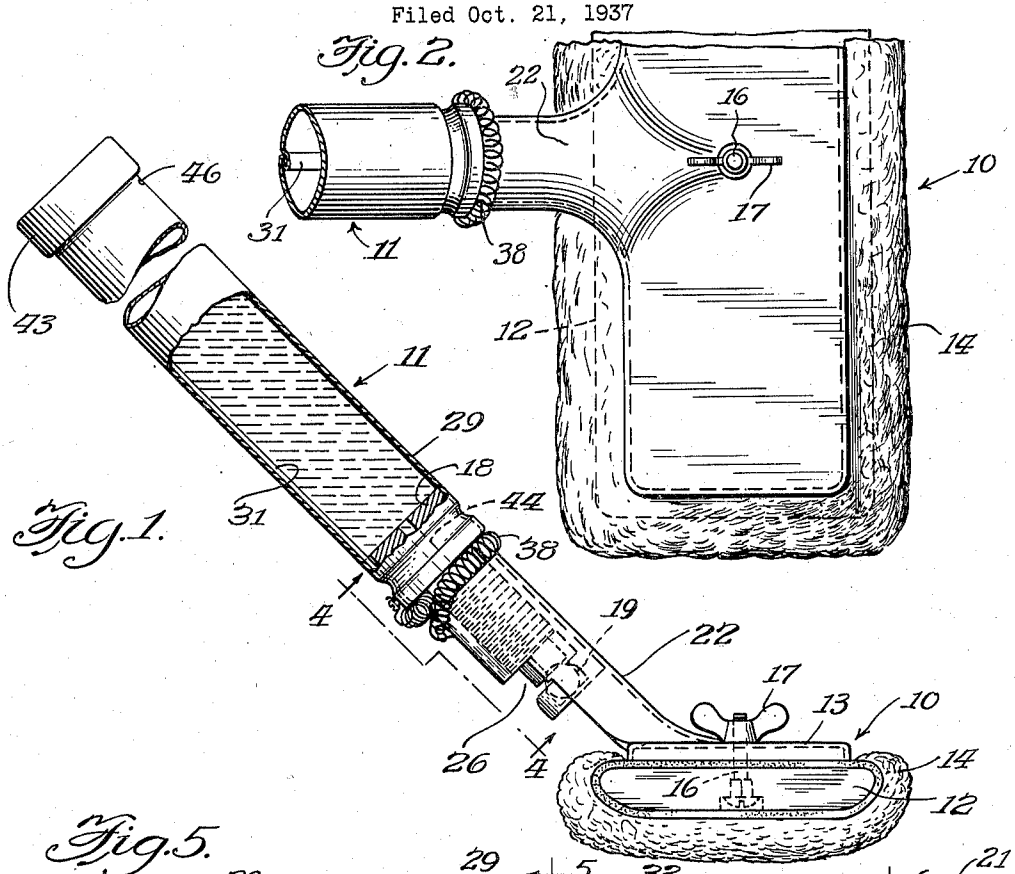


Fig. 1.

Fig. 5.

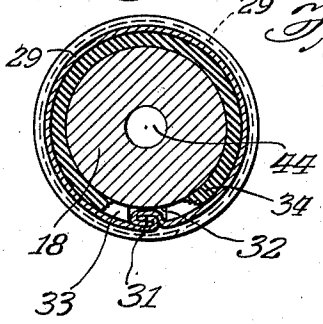


Fig. 3.

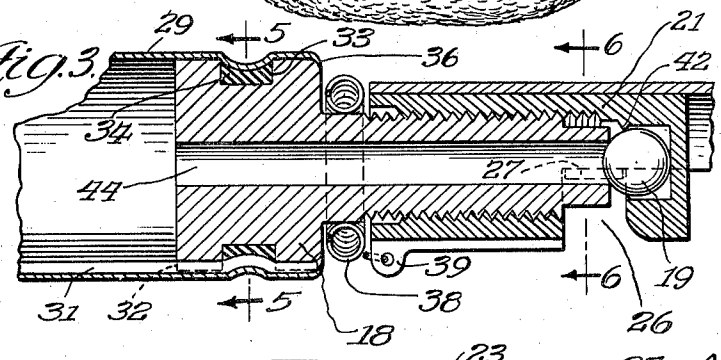


Fig. 6.

