April 16, 1963 R. A. YONKERS ETAL 3,085,284

APPLICATOR MACHINE

Filed Aug. 10, 1959 3 Sheets-Sheet 1

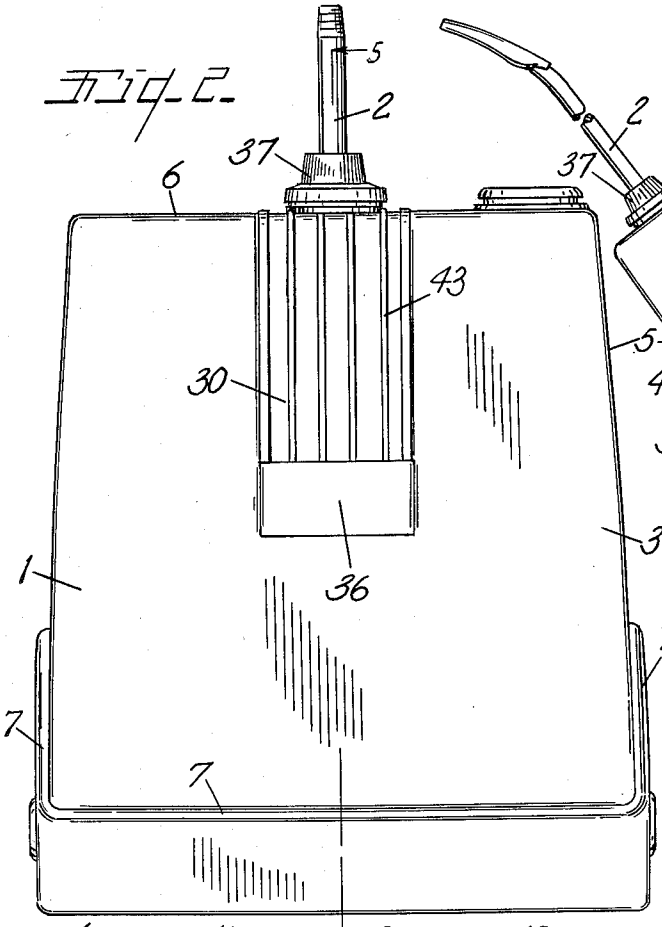


Fig. 2.

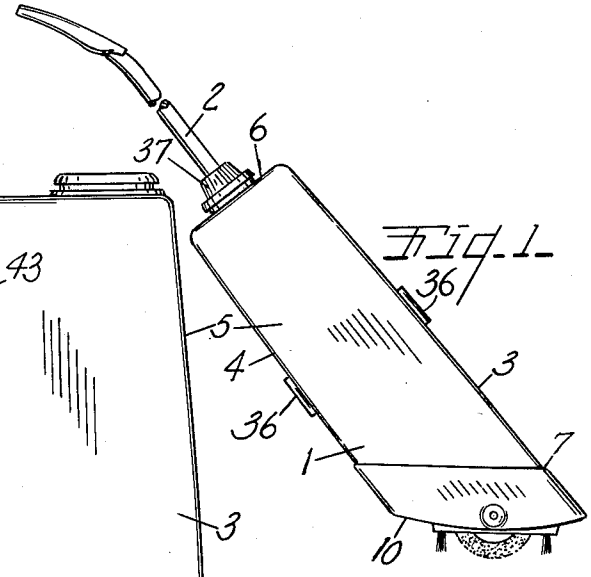


Fig. 1.

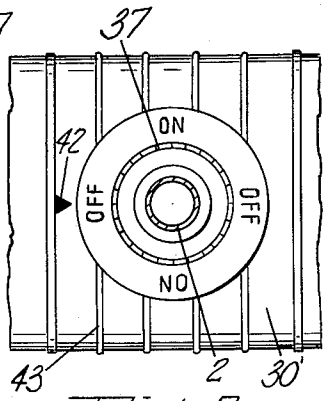


Fig. 8.

