United States Patent

Simon et al.

[15] **3,682,557**

[45] **Aug. 8, 1972**

[54] **CLEANING APPARATUS**

[72] Inventors: **Sydney Simon,** 936 Oramore St., Pittsburgh, Pa. 15201; **Morris Simon,** 3254 Hebron Dr., Pittsburgh, Pa. 15235; **John S. Hale,** Arlington, Va.; **Charles J. Markward,** Bethesda, Md.

[73] Assignee: **to said Sydney Simon and Morris Simon, by said Hale and Markward**

[22] Filed: **Oct. 2, 1970**

[21] Appl. No.: **77,495**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 21,461, March 20, 1970, abandoned.

[52] **U.S. Cl.** **401/139,** 222/182, 401/190, 401/263

[51] **Int. Cl.** **A47l 13/26,** A46b 5/02

[58] **Field of Search**.....401/137–139, 190, 401/195; 15/121, 245; 222/182

[56] **References Cited**

UNITED STATES PATENTS

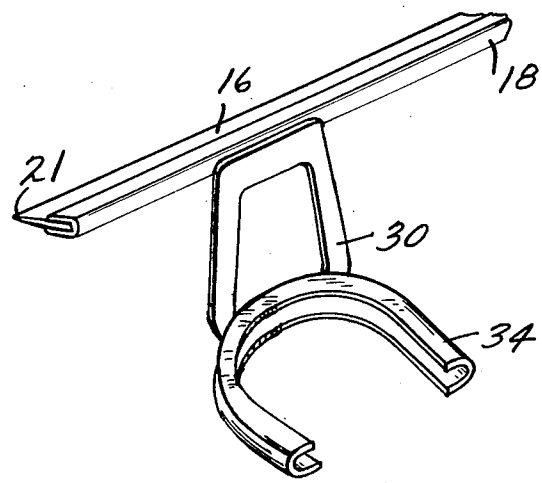
2,741,789	4/1956	Ray	401/139
2,753,578	7/1956	Lebet	401/139
2,770,826	11/1956	Curfman	401/139
3,008,164	11/1961	Herman et al.	401/139 X
3,185,351	5/1965	Klun	401/139 X
3,302,235	2/1967	Gerber	401/190
3,565,541	2/1971	Vallis	401/137

Primary Examiner—Lawrence Charles
Attorney—Cushman, Darby & Cushman

[57] **ABSTRACT**

A cleaning apparatus for use with a spray dispensing receptacle comprising adapter means which are constructed to be removably secured to the dispensing receptacle. A cleaning blade and blade holder of substantially linear configuration is secured to the adapter means for squeegee cleaning of a surface area, after spray treatment from the contents of the dispensing receptacle. A preferred embodiment of the invention includes an open window structure between the adapter means and the blade holder for permitting the passage of the dispensed spray therethrough to permit both spray treatment and squeegee action with a single stroke of the apparatus.