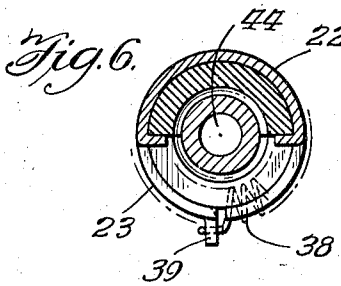
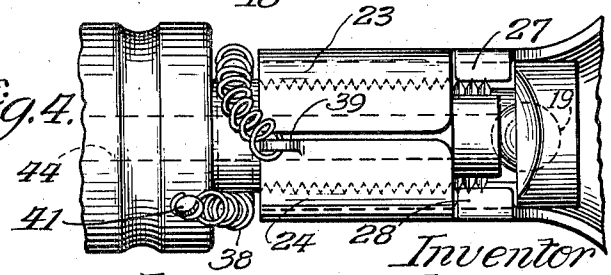


Fig. 4.



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SPREADER FOR TREATING LIQUIDS

Lawrence S. Korsen, Chicago, Ill.

Application October 21, 1937, Serial No. 170,229

13 Claims. (Cl. 91—25)

My invention relates to spreaders for treating liquids. It relates more in particular to a light-weight mop-type of device for spreading liquid wax on floors.

Although the spreader of my invention may be used for spreading substantially any type of treating liquid, it has been designed particularly for, and has its greatest application in, the spreading of liquid wax onto floors and similar surfaces. Accordingly, the invention will be described with particular reference to this use, although clearly reference to a particular use shall not be considered as a limitation in the application of the invention.

So-called liquid floor wax is, in fact, not a liquid wax but an aqueous emulsion of a high melting point wax product so constituted that, when it is spread in a thin film onto the floor, the water of the aqueous emulsion evaporates, leaving a deposit of wax in the form of a thin film. Various plasticizing agents, solvent modifying agents, and the like, may be incorporated, but, for the purpose of my invention, full identification of the character of the wax emulsion is not required. In the application of such a wax emulsion to a surface, it is essential, to proper results, to avoid rubbing the applied film any more than is necessary to get an even distribution. Those skilled in the art of applying liquid wax well understand this fact. To apply an even film of liquid wax and avoid excess pressure and excess rubbing action is substantially impossible if the weight of the spreading implement is too great. Attempts have been made to utilize a reservoir of some kind or other with the spreader, so that, besides the weight of the spreader itself, there is the added weight of a relatively large quantity of the liquid wax. As a consequence, all spreaders with which I am familiar, particularly when filled with the liquid wax, have been too heavy for fully satisfactory use for the intended purpose.

Still other disadvantages in connection with spreaders and waxing devices heretofore produced are known to the industry, all of which my invention is intended to eliminate. A valve mechanism is conventionally provided to control the flow of the liquid wax from the reservoir through a spout or port onto the floor, particularly in the path of the head. Both the valve and the opening from the valve to the floor, usually in a spout, are frequently stopped up by the wax hardening therein. The arrangement employed was such that to clear up stoppages of this kind required substantially dismantling the entire apparatus. Another disadvantage is that where ferrous metals are employed in the reservoir, for example, in a hollow handle, considerable oxidation of the iron would result because of the presence of water in the emulsion and rust resulting from the oxidation being red in color the liquid wax would at times be streaked with rust as it was delivered to the floor, thus causing an undesirable staining and necessitating removal of the stained portion and reapplication of wax in order to do a thorough and acceptable job. In certain types of reservoirs, for example where a glass bottle in which the liquid wax was vended was employed, this difficulty did not manifest itself to such a great extent, but, where a hollow handle was employed, the difficulty has been particularly noticeable. Another disadvantage is that structural features have been employed which required the use of relatively heavy parts which added to the weight, these parts being considered necessary because of the rather intricate design of the valve and associated mechanism which was employed.

The principal object of my invention is the provision of an improved light-weight liquid spreader particularly adapted for spreading liquid wax onto floors, but capable of being employed for the application of any liquid treating material to a plane surface.