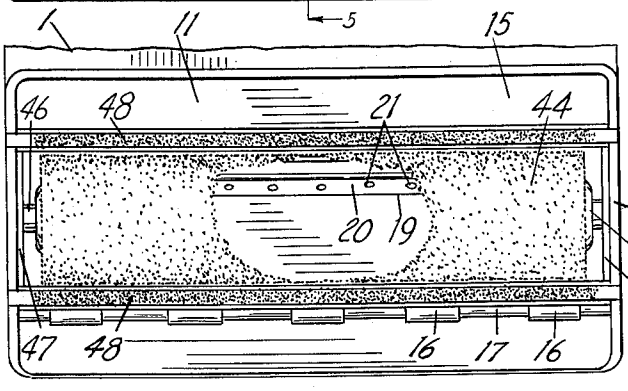


Fig. 3.

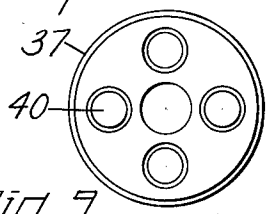


Fig. 9.

Inventors.
Robert A. Yonkers
Henry J. Rosendall
Henry T. Lathrop.
BY Otto A. Earl
ATTORNEY.

April 16, 1963 R. A. YONKERS ETAL 3,085,284

APPLICATOR MACHINE

Filed Aug. 10, 1959 3 Sheets-Sheet 2

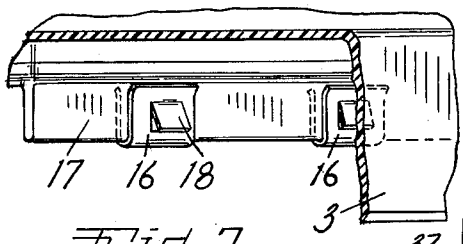


Fig. 7

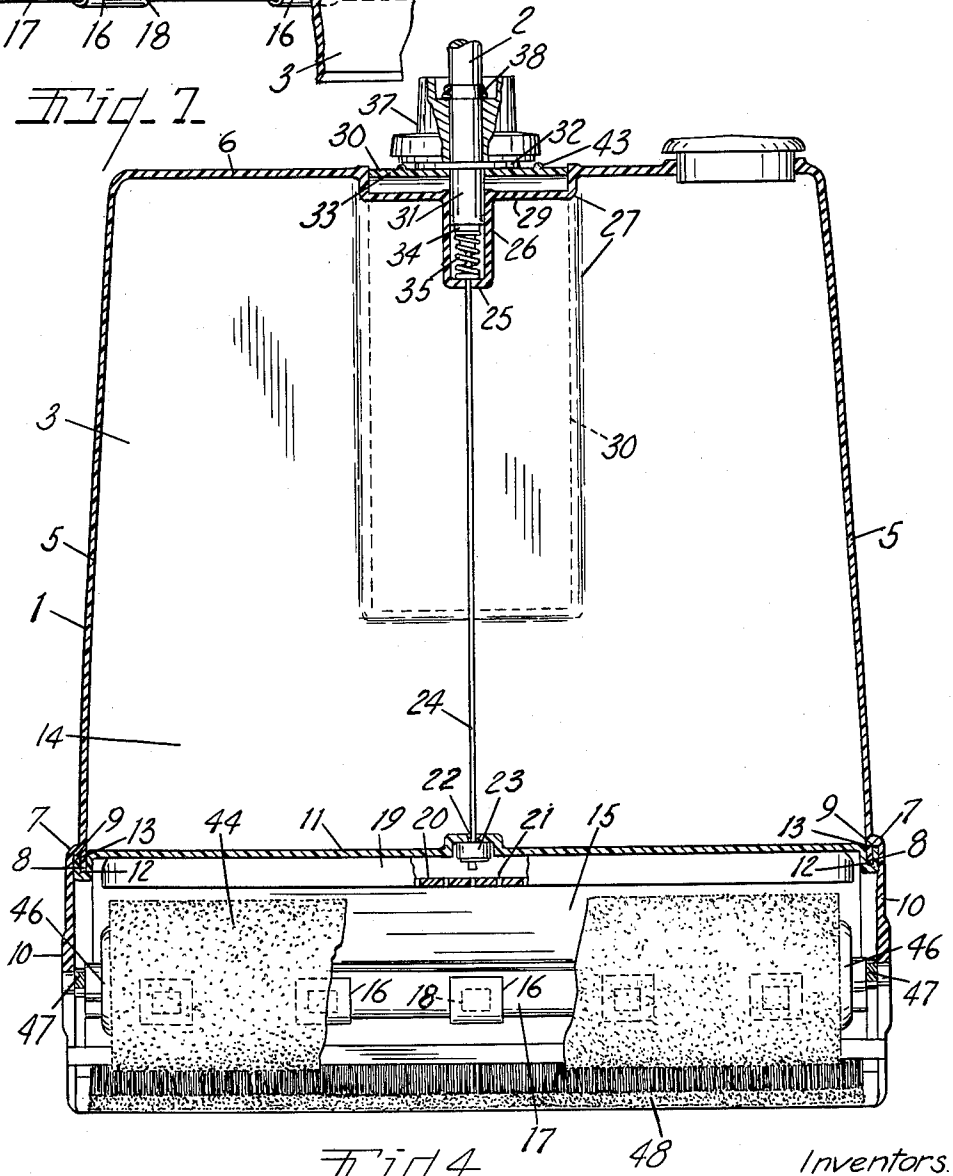


Fig. 4

Inventors.
Robert A. Yonkers.
Henry U. Rosendall
Henry T. Lathrop.
BY Otto Earl
ATTORNEY.