3 Claims, 17 Drawing Figures



PATENTED AUG 8 1972

3,682,557

SHEET 1 OF 4

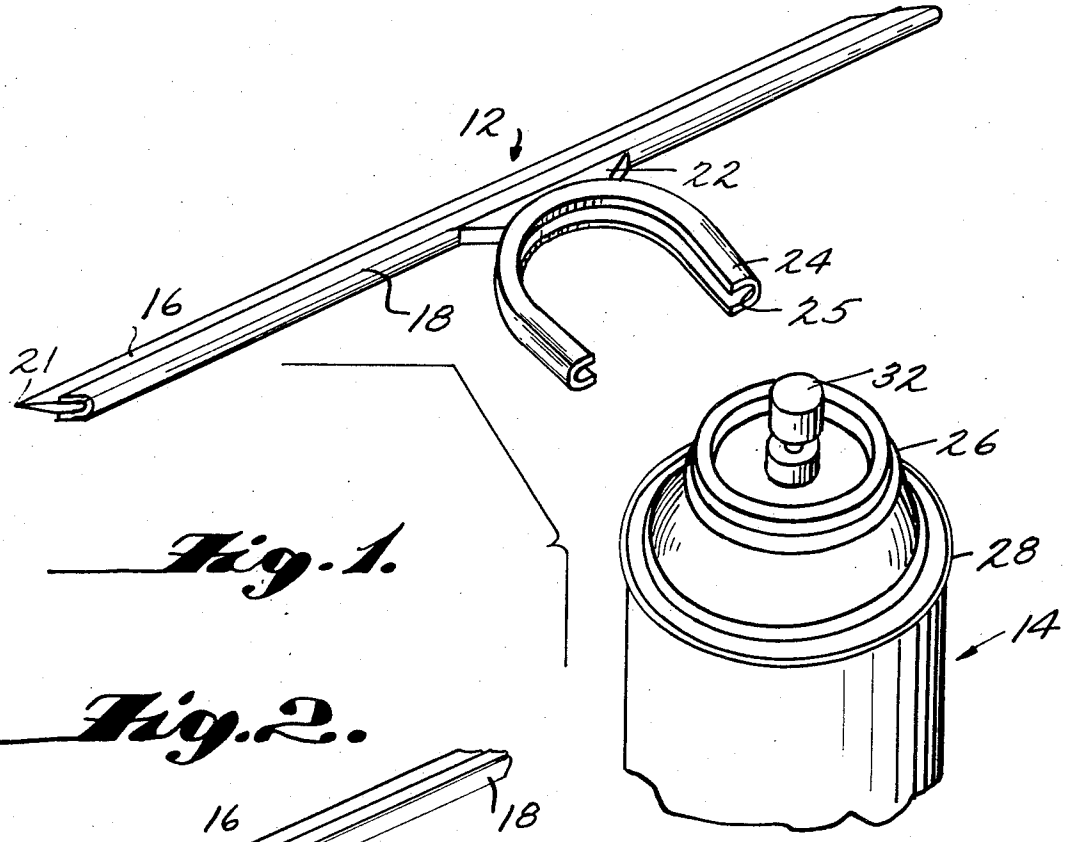


Fig. 1.

Fig. 2.

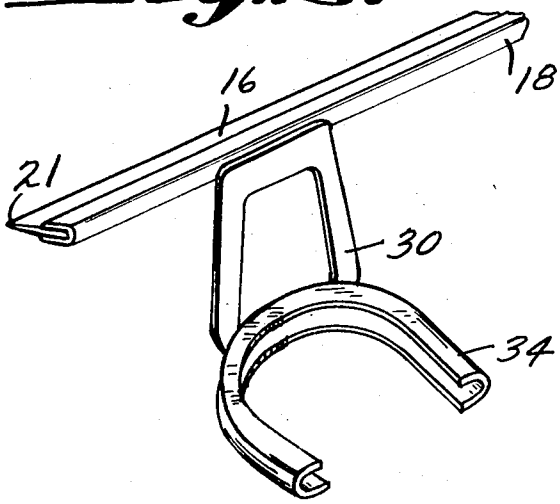
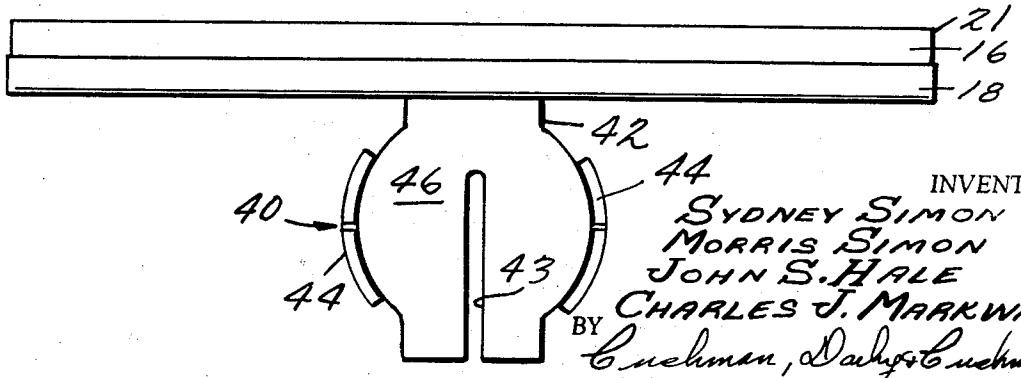


Fig. 3.



INVENTORS
SYDNEY SIMON
MORRIS SIMON
JOHN S. HALE
BY CHARLES J. MARKWARD
Cushman, Darby & Cushman
ATTORNEYS

Fig. 4.