Another object is the provision of an improved valve mechanism for delivering the treating liquid from a reservoir to a plane surface in the path of the spreader head.

Another object is the provision of an improved type of reservoir and an improved type of connection between the reservoir and the spreader head and through the valve mechanism.

In the development of my invention, I have had in mind other specific problems and objects and other specific details for meeting such objects and problems, all of which will appear clear to those skilled in the art from a consideration of the drawing and the detailed description which follows.

In the drawing, Fig. 1 is a side, fragmentary, elevational view, partly in section, showing a preferred embodiment of my invention;

Fig. 2 is an enlarged, fragmentary plan view of the device shown in Fig. 1;

Fig. 3 is an enlarged, fragmentary, sectional view showing the valve mechanism and the manner in which the handle reservoir is secured to the valve stem;

Fig. 4 is an enlarged, fragmentary bottom plan

view, looking along the line 4—4 of Fig. 1 in the direction of the arrows; and

Figs. 5 and 6 are sectional views taken on the lines 5—5 and 6—6, respectively, of Fig. 3 looking in the direction of the arrows.

In considering the device shown in the drawings, and presently to be described, it is to be understood that some of the structural features employed accomplish more than one advantage, and so the description of the advantages and particular features of structure is not to be considered as a disclaimer of other features clearly apparent to those skilled in the art.

The device comprises in general a head generally indicated by the reference character 10, and a handle generally indicated by the reference character 11, valve mechanism and control means therefor being provided between the handle and head and comprising, in a sense, a part of the handle. The head per se consists of a block 12, preferably of wood, and a stamped plate 13. Lamb's wool 14 or other suitable material is wrapped about the block 12 and the side edges disposed under the plate 13. A carriage bolt 16 extends through the block 12 and the plate 13, the thumb nut 17 being secured to the upwardly extending end of the carriage bolt so as to hold the plate and block together and clamp the edges of the lambs' wool between them. This assembly comprises the completed head adapted for spreading the liquid wax on the floor or other plane surfaces as it is delivered from the reservoir by the valve mechanism.

The valve mechanism comprises a valve stem 18 carrying a seat against which a ball 19 engages. The ball 19 is carried in a manner to be described by a ball retaining member 21, both the valve stem 18 and ball retaining member 21 having certain features of design which will be described. The plate 13 has an integral upwardly extending portion 22 so shaped as to provide for requisite strength, and having a pair of side extensions 23 and 24 at the top which engage around the upper portion of the ball retaining member 21. At the point where the ball 19 engages the seat on the valve stem 18, the lower portion of the valve retaining member 21 is cut away to remove the lower hemisphere thereof and provide an opening indicated by the reference character 26 in Figs. 1 and 3. A pair of ears 27 and 28 forming a part of the extension 22 of the plate 13 are formed over the edges of the cut-away portion of the ball retaining member and, as illustrated in Figs. 4 and 6, the edges of the ears 27 and 28 engage against the shoulder formed by the cutting away of a portion of the ball retaining member so that the extension 22 cannot readily be pulled longitudinally of the ball retaining member so as to cause a separation of these members. Thus, the head 10 is rigidly secured to the ball retaining member 21.

The valve stem 18 is similarly rigidly secured to the handle and the manner in which this is accomplished will be described in connection with the description of the handle per se. The handle comprises a section of lock-seamed tubing 29, the seam thereof being indicated by the reference character 31. The valve stem 18 is provided with a portion having in general substantially the same outside diameter as the inside diameter of the tube 29. This portion 29 is provided with a longitudinally extending groove 32 and an annularly extending groove 33. A band 34, formed of rubber or other suitable compressible material, is placed in the annular groove 33. The tube 29 is assembled to the valve stem 18 by extending the bead 31 into the longitudinally extending groove 32 (see Fig. 5) and then spinning or otherwise crimping the tube so as to cause it to engage into the annular groove 33 and into contact with the band 34. The end of the tube may also be crimped around the shoulder formed on the valve stem 18, as indicated at 36. Thus, the tube 29 is prevented from being pulled away from the valve stem 18 by the crimping thereof into the annular groove and the tube is prevented from turning with respect to the valve stem 18 because the bead 31 is engaged within the annular groove 32 carried by the valve stem. The valve stem 18, therefore, is, for all practical purposes, integral with the tube 29 and, with the tube 29, forms the handle proper.

