Dec. 25, 1962 R. I. LAPPIN 3,069,711

APPARATUS FOR TREATING FLOORS

Original Filed June 24, 1958 3 Sheets-Sheet 1

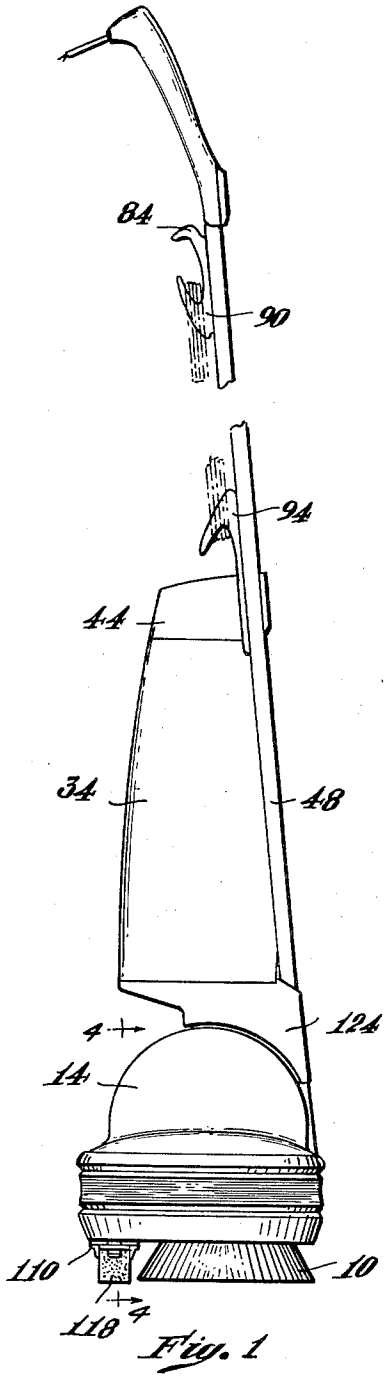


Fig. 1

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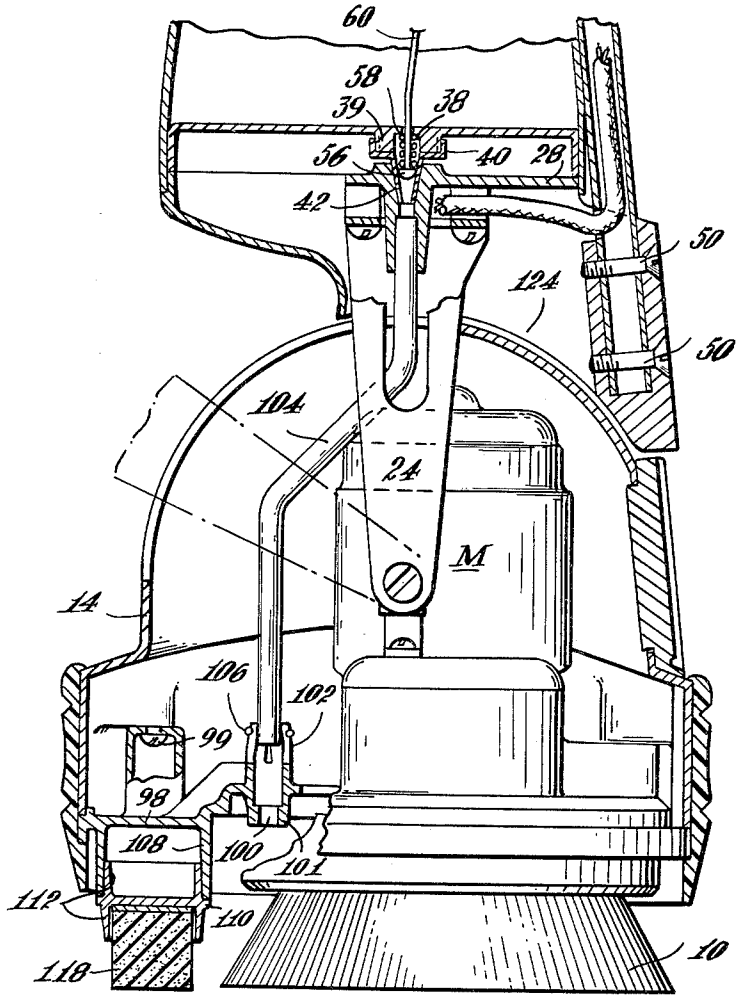