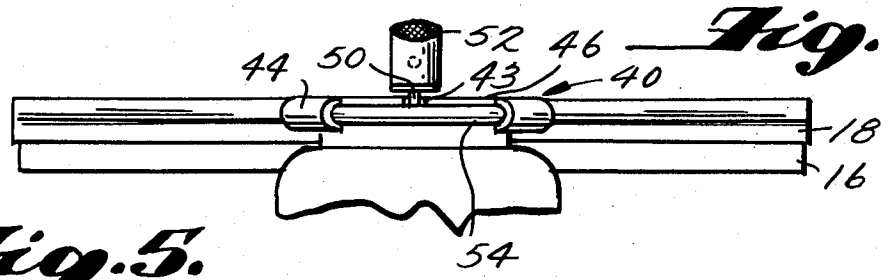


Fig. 5.

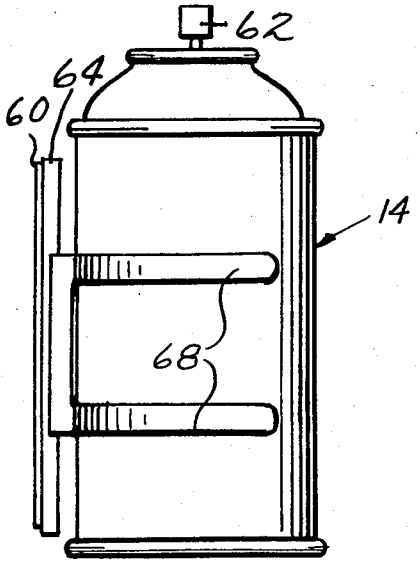


Fig. 6.

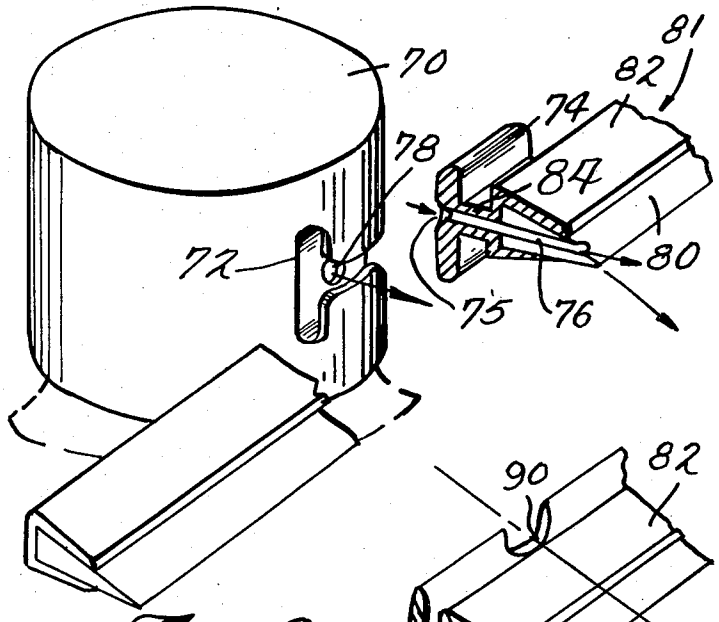


Fig. 7.

Fig. 6a.

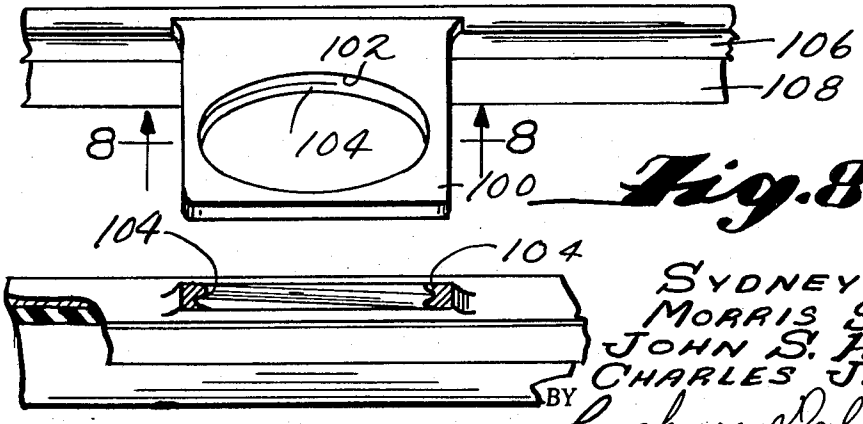


Fig. 8.