April 16, 1963 R. A. YONKERS ETAL 3,085,284

APPLICATOR MACHINE

Filed Aug. 10, 1959 3 Sheets-Sheet 3

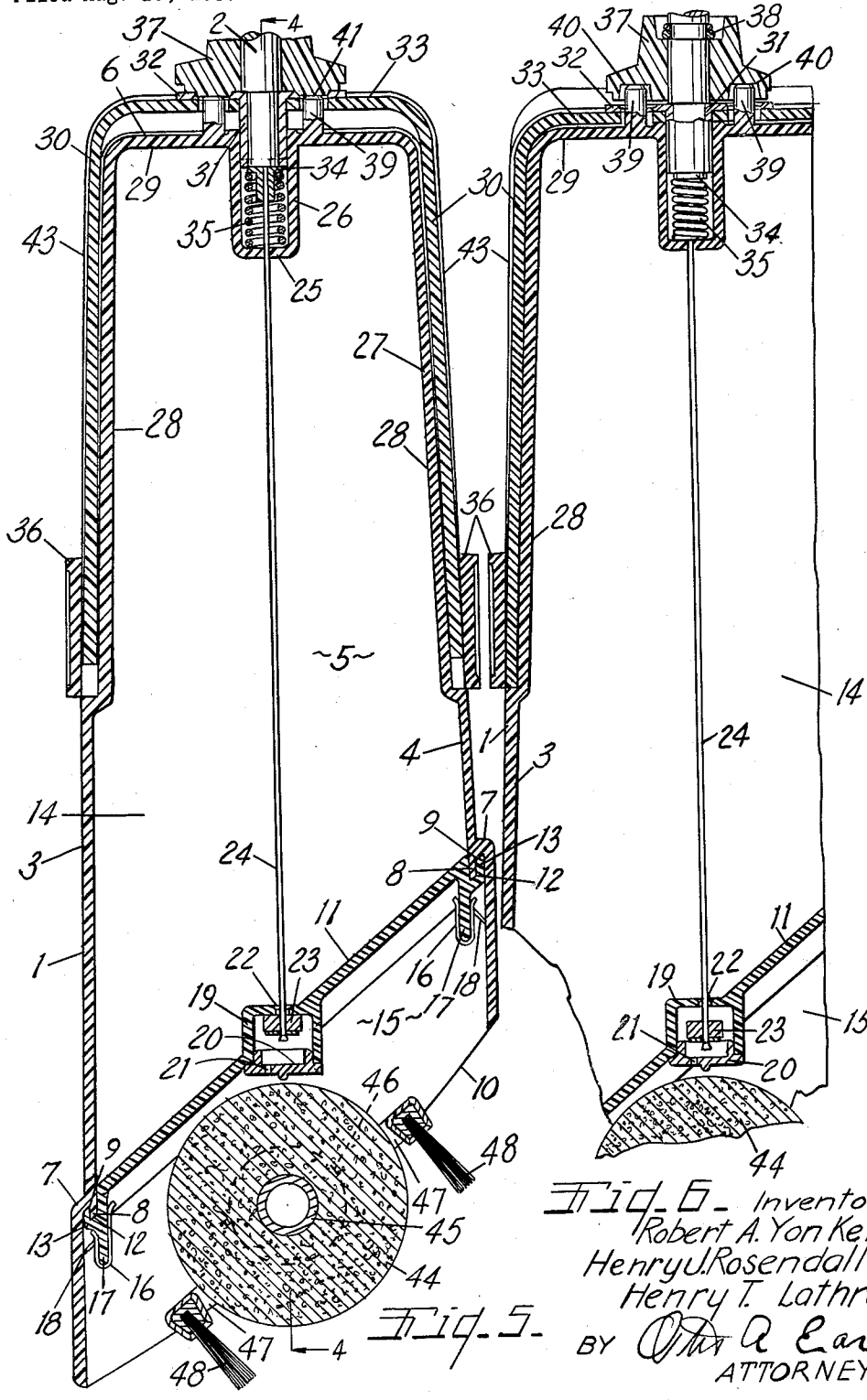


Fig. 5.

Fig. 6.

Inventors.
Robert A. Yonkers.
Henry J. Rosendall
Henry T. Lathrop.
BY Otto A. Earl
ATTORNEY.

United States Patent Office 3,085,284 Patented Apr. 16, 1963

3,085,284

APPLICATOR MACHINE

Robert A. Yonkers, Henry J. Rosendall, and Henry T. Lathrop, Grand Rapids, Mich., assignors to Bissell, Inc., Grand Rapids, Mich.

Filed Aug. 10, 1959, Ser. No. 832,677
12 Claims. (Cl. 15—589)

This invention relates to an applicator device or apparatus adapted for use in applying detergents to fibrous surfaces, for example rugs, carpets or the like, and which also may be adapted for applying wax or other materials to a hard or non-fibrous surface. The main objects of this invention are:

First, to provide an applicator device or apparatus which includes a body member comprising a liquid receptacle, a discharge conduit and a handle reciprocatingly associated with the body member and acting to open the valve with a stop means for holding the handle in non-valve operating position.

Second, to provide a body structure including a receptacle, a partition having a discharge conduit therein, the partition being spaced from the lower edge of the body member to provide a downwardly facing housing below the partition member, in which the body member and partition member may be readily formed of moldable plastic material.

Third, to provide an improved means for connecting the handle to the body member in which the manipulating strain or stress upon the handle is distributed or sustained by substantial areas of the body member walls.

Fourth, to provide an apparatus for applying detergent containing liquids to rugs, carpets or like surfaces having nap, and working the detergent into the nap.

Fifth, to provide a structure embodying these and other advantages in which the several parts may be economically produced and assembled.

The invention provides an applicator machine adapted to treat a surface by translation of the machine in a reciprocating forward and back movement over the surface and in which a source of liquid has a valve controlled discharge automatically operable in correlation to the translation.

The machine is particularly adapted to treating rugs and floors and is provided with a long handle for manipulation by a standing operator and which handle is connected to the valve control to actuate the latter directly by thrust forces applied by the handle to the machine.

A manually operated control member is provided to lock the handle against valve actuation for selected times when desired.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

FIG. 1 is a side elevational view of a structure embodying the invention, the handle being partially broken away.

FIG. 2 is a front elevation thereof.

FIG. 3 is a fragmentary bottom view, parts of the applicator roller being broken away to disclose structural details and the applicator roller brushes being shown conventionally.