Fig. 2

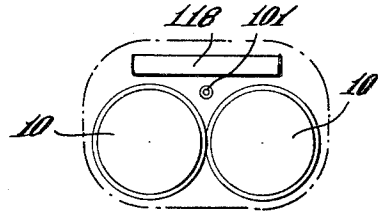


Fig. 3

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APPARATUS FOR TREATING FLOORS

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Fig. 4

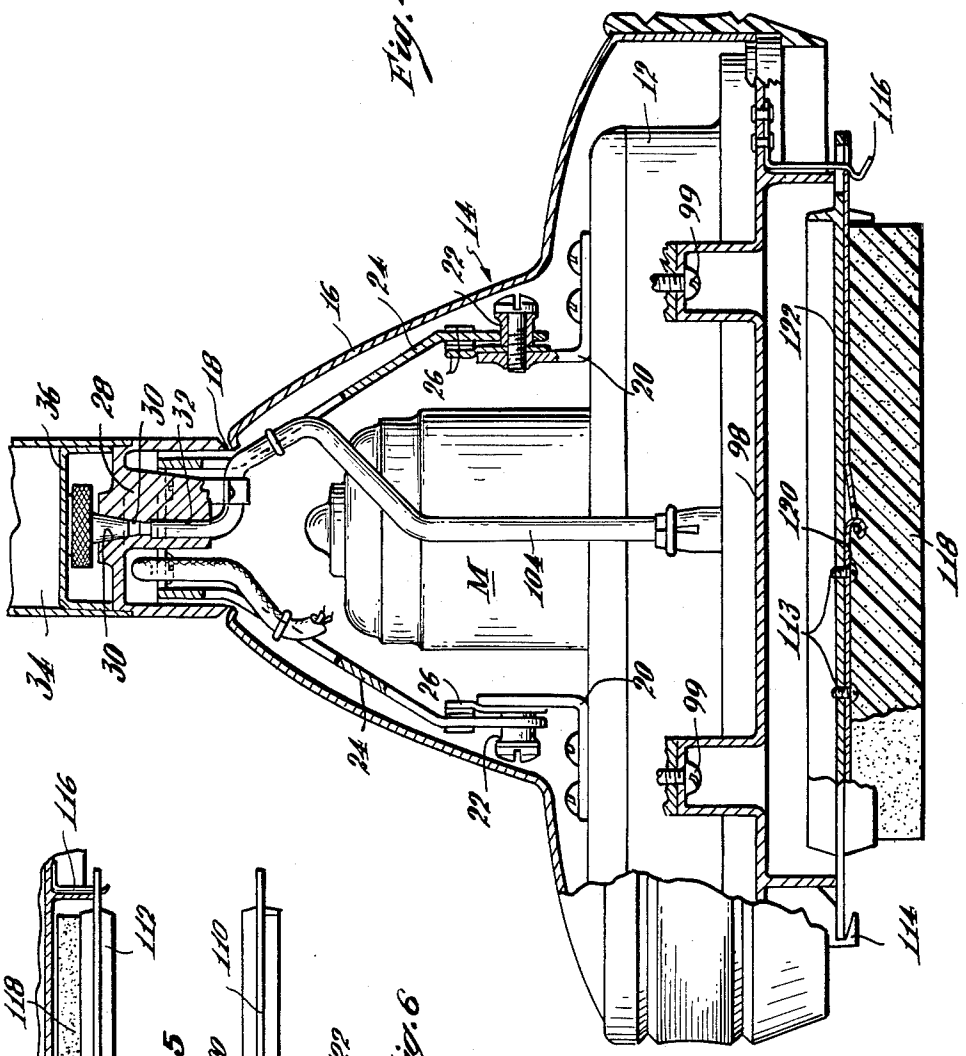
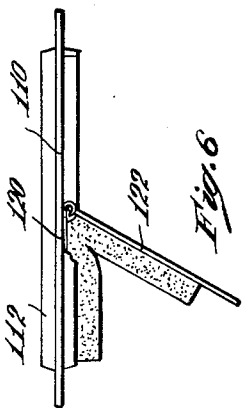


Fig. 5

Fig. 6



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APPARATUS FOR TREATING FLOORS

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Original application Ser. No. 744,128, June 24, 1958, now Patent No. 3,013,288, dated Dec. 19, 1961. Divided and this application Feb. 14, 1961, Ser. No. 89,285

5 Claims. (Cl. 15—50)

This invention relates to scrubbing apparatus of the kind disclosed in my pending application Serial No. 774,128, filed June 24, 1958, now Patent No. 3,013,288, of which this is a division.