INVENTORS
SYDNEY SIMON
MORRIS SIMON
JOHN S. HALE
CHARLES J. MARKWARD
BY
Cushman, Darby & Cushman
ATTORNEYS

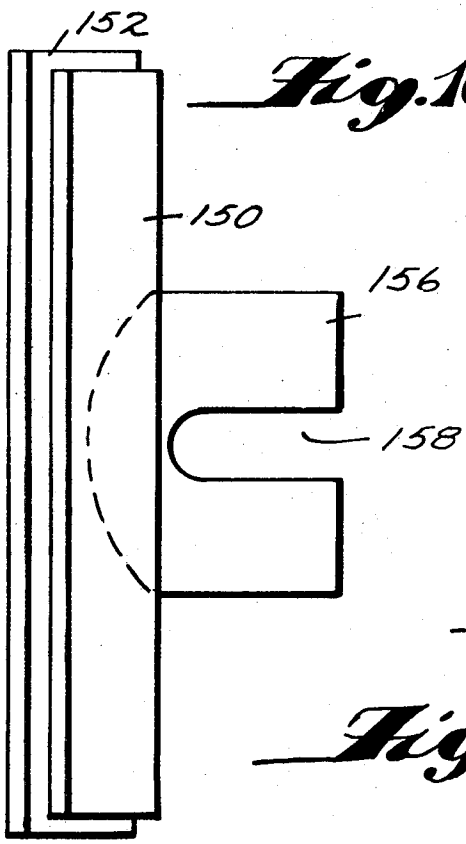


Fig. 10.

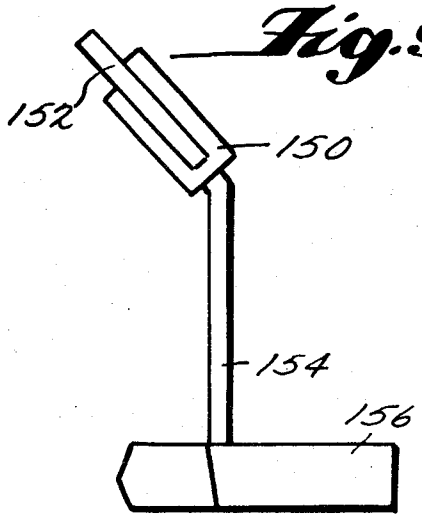


Fig. 9.

Fig. 13.

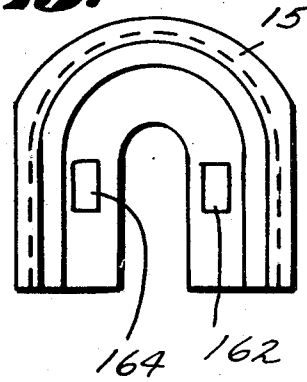


Fig. 12.

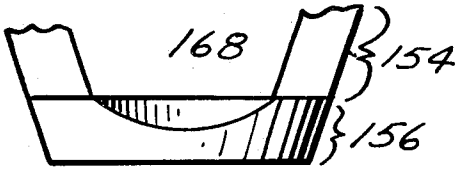
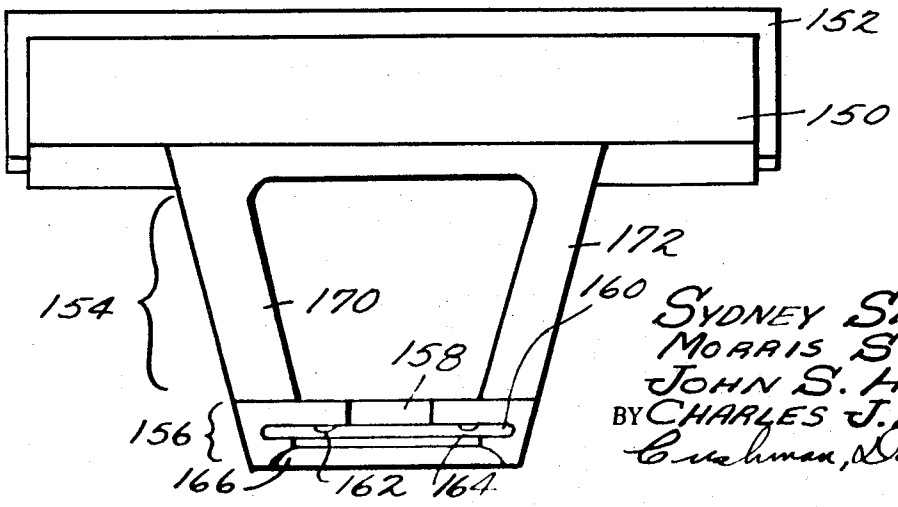


Fig. 11.