FIG. 4 is a fragmentary enlarged vertical section on a line corresponding to line 4—4 of FIG. 5 with the handle in retracted position and the discharge valve closed.

FIG. 5 is an enlarged fragmentary view on a line corresponding to line 5—5 of FIG. 2 with the handle in retracted or valve closing position.

FIG. 6 is a fragmentary view corresponding to that of FIG. 5 with the handle in valve opening position.

FIG. 7 is an enlarged fragmentary view illustrating details of the means for retaining the body partition member in position.

FIG. 8 is a fragmentary plan view showing the handle in cross section and illustrating the relation of the stop member thereto.

FIG. 9 is an inverted view of the handle stop member.

The embodiment of our invention illustrated is of the type illustrated in applications for Letters Patent Serial No. 660,807, now Patent No. 2,975,462, filed May 22, 1957, and No. 690,772, now Patent No. 2,976,559, filed October 17, 1957, by two of the present joint inventors. It is adapted for the practicing of the method of application for patent Serial No. 733,511, filed May 17, 1958 as a division of said application, Serial No. 660,807.

The embodiment of our invention illustrated is particularly desirable for the use in the application of detergent containing liquid to carpets. The embodiment of our invention illustrated comprises a body member designated generally by the numeral 1, a handle designated generally by the numeral 2 and connected to the body member for manipulation of the body member and to control the discharge of the cleaning or other material. In the embodiment illustrated, the body member 1 is of generally rectangular section and comprises the front wall 3, rear wall 4, side walls 5 and top 6. These walls are formed integrally of molded plastic. The walls are provided with continuous offsets or outwardly projecting shoulder portions 7 having inwardly offset downwardly projecting continuous internal flanges 8 which are spaced from the walls to provide upwardly facing continuous grooves 9. The front wall 3 is of greater length than the rear wall 4 and the bottom edges 10 of the side walls 5 lie generally in the plane of the lower edges of front wall 3 and rear wall 4, edges 10 being preferably curved downwardly as illustrated in FIG. 1.

The partition member 11 is dimensioned to fit within the walls and is provided with an upwardly facing groove 12 receiving the flange 8 and an upwardly projecting flange 13 fittingly received within the downwardly facing groove 9. These parts are fitted together to provide a liquid receptacle 14 above the member 11 and the downwardly facing housing 15 below the partition member 11. To insure a liquid-tight joint between the body member parts and the partition 11, the parts may be if desired fusedly connected or assembled with a suitable sealing material. However, the partition member 11 is further secured by means of the clips 16 engaged with the downwardly projecting flange 17 on the member 11 and provided with springable lugs 18 which engage the front and rear walls 3 and 4, see FIGS. 4 and 5. The partition member 11 embodies a distributing conduit 19 which extends crosswise of the body member parallel to the front and rear walls 3 and 4 and includes a face member 20 having a longitudinal series of discharge openings 21 therein.

The conduit 19 is connected to the receptacle 14 by the port 22 arranged centrally thereof. This port is controlled by the upwardly seating valve 23 provided with a stem 24 which projects upwardly through an opening in the bottom 25 of the upwardly facing cylinder 26 depending from the top 6 of the body member.

The front and rear walls 3 and 4 and the top 6 are provided with centrally disposed merging recesses designated

generally by the numeral 27. These recesses result from the insetting of portions 28 in the front and rear walls and 29 in the top, see FIGS. 4, 5 and 6. The handle 2 is provided with a downwardly facing yoke-like support member 30 which is secured thereto by the sleeve 31 secured to the lower end of the handle and having a flange 32 overlapping the top or bight portion 33 of the yoke-like member 30. This sleeve 31 is a slidable fit in the cylinder 26, see FIGS. 5 and 6. The handle 2 is slidably supported on the body member by the yoke member 3. On thrust of the handle toward the body member it contacts the head 34 on the valve stem 24, the head also serving as a thrust member for the spring 35 supportedly seated in the cylinder 26 so that the thrust of the handle opens the valve 23.