The aforesaid apparatus has a pair of circular brushes arranged to rotate about vertically disposed, spaced parallel shafts, the latter being suitably journaled in a frame which mounts a driving motor and a handle for propelling the apparatus in use. The apparatus is equipped with a bracket for supporting a container of liquid wax or detergent and a valve-controlled conduit for conducting it to the floor behind the brushes. A squeegee is mounted rearwardly of the place of discharge of the liquid to the floor and the principal object of this invention is to provide for supporting the squeegee in one position for use and in another position for storage, so that the apparatus may optionally be used for scrubbing or polishing.

As herein illustrated, a support is mounted on the frame, rearwardly of the applicator brushes, which contains a downwardly open, transversely extending chamber of a length and depth to house the squeegee and the latter is secured at one side of a mounting element adapted to be disposed against the lower edges of the chamber and to be held thereagainst with either side facing downwardly therefrom. The distance between the plane of the lower edges of the chamber and the plane of the operating surfaces of the brushes is approximately equal to the thickness of the squeegee. The mounting element has oppositely extending flanges, of less depth than the thickness of the squeegee at its opposite sides, which are adapted to be frictionally engaged with the walls of the chamber and extensions at its ends which are adapted to bear against the edges of the chamber at the ends. A notched lug is situated on the support adjacent one end of the chamber with which the extension at that end of the mounting element is engaged and a resilient latch is attached to the support at the opposite end for engagement with the extension at that end. The squeegee is secured to the mounting element, at one side, between the flanges, one-half being attached to the mounting element and the other half to a plate hinged to the mounting element so that it may be folded to press the half attached thereto against the other half for squeezing liquid therefrom. The hinged plate contains an opening coinciding with the hole in the extension through which the latch extends for holding both the mounting element and the hinged plate in operative position with the squeegee extending downwardly from the chamber for use.

The invention will now be described in greater detail with reference to the accompanying drawings wherein:

FIG. 1 is a side elevation of the machine;

FIG. 2 is a vertical section, to somewhat larger scale, taken midway between opposite ends of the apparatus from front to back;

FIG. 3 is a plan view of the applicator brushes and squeegee when viewed from below, showing the position of the liquid discharge with reference to the brushes and squeegee;

FIG. 4 is a vertical section taken on the line 4—4 of FIG. 1;

FIG. 5 is an elevation partly in section at the rear side of the apparatus, showing the squeegee mounted in its inoperative position; and

FIG. 6 is an elevation of the squeegee removed from the apparatus, showing one-half folded over the other to squeeze out used liquid.

Referring to the drawings, FIGS. 2 and 3, the apparatus is of the type having a pair of elements for operating on a floor or rug, herein shown as brushes **10—10**, supported side-by-side on a mount **12** (FIG. 2), for rotation in opposite directions. A motor M is mounted on the support for effecting rotation of the applicators. A cover **14** is fitted over the mounting means **12**, so as to conceal the latter and the motor, leaving only the lower portions of the brushes exposed. The upper part of the housing has rising converging side walls **16** (FIG. 4), which are circularly curved in front to back section (FIG. 2), and has at its apex an opening **18** which extends from the top, rearwardly through approximately the rear quarter. A pair of angle brackets **20—20** (FIG. 4) are fastened to the mount **12** at opposite sides of the motor within the housing, which have upwardly extending legs carrying bearing studs **22—22** upon which the lower ends of a pair of upwardly extending arms **24—24** are journaled for rotation about a horizontal axis. The brackets are located rearwardly of the plane of the axes of the brushes so that the axes of the bearing studs are spaced rearwardly from and parallel to the axes of the brushes. A spring clip **26** is fastened to the upper leg of each of the brackets **20—20** for engagement with the lower portions of the arms **24—24**, when in their upright position, to assist in holding them in this position. The arms **24—24** are bent toward each other so as to follow the converging walls of the housing through the opening **18** and have fastened to their upper extremities, externally of the housing, a bracket casting **28** which has centrally thereof a tapering opening **30** (FIGS. 2 and 4), below which there is a narrow ledge for receiving the lower edge of a receptacle **34** which has an upwardly recessed bottom **36**. The receptacle has in its bottom a central opening **38** (FIG. 2), surrounded by a threaded boss **39** on which is screwed a cap **40** having a tapering nozzle **42** adapted to be engaged with the tapering opening **30** in the bracket when the receptacle is placed on the bracket. The lower edge of the receptacle, by interengagement with the ledge on the bracket, guides the nozzle into place and holds the bottom of the receptacle in registration with the bracket so that there is no danger of it becoming displaced at this end even though the handle is carelessly allowed to drop. The upper end of the receptacle is held in place by a collar **44** which is pivotally connected to a handle **48**, the lowered end of which is secured to the bracket **28** by screw bolts **50—50**, forwardly of the center line of the axes of the brushes. The receptacle **34** is a plastic bottle, transversely quite narrow, being comparable in width to the handle, and is mounted so that its forward side lies along the rear side of the handle. As thus disposed, the weight of the receptacle and liquid is carried at the lowermost portion of the handle, as close as possible to the center line about which the bracket turns. At the bottom of the receptacle there is a valve **56** (FIG. 2), located in the nozzle **42**, which normally is held closed by a spring **58**. A stem **60**, attached at its lower end to the valve, extends upwardly therefrom through the top adjacent the handle where it is connected, as described in the aforesaid pending application, to a trigger **84**.