INVENTORS
SYDNEY SIMON
MORRIS SIMON
JOHN S. HALE
BY CHARLES J. MARKWARD
Cushman, Darby & Cushman
ATTORNEYS

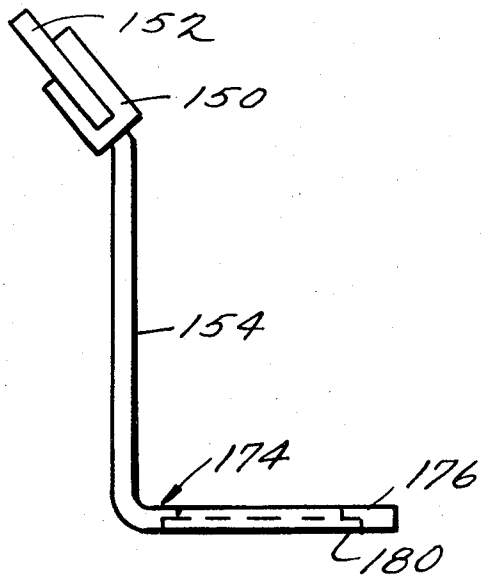


Fig. 14.

Fig. 16.

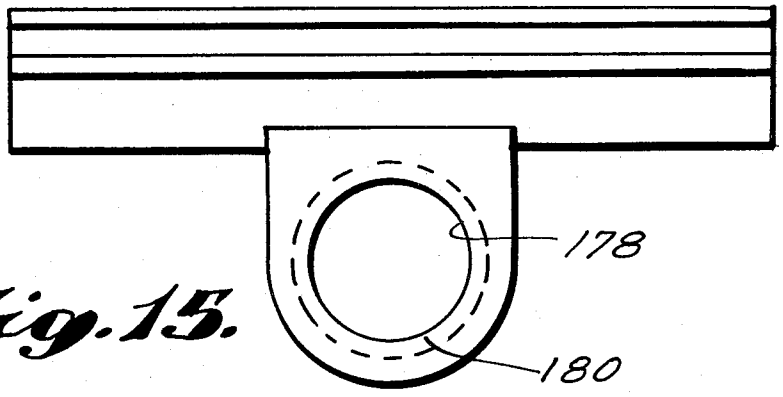
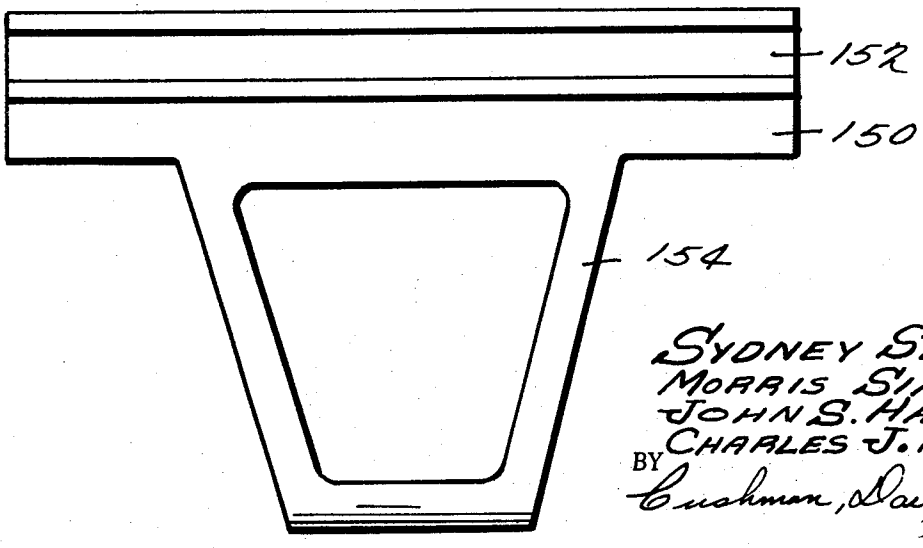


Fig. 15.