Cross pieces 36 are disposed across the lower ends of the recesses 27 in the front and rear walls 3 and 4 to conceal the lower ends of the yoke member. The actuating of the valve 23 to open position by the thrust movement of the handle against spring 35 may be controlled by stopping relative movement of the handle 2 and body member 1. For this purpose the handle is provided with a control member 37 rotatably mounted on the handle above the yoke member 30, and rotatably retained against longitudinal movement relative to the handle by the collar 38 disposed above the stop member and fixed to the handle.

The body member top 6 is provided with lugs 39 projecting upwardly through the yoke member 30 and into the path of movement of control member 37. The underside of the control member 37 has recesses 40 normally aligned with lugs 39 to receive the same when it is desired to permit actuation of valve 23 to open position. When the control member 37 is turned to an off position, abutments 41 on the underside of the member between recesses 40 engage the lugs 39 and prevent relative movement between the handle and the body member 1, thereby preventing opening of valve 23 by the handle. In FIG. 5 the abutments 41 are shown in aligned position with the lugs 39 and in FIG. 6 the recesses 40 are aligned with the lugs. When the control member 37 is adjusted as shown in FIG. 5, the handle is locked in its retracted or non-reciprocating position. When the control member 37 is adjusted as shown in FIG. 6 the valve actuation thrust on the handle opens the valve 23 as illustrated in that figure. The control member 37 may be provided with "Off" and "On" indicia, either of which may be aligned with the pointer 42.

The yoke member 30 may be desirably ribbed at 43 to reduce possible frictional contact with cross pieces 36 and strengthen the yoke.

The distributing roller 44 is rotatably mounted on the side walls 5 of the body member 1, this roller of resilient sponge-like material, preferably synthetic, being provided with a relatively small shaft 45 having a collar and spindle portion 46 of relatively small diameter compared to the diameter of the roller, see FIGS. 3, 4 and 5. The ends of the spindle 46 are journaled by the frame 47 which in turn is carried by the side walls 5. The details of frame 47 are described and claimed in copending application Serial No. 690,722, now Patent No. 2,976,559, referred to above. The brushes, designated generally by the numeral 48, are mounted on the frame 47 and are in parallel relation to the roller 44 so that the brushes are in brushing contact with the surface over which the roller is supportedly and compressedly translated. It will be noted that the roller 44 is supported so that material discharging through the openings 21 is discharged upon the roller, see FIGS. 5 and 6. As stated, the roller 44 is formed of resiliently compressible spongy material and is capable of absorbing a substantial quantity of detergent containing liquid discharged thereon from the conduit 19. As the apparatus is translated over a nap surface to be cleaned, the discharge liquid absorbed by the roller 44 is first aerated by the working of said roller and

progressively applied as a foam to the nap, thus reducing the danger of soaking the base of the rug. The foamed detergent is thoroughly worked into and throughout the nap both by the translation of the sponge-like roller in pressure contact with the nap, and the accompanying translation of the brushes in contact with the nap.

Different applicators may be employed for different types of surface treatment. The invention provides a means of valve control of the discharge of the liquid automatically with handle thrust and which may be locked against actuation for selected periods of time as desired.

What is claimed as new is:

1. In apparatus of the class described, a receptacle for liquid, valve means in the bottom of said receptacle for controlling discharge of liquid from the receptacle, means carried by the top of said receptacle to translate said receptacle over a surface to be treated by said discharged liquid, and means extending through said receptacle and connecting said valve means and said translating means to actuate said valve means automatically in correlation to said translation, said translating means having limited reciprocal movement relative to said receptacle to effect said actuation of said valve actuating means.

2. In apparatus of the class described, a receptacle for liquid, valve means in the bottom of said receptacle for controlling discharge of liquid from the receptacle, means carried by the top of said receptacle to translate said receptacle over a surface to be treated by said discharged liquid means extending through said receptacle and connecting said valve means and said translating means to actuate said valve means automatically in correlation to said translation, and means to prevent actuation of said valve means by said last named means at selected times, said translating means having limited reciprocal movement relative to said receptacle at other times to effect said actuation of said valve actuating means.