A support **98** is fastened by screws **99** to the mount, rearwardly of the brushes, which has a horizontal wall (FIG. 2), containing substantially midway between its opposite ends an opening **100** surrounded at its upper side by a split sleeve **102** and at its lower side by a boss **101**. A flexible conductor **104** is fastened at its lower end within the sleeve **102**, for example, by placing a split spring ring **106** about the sleeve so as to compress it against the

conductor. The upper end of the conductor is press-fitted into the opening **32** in the bracket **28**. The conductor provides means for passage of the content of the receptacle to a place midway between the centers of the brushes and spaced rearwardly therefrom, so that the fluid is deposited on the floor directly behind the brushes, as shown in FIG. 3, ahead of a transversely mounted sponge mounted rearwardly thereof, as will subsequently be described.

By depositing the liquid at the rear side of the brushes or applicators in the natural cleft made by the conjunction of the two brush or applicator arcs, the liquid is spread by the sponge or brushes regardless of the direction of movement. Feeding the liquid directly to the floor moreover makes it possible to control the quantity of flow quickly since there will be no time delay between the act of releasing the trigger and visual evidence that fluid has been delivered to the floor. The squeegee operates continually to take up liquid from the floor and, by its internal action, redistribute it in an even film across its entire length in contact with the floor. This is accomplished by virtue of its multicellular, sponge-like, homogeneous construction.

The support **98** has also spaced parallel, downwardly extending flanges **108—108** (FIG. 2), which form an open channel parallel to the line of centers of the brushes behind the dispensing opening **100**. A bar **110** having symmetrically located, oppositely extending, spaced parallel flanges **112—112** is adapted to be frictionally engaged with the flanges **108—108** of the channel and to be reversibly held therein by engagement of one end, as shown in FIG. 4, with a hook **114** on the support and at its opposite end by a spring latch **116** also on the support. A sponge rubber squeegee **118** is supported between the flanges **112—112** at one side of the bar **110**, so as to have contact with the floor directly behind the brushes (FIGS. 2 and 4). By reversing the position of the bar **110** the squeegee may be disposed within the channel between the flanges **108—108**, as shown in FIG. 5, when it is not being used. The squeegee is fastened to hinged plates **120** and **122** (FIGS. 4 and 6), the former being fastened to the bar **112** by screws **113** and the latter being held in place when the squeegee is in its operative position by engagement of the latch **116** therewith, as shown in FIG. 4. As thus constructed, the squeegee may be removed for washing by removing the bar **110** from the channel. After removing the squeegee the plate **122** may be folded double on the plate **120**, as shown in FIG. 6, to squeegee out the wash water so as to leave it dry.

Important advantages are obtained from mounting the sponge in the aforesaid manner and in the aforesaid relation to the brushes. Thus, since the sponge is needed only for the purpose of spreading wax and detergents and is not needed during polishing and buffing, it may be stored in a position out of contact with the floor which protects the sponge itself from undue wear, adding to its life and prevents smearing of the floor during polishing. As constructed, the sponge holding bar is stored high enough so that there is no danger of accidental contact with the floor.

The provision for folding of the sponge halves to squeeze out the left-over wax and water following washing is particularly advantageous because it permits cleaning to be accomplished without soiling the hands and provides a mechanical advantage for applying a considerable amount of pressure to the sponge which could not be satisfactorily obtained by pressing the fingers against its surface. Moreover, because of the ease of cleaning there is less likelihood that the operator will neglect to do so after each use.

Since the supporting flanges **112—112** are disposed perpendicularly their lateral sides take up the principal forces imparted to the sponge by back and forth movement. Hence, the spring latch **116** can be made very light and easy to operate since it is not required to bear the load and therefore it is easy to remove the sponge for cleaning. Moreover, for convenience, it is desirable to have the sponge bar removable in the same direction as the pads or brushes.