INVENTORS
SYDNEY SIMON
MORRIS SIMON
JOHN S. HALE
CHARLES J. MARKWARD
BY Cushman, Darby & Cushman
ATTORNEYS

CLEANING APPARATUS

This is a continuation-in-part of copending application Ser. No. 21,461, filed Mar. 20, 1970 now abandoned.

This invention generally relates to an adjustable cleaner apparatus for smooth surfaces such as glass, ceramics, metals or plastics. The cleaning apparatus generally comprises a squeegee or cleaning blade mounted or secured to a support or adapter means which is adapted to be removably secured to a dispenser receptacle to clean surfaces such as windows, mirrors and windshields.

The windows, windshields and mirrors collect dirt, pollutants and various other materials which require the use of solvents and cleaning apparatus for effective removal. Accordingly, it is an object of this invention to provide a cleaning apparatus which can be adjustably secured to a solvent or cleaning fluid spray dispenser receptacle such as a pressurized or non-pressurized spray.

It is another object of this invention to provide a removable squeegee cleaning apparatus for attachment to spray dispensers such that spray treatment and squeegee cleaning can be accomplished substantially simultaneously in a single stroke of the apparatus.

It is still a further object of this invention to provide a cleaning apparatus of simple durable construction that can be easily manufactured and easily assembled onto a dispenser receptacle by any ordinary individual.

This invention is also adaptable to all standard solvent dispenser receptacle cans or bottles which are currently on the market and can be easily removed from the receptacle and reused after the dispenser receptacle, to which it was first secured, has been emptied. This invention provides an apparatus that can be produced at such a low cost that it can be used in conjunction with a dispenser receptacle of cleaning fluid or solvent as an incentive to the sale of the product.

A preferred embodiment of the invention includes an open window structure disposed intermediately between the adapter and the blade holder. When the open window is properly aligned with the spray nozzle of the dispensing receptacle, the area to be cleaned may be first treated with a spray of cleaning liquid and thereafter subjected to a squeegee cleaning action in a single movement or stroke of the apparatus. In addition the adapter includes a semicircular recess having raised bosses therein for engaging the rim of a typical pressurized spray dispensing can in a firm and mechanically strong yet easily removable manner.

Since the adapter is attached near the spray dispensing nozzle, it also includes a concave portion extending outwardly past the window structure along the path of dispensed spray particles to prevent undue obstruction of the generally conically shaped spray pattern during operation. In addition, the window structure is preferably of generally trapezoidal shape, again, to present minimum obstruction to a conically shaped spray pattern.

Additional objects and advantages of this invention will be readily apparent to those skilled in the art following detailed description of the apparatus structure and the accompanying drawings of which:

FIG. **1** is a partially fragmented perspective view of one embodiment of the cleaning apparatus and a dispenser receptacle;

FIG. **2** is a perspective view of a preferred variation of the cleaning apparatus shown in FIG. **1**;

FIG. **3** is a plan view of another embodiment of the cleaning apparatus;

FIG. **4** is a rear partial view of the cleaning apparatus shown in FIG. **3** secured to a dispenser receptacle;

FIG. **5** is a perspective view of yet another embodiment of the cleaning apparatus secured to a dispenser receptacle;

FIG. **6** is a fragmented partial perspective view of another embodiment of the cleaning apparatus in relation to a dispenser receptacle;

FIG. **6***a* is a partial perspective view of a variation of the cleaner apparatus which is shown in FIG. **6**;

FIG. **7** is a fragmented partial perspective view of still another embodiment of the cleaning apparatus,

FIG. **8** is a cross-section of the cleaning apparatus of FIG. **7** taken along lines **8′ — 8′**;

FIG. **9** is a side view of a preferred embodiment of this invention generally similar to that shown in FIG. **2**;

FIG. **10** is a top view of the embodiment shown in FIG. **9**;

FIG. **11** is a rear view of the embodiment shown in FIG. **9**;

FIG. **12** is a partial front view of the embodiment shown in FIG. **9**;

FIG. **13** is a partial bottom view of the embodiment shown in FIG. **9**;

FIG. **14** is a side view of the embodiment of FIG. **9** without the clip-on adapter;

FIG. **15** is a front view of the embodiment of FIG. **14**; and

FIG. **16** is a top view of the embodiment of FIG. **14**.