3. In apparatus of the class described, a receptacle for liquid, means for supporting said receptacle upon a surface to be treated and disposed to receive liquid from said receptacle for treating the surface, valve means in the bottom of said receptacle for controlling the discharge of liquid from said receptacle to said supporting and treating means, a handle connected to the top of said receptacle and disposed to translate the same over the surface to be treated in a reciprocating forward and back movement, and means extending through said receptacle and connecting said handle to said valve means for automatically opening said valve means upon the forward translation of said receptacle and closing said valve means upon the backward translation, said handle having limited reciprocal movement relative to said receptacle during said forward and back translating movement to thereby effect said valve opening and closing in correlation to said translation.

4. In apparatus of the class described, a receptacle for liquid, means supporting said receptacle upon a surface to be treated and disposed to receive liquid from said receptacle for treating the surface, valve means controlling the discharge of liquid from said receptacle to said supporting and treating means, a handle connected to said receptacle and disposed to translate the same over the surface to be treated in a reciprocating forward and back movement, means automatically opening said valve means upon the forward translation of said receptacle and closing said valve means upon the backward translation, and manually adjustable control means to prevent said automatic opening of said valve means at selected times.

5. In apparatus of the class described, a receptacle for liquid, means supporting said receptacle upon a surface to be treated and disposed to receive liquid from said receptacle for treating the surface, valve means at the bottom of said receptacle for controlling the discharge of liquid from said receptacle to said supporting and treat-

ing means, a handle carried by the top of said receptacle and disposed to translate the same over the surface to be treated in a reciprocating forward and back movement, said supporting means resisting said translation upon the surface to be treated, spring means biasing said valve means to closed position, and means connecting said handle to said valve means and providing limited movement of the handle relative to said receptacle to actuate said valve to open position under forward thrust of the handle.

6. In apparatus of the class described, a receptacle for liquid, means supporting said receptacle upon a surface to be treated and disposed to receive liquid from said receptacle for treating the surface, valve means at the bottom of said receptacle for controlling the discharge of liquid from said receptacle to said supporting and treating means, a handle carried by the top of said receptacle and disposed to translate the same over the surface to be treated in a reciprocating forward and back movement, said supporting means resisting said translation upon the surface to be treated, spring means biasing said valve means to closed position, and means connecting said handle to said valve means and providing limited movement of the handle relative to said receptacle to actuate said valve to open position under forward thrust of the handle, said handle extending upwardly and rearwardly from said receptacle to be actuated by a standing operator when treating a rug or the like, and said valve actuation by said handle being in a direction parallel to the forward thrust forces of said handle.

7. In apparatus of the class described, a receptacle for liquid, means supporting said receptacle upon a surface to be treated and disposed to receive liquid from said receptacle for treating the surface, valve means controlling the discharge of liquid from said receptacle to said supporting and treating means, a handle connected to said receptacle and disposed to translate the same over the surface to be treated in a reciprocating forward and back movement, said supporting means resisting said translation upon the surface to be treated, spring means biasing said valve means to closed position, means connecting said handle to said valve means and providing limited movement of the handle relative to said receptacle to actuate said valve to open position under forward thrust of the handle, and adjustable abutment control means between said handle and said receptacle to lock the same against valve actuation at selected times.

8. In apparatus of the class described, a receptacle for liquid, a liquid distributing conduit beneath said receptacle and commnuicating therewith through an opening for passage of liquid from the receptacle to the conduit, a downwardly facing valve seat at said opening, a valve member disposed to engage said seat and close said opening, spring means biasing said valve member upwardly against said seat, a handle carried by said receptacle and disposed to translate the same over a surface to be treated in a reciprocating forward and back movement, treating means supporting said receptacle upon a surface to be treated and resisting said forward translation, and means connecting said handle to said valve member and providing for limited relative movement between said handle and said receptacle in the direction of forward thrust of the handle to actuate said valve member against said spring means to open the valve upon a forward thrust of said handle.