The valve stem 18 and the ball retaining member 21 are axially adjustable with respect to each other to close the valve of which these members form a part, or to open it a suitable distance to allow the liquid wax to pass therethrough. Preferably, the two members are threaded in the manner shown so that turning the handle in a right hand direction closes the valve, while turning the handle in a left hand direction opens the valve. I provide automatically operable means, however, to close the valve after it has been opened by manually manipulating the handle. For this purpose, I use a coil spring 38, which is housed in the annular space formed between the shoulder on the valve stem 18 to which the handle is attached and the end of the ball retaining member 21. One end of the spring is secured to an ear 39 formed on the side extension 24 of the member 22 (Figs. 3 and 4). The other end of the spring, as illustrated particularly in Fig. 4, is engaged by a cap screw or pin 41 which is threaded through the lower portion of the tube 29 and into the underlying section of the valve stem. The spring 38 is under tension at all times, but greater tension is imparted thereto by opening the valve. When the handle is released by the operator, the valve stem is rotated with respect to the member 21 (the handle 11 is rotated with respect to the head 10) and the valve is closed.

The form of valve and valve seat may be modified somewhat without departing from the spirit and scope of my invention. As will be seen from Fig. 3, the ball 19, comprising the valve which engages the seat formed on the end of the valve stem, is a separate member which does not form a part of the member 21. Obviously, in place of the ball 19, a suitable projection on the member 21 may be utilized. Such a construction, however, would require very accurate machining in order to obtain dependable results. It will be noted that, in the space in which the ball 19 is housed, there is ample room for the ball to move in a plane perpendicular to the axis of the valve stem. This permits the ball to accommodate itself to the seat at the end of the valve stem, thus making it unnecessary to provide for extreme accuracy in machining. In order to hold the ball in place, the annular edge of the recess in which the ball is housed is peened in a plurality of places as indicated, for example, at 42, thereby preventing the ball from becoming dissociated from the member 21 when the valve is disassembled. I, therefore, provide a simple, easily assembled valve mechanism, and one in which the valve and seat are readily lined up without unnecessarily accurate machining operations. The ball 19 may be a standard steel ball, such as employed in ball bearings. The valve stem 18 is, for example, of rela-

tively mild steel, such as an 18–8 nickel chromium stainless steel. Before the assembly and after the valve stem 18 has been produced, a ball similar to that which will be employed in the finished device is preferably placed on the seat and given one or two light taps with a mallet so that, should there be any irregularity in that end of the valve stem which will comprise the seat, the irregularity will be removed and a perfectly formed seat produced.

The handle, as indicated, is formed of tubing which functions as a reservoir to hold a supply of the liquid wax. A suitable cap 43 closes the reservoir, this cap being readily removable to replenish the supply of liquid wax therein. The reservoir communicates with the valve seat through an opening 44 extending entirely through the valve stem. In order to permit regularity of flow independently of the quantity of liquid wax in the handle, I provide a relatively small opening 46 near the top of the handle for the admission of air to replace the liquid wax as it is fed through the valve.

I consider a salient feature of my invention to comprise the use of a seamed tubing for the handle, which seamed tubing is tinned, plated, or otherwise protected, on the inside in order to prevent rusting and the consequent discoloration of the liquid wax which may occur if the wax be permitted to stand in the tube for a relatively long period of time, as, for example, between applications when the device is being employed, for example, in a private home. I obtain two very definite advantages by the use of the lock-seam tubing. Inasmuch as the tubing is formed up from a flat sheet of metal, the surface which will comprise the inside surface of the tube is readily and simply tinned or plated so that the aqueous emulsion of wax will not come into contact with a readily rustable or erodible surface. The tinned sheet of metal is then readily formed without the application of any heat or at least without the application of a sufficient amount of heat to affect the tinned surface deleteriously. Those skilled in the art will understand that it is an expensive, and. in a relatively long piece of tubing, a substantially impossible operation to tin, plate or coat the inside of a previously formed tube. When tubing is produced by a drawing or lap welding process, relatively high temperatures must be employed. If a sheet forming the lap welded tubing has been previously tinned, the tin surface is so affected by the heat that it will no longer function as an adequate protection to the underlying metal surface. Pretreatment of a blank is, of course, impossible when drawn seamless tubing is produced.