By disposing of the sponge at the back side of the rotating brushes the content of the receptacle can be fed downwardly between the brushes by means of the shortest length of conductor and the sponge itself can be concealed in the housing with only a minor change in the shape of the machine at the rear part and without making any change in its conventional shape at the forepart. This is advantageous in that, by keeping the brushes close to the forward part of the housing, it is easier to maneuver and the brushes will pick up the detergent, wax or other solution and spread it laterally to their entire width without necessitating the use of a sponge, that is, as long from end-to-end as the brush span from side-to-side.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. The combination with a floor machine having a pair of motor-driven applicators rotatable about spaced parallel, vertically disposed axes, of a squeegee, and of means for supporting the squeegee adjacent the rear side of the applicators, in one of two positions, for storage or use, comprising a support mounted rearwardly of the applicators containing a transversely disposed, downwardly open chamber having spaced parallel walls, the vertical distance between the plane of the lower edges of the walls and the plane of the operating surfaces of the applicators being substantially equal to the thickness of the squeegee, a reversibly mountable mounting element having at its opposite faces oppositely extending flanges of lesser depth than the thickness of the squeegee, adapted to be telescopically and frictionally engaged with the walls of the chamber to hold the mounting element substantially in the plane of the lower edges of the chamber, means securing the squeegee to one face of the mounting element between the flanges at that side, and means at the opposite ends of the chamber and the mounting element reversibly engageable to hold the mounting element in either position.

2. The combination with a floor machine having a pair of motor-driven applicators rotatable about spaced parallel, vertically disposed axes, of a squeegee, and of means for supporting the squeegee adjacent the rear side of the applicators, in one of two positions, for storage or use, comprising a support mounted rearwardly of the applicators containing a transversely disposed, downwardly open chamber of sufficient length and depth to accommodate the squeegee for storage, the vertical distance between the plane of the lower edges of the chamber and the plane of the operating surfaces of the applicators being substantially equal to the thickness of the squeegee, a reversible mounting element to one side of which the squeegee is attached, and means at the opposite ends of the chamber and mounting element engageable to hold the mounting element with either side facing outwardly of the chamber to hold the squeegee in one of the two positions.

3. The combination with a floor machine having a pair of motor-driven applicators rotatable about spaced parallel, vertically disposed axes, of a squeegee, and of means for supporting the squeegee adjacent the rear side of the applicators, in one of two positions, for storage or use, comprising a support mounted rearwardly of the applicators containing a transversely disposed, downwardly open chamber having spaced parallel walls, the vertical distance between the plane of the lower edges of the walls and the plane of the operating surfaces of the applicators being approximately equal to the thickness of the squeegee, a reversibly mountable mounting element having at its opposite faces oppositely extending flanges of lesser depth than the thickness of the squeegee, adapted to be telescopically engaged with the walls of the cham-

ber, said mounting element having at its ends portions bearing against the lower edges of the walls at the ends of the chamber, and portions which extend beyond said end walls, said support containing a notch at one end for receiving an end of the extension at that end, and a resilient latch on the support at the opposite end of the chamber yieldably engaged with the extension at that end to hold it in engagement with the end of the chamber.

4. The combination with a floor machine having a pair of motor-driven applicators rotatable about spaced parallel, vertically disposed axes, of a squeegee, and of means for supporting the squeegee adjacent the rear side of the applicators, in one of two positions, for storage or use, comprising a support mounted rearwardly of the applicators containing a transversely disposed, downwardly open chamber having spaced parallel walls, the vertical distance between the plane of the lower edges of the walls and the plane of the operating surfaces of the applicators being approximately equal to the thickness of the squeegee, a reversibly mountable mounting element having at its opposite faces oppositely extending flanges of lesser depth than the thickness of the squeegee, adapted to be telescopically engaged with the walls of the chamber to hold the mounting element substantially in the plane of the open end of the chamber, and portions which extend beyond said end walls, said support containing a notch at one end for receiving an end of the extension at that end, the extension at the opposite end containing a hole, and a resilient latch on the support at that end yieldably engaged with en edge of the hole to hold the mounting element in engagement with the chamber.

5. Apparatus according to claim 4, wherein one-half of the squeegee is secured to the mounting element and the other half to a hinged plate so as to be foldable into engagement with the one-half, said hinged plate having a portion coinciding with the extension of the mounting plate at the end containing the hole through which the latch extends, the latter being operable, by engagement with the hinged plate, to hold both it and the mounting element in position.

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