9. In apparatus of the class described, a receptacle for liquid, a liquid distributing conduit beneath said receptacle and communicating therewith through an opening for passage of liquid from the receptacle to the conduit, a downwardly facing valve seat at said opening, a valve member disposed to engage said seat and close said opening, spring means biasing said valve member upwardly against said seat, a handle carried by said receptacle and disposed to translate the same over a surface to be treated in a reciprocating forward and back movement, said handle extending at an angle upwardly and rearwardly from the receptacle to provide for treatment of rugs and the like by a standing operator, treating means supporting said receptacle upon a surface to be treated and resisting said forward translation, and means connecting said handle to said valve member and providing for limited relative movement between said handle and said receptacle in the direction of forward thrust of the handle to actuate said valve member against said spring means to open the valve upon a forward thrust of said handle, said valve actuation being disposed parallel to said handle to effect actuation of the valve against said spring means by direct axial thrust of the handle substantially free from binding.

10. In apparatus of the class described, a receptacle for liquid, a liquid distributing conduit beneath said receptacle and communicating therewith through an opening for passage of liquid from the receptacle to the conduit, a downwardly facing valve seat at said opening, a valve member disposed to engage said seat and close said opening, spring means biasing said valve member upwardly against said seat, a handle carried by said receptacle and disposed to translate the same over a surface to be treated in a reciprocating forward and back movement, said handle extending at an angle upwardly and rearwardly from the receptacle to provide for treatment of rugs and the like by a standing operator, treating means supporting said receptacle upon a surface to be treated and resisting said forward translation, means connecting said handle to said valve member and providing for limited relative movement between said handle and said receptacle in the direction of forward thrust of the handle to actuate said valve member against said spring means to open the valve upon a forward thrust of said handle, said valve actuation being disposed parallel to said handle to effect actuation of the valve against said spring means by direct axial thrust of the handle substantially free from binding, and yoke means rigidly carried by said handle and overlying said receptacle to maintain the handle and receptacle against relative displacement other than said valve actuating displacement axially of the handle.

11. In apparatus of the class described, a receptacle for liquid, a liquid distributing conduit beneath said receptable and communicating therewith through an opening for passage of liquid from the receptacle to the conduit, a downwardly facing valve seat at said opening, a valve member disposed to engage said seat and close said opening, spring means biasing said valve member upwardly against said seat, a handle carried by said receptacle and disposed to translate the same over a surface to be treated in a reciprocating forward and back movement, treating means supporting said receptacle upon a surface to be treated and resisting said forward translation, means connecting said handle to said valve member and providing for limited relative movement between said handle and said receptacle in the direction of forward thrust of the handle to actuate said valve member against said spring means to open the valve upon a forward thrust of said handle, and control means interposed between said handle and said receptacle and locking the same against valve opening actuation by said handle at selected times.

12. In apparatus of the class described, a receptacle for liquid, means supporting said receptacle upon a surface to be treated and disposed to receive liquid from said receptacle for treating the surface, valve means controlling the discharge of liquid from said receptacle to said supporting and treating means, a handle connected to said receptacle and disposed to translate the same over the surface to be treated in a reciprocating forward and back movement, said supporting means resisting said translation upon the surface to be treated, spring means biasing said valve means to closed position, means connecting said handle to said valve means and providing limited movement of the handle relative to said receptacle to

actuate said valve to open position under forward thrust of the handle, a rotatably adjustable control member carried by said handle and facing said receptacle, and abutment means on said receptacle disposed to be engaged by the face of said control member upon forward thrust of the handle, the face of said control member having recess means to receive said abutment means when the control member is adjusted to provide for valve actuation by said handle and having an abutment surface disposed to engage said abutment means to lock said handle against valve actuation when the control member is turned to locking position.

References Cited in the file of this patent

UNITED STATES PATENTS

1,181,594	Hinkle	May 2, 1916
1,267,521	Dover	May 28, 1918
1,445,976	Sealund	Feb. 20, 1923
2,633,590	Mitchell	Apr. 7, 1953
2,876,476	Woods	Mar. 10, 1959