Another feature of advantage in my invention is the arrangement of the valve so that it is readily accessible to a brush or other tool through the opening 26. This structure has the very great advantage that should there be a tendency to clogging, the stoppage can readily be cleared. Moreover, after the device has been used, the operator may take a cloth, brush or similar implement and wipe any adhering liquid wax from the region around the opening 26 so that there will be no appreciable amount of wax that can harden and so cause a stoppage. Clearly, while the device is being used and the wax continues to flow out through the opening 26, there will be insufficient time for a stoppage to occur. Another advantage of the arrangement employed is that the liquid wax does not flow through an opening of relatively small cross section as, for example, in a spout in such a way that there may be a variable resistance to the passage of a stream of liquid wax, thus causing irregular feeding. In my design, the liquid wax flows from the reservoir with no obstruction, except that offered by the valve itself, substantially just as free flowing characteristics being obtained as can be obtained by pouring the liquid wax from an ordinary container, the only difference being in the fact that the valve limits the flow to a relatively smaller quantity, the exact quantity being determined obviously by the position of the handle.

Another feature is the utilization of a stamping for the plate 13 and the extension 22 thereof which connects with the handle. This construction is made possible, of course, in part by the simplified valve and liquid discharging mechanism utilized. It is also made possible in part by the fact that the block 12 has an upper portion which extends into the relatively hollow underside of the plate 13, as illustrated by the dotted lines in Fig. 1, thereby producing a firm and strong support without the necessity of utilizing relatively large amounts of metal in the plate 13 itself. Heretofore relatively heavy members have been utilized, but by means of my arrangement I secure extreme lightness with more than adequate strength.

It is believed that the manner of employing the spreader of my invention is, in general, clear from the preceding detailed description. In general. however, I wish it to be noted that, after the handle which comprises the reservoir has been charged with a supply of treating liquid and the lambs' wool pad or other material placed in position, the head is placed on the floor with the lambs' wool face lying against the floor surface, and, using the contact with the floor as a means for preventing the head from turning, the handle is turned slightly to the left, that is, in a counter-clockwise direction, just enough to allow a suitable stream of the liquid to flow onto the floor through the opening 26. The head is then moved gently and lightly over the deposited liquid, employing no more pressure than sufficient to spread the liquid in an even film over the entire surface. The amount of the liquid deposit can be controlled accurately to suit the operator's requirements. The flow of liquid is stopped by merely releasing the handle, the spring 38 functioning to close the valve automatically. When the operation is to be discontinued, no precautions are necessary in the care of the spreader, except to release the handle and allow the valve to close. The liquid may be allowed to remain in the handle without deleterious result, as the amount of moisture which might be evaporated through the opening 46 is negligible. When the floors require further treatment, the device can again be operated with the same supply of liquid just as if the operation had been continued on the same day.

I have described my invention in considerable detail in order that those skilled in the art may understand fully the manner in which the spreader of my invention is constructed and employed, but my invention is not limited to the identical details described. Furthermore, while the spreader is of particular advantage for application of liquid wax to floors and other plane surfaces it may be used to apply any treating liquid to a surface to which such liquid is to be applied.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. In a liquid spreader of the character described, a valve comprising at least two valve members rotatable with respect to each other to control the opening of the valve, a head secured to one of said members, and a lock-seam tube secured to the second of said valve members, said second valve member having an exterior longitudinal groove into which the head of said tubing extends to prevent turning movement between said second valve member and tubing, said tubing comprising a handle and reservoir, and said second valve member having an opening to pass liquid from the reservoir to the valve.

2. In a liquid spreader of the class described, a hollow handle functioning as a liquid reservoir, a head, and valve mechanism associated with the handle and head for controlling the flow of liquid from the handle, said valve mechanism comprising a seat and a member engageable against the seat to close the valve, the seat being open to the outside so that liquid may flow directly from the seat onto a surface to which it is applied whereby stoppage of the flow of the liquid is substantially obviated.

3. In a liquid spreader of the class described, a valve mechanism comprising a member carrying a valve body and another member carrying a valve seat, one of said members threaded into the other to releasably engage said body and seat, said member carrying the valve body being cut away to provide a large opening exposing said seat, a head carried by one of said members and a hollow handle carried by the other of said members, a passageway being provided between the inside of the handle and the valve seat.

4. A spreader as defined in claim 3, including spring means effective between said members to normally hold said valve body against said seat.

5. In a liquid spreader of the class described, a head, a hollow handle to hold liquid, a valve mechanism actuated by the relative position of handle and head to control the flow of liquid from the hollow handle, and spring means effective between the handle and head to normally close the valve.

6. In a liquid spreader of the class described, a head, a valve member secured to the head, a second valve member threaded with respect to the first valve member, said second valve member having an annular groove and an axial longitudinal groove, and a handle comprising lock-seam tubing extending over said valve member with the seam of the tubing extending into the longitudinal groove, the tubing being crimped into the annular groove, whereby the handle is rigidly secured to said valve member.

7. In a liquid spreader of the class described, a valve stem axially apertured to provide a valve seat, a ball retaining member into which the stem is threaded, a ball loosely held by the ball retaining member whereby it readily is centered on said seat, the ball retaining member being cut away at its underside to provide a relatively large opening adjacent said seat, a hollow handle secured to the valve stem, a plate secured to the ball retaining member, said plate having an upper extension formed around said ball retaining member and a pair of ears engaged over the same where it is cut away, and means for attaching a surface engaging spreader member to said plate, whereby the hollow handle may contain liquid, the flow of which through the valve may be controlled by controlling the relative position of said handle and plate as the spreader member is in engagement with the floor.

8. A spreader as defined in claim 7 including a spring disposed between said valve stem and ball retaining member to turn said members in a direction to normally close the valve.

9. A spreader as defined in claim 7 wherein said handle is lock-seam metal tubing, an annular and a longitudinal groove being provided in the surface of the valve steam, the seam of the tubing extending into the longitudinal groove and the tubing being crimped to extend into the annular groove.

10. A spreader as defined in claim 7 wherein said handle is lock-seam metal tubing, an annular and a longitudinal groove being provided in the surface of the valve stem, the seam of the tubing extending into the longitudinal groove and the tubing being crimped to extend into the annular groove, and a band of resilient material extending into the annular groove, whereby to form a liquid-tight seal between the tubing and valve stem.

11. A spreader for liquid wax or the like, which comprises a lock-seam tubing handle having its inside surface coated with a corrosion resisting substance, said handle serving as a reservoir for the liquid wax, a spreader head, a valve member carried by the handle, and a valve member carried by the head, said valve members threadably associated with each other and carrying a seat and seat engaging valve, respectively, the closing and opening of which is controlled by the relative radial positions of said valve members, said valve member attached to the handle having a passageway placing the inside of the handle in communication with the seat and the valve member secured to the head being cut away around said seat to place said valve and seat in direct communication with outside atmosphere whereby liquid wax passing said seat may drop directly onto the floor.

12. In a liquid spreader of the class described, a valve mechanism, a head secured to one part of said valve mechanism, and a handle comprising lock-seam tubing having an inner protective coating, said tubing secured to a second part of said valve mechanism, said handle comprising a reservoir for the liquid, and said valve mechanism being controlled by rotating said handle for releasing a supply of the liquid from the reservoir, said valve mechanism being so disposed that liquid passing therefrom may drop directly onto the floor into the path of said head.

13. In a liquid spreader of the class described, a reservoir for the liquid comprising a lock-seamed tube having an inner protective coating, said reservoir comprising a handle, a spreader head, means for controlling the flow of liquid from the reservoir by turning said handle on said head, and spring means effective between the handle and head normally to prevent the delivery of liquid by said last mentioned means.

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