Popular brands of liquid solvents or cleaning liquids are currently sold in dispensing receptacles comprising cans, bottles and aerosol cans. However, these containers, which are broadly termed dispensing receptacles in this specification, contain only the liquid or spray for use in cleaning and do not provide the necessary apparatus to allow the user to effectively and easily clean the smooth area to which the solvent or cleaning material has been applied.

The preferred cleaning apparatus shown in FIG. **1** discloses a squeegee cleaning apparatus **12** which can be removably attached to a dispenser receptacle **14**. The squeegee cleaning apparatus **12** comprises a blade **16** mounted or secured to a blade holder **18**, and a support **22** which connects and supports the blade holder to a collar support or adapter means **24**. The blade **16** is preferably linear in configuration and can be made of plastic, rubber, or any other suitable material which will not injure or mark the surface being cleaned. The blade material must be sufficiently rigid so that the surface can be cleaned while at the same time being sufficiently pliable and flexible so that the scraping or cleaning edge **21** of the blade will not crack or break when in use. The blade **16** is fitted into the blade holder and functions as a squeegee or wiper. The cleaning blade **16** can be of a one piece construction or have a blade holder **18**. The blade **16** or blade holder **18** containing the blade is suitably mounted or secured to a support **22** which is secured to a substantially U-shaped collar support or adapter means **24**. The collar support or adapter means **24**, preferably has an inside diameter substantially the same or slightly greater than the outer diameter of flange **26** surrounding dispenser receptacle

14 and is channeled or grooved as shown at 25. The inner diameter of collar support or adapter means 24 enables the substantially U-shaped collar 24 to fit snugly onto the receptacle flange 26 and to hold the squeegee cleaning apparatus 12 thereon in the proper position.

It should be noted that any flange of the receptacle 14, such as the one shown at 28, could also be used for attachment purposes. The flange of the receptacle can, of course, be constructed to conform to any desired shape. If desired, the collar support or adapter means 24 can be constructed of a resilient material so that it can be forced over any of the dispenser receptacle flanges. In addition, the channeled inside surface 25 of collar support or adapter means 24 may be coated with a friction coating or adhesive to allow the collar support 24 to grip the receptacle flange even more tightly.

FIG. 2 shows a preferred modification of the apparatus disclosed in FIG. 1 wherein the cleaning blade 16 and blade holder 18 are secured to an upright support 30 having an aperture therein which positions the blade 16 and blade holder 18 above the collar or adapter 34. A more detailed description of this embodiment is set forth below with respect to FIGS. 9–16. The upright support 30 shown in FIG. 2 is of sufficient height and construction so that it will carry the cleaning blade 16 or cleaning blade and cleaning blade holder above the spray pump or nozzle 32 of dispenser receptacle 14 when the collar or adapter means 34 is positioned over flange 26 or 28. The upright support 30 can be secured to the base of the substantially U-shaped collar or adapter 34 or to any suitable area of it. In using this embodiment the cleaning blade 16 or cleaning blade and blade holder is above the spray pump or nozzle 32 so that the spray or solvent is discharged through the aperture with the result that the simple action of pulling the dispenser receptacle 14 downward forces the blade 16 downward as a squeegee causing the tip 21 of the blade to clean the spray covered surface area in a single stroke provided the spray pattern is sufficiently broad at such close range to completely cover the area to be cleaned by the squeegee.

Another embodiment of the cleaner apparatus is shown by FIG. 3, in which the cleaning blade 16 and the blade holder 18 are connected to adapter means 40 by a neck support 42. The adapter means body 46 is preferably slotted at 43, as shown in FIGS. 3 and 4, so that it can be slidably placed around the neck 50 of pump or nozzle 52. The side edges 44 of the adapter body 46 project downward from the adapter body 46 so that they can engage a flange 54 of dispenser receptacle 14 which is partially shown by clamping, snapping or frictional engagement.

The embodiment shown in FIG. 5 discloses a dispenser receptacle 14 having a spray pump or nozzle 62. A cleaner blade 60 is secured to a blade holder 64 which is mounted or secured to support 66 which is integrally connected or secured to at least one substantially U-shaped band or adapter means 68 which engages the outer surface of receptacle 14's body and holds the cleaning apparatus against the receptacle's outer surface. The band or bands 68 are preferably made of a resilient material so that the arms of the band can be forced apart allowing the inner surface of the band or bands to be snapped back to forcibly engage the body of dispenser receptacle 14. If desired, the inner surface of resilient bands 68 may be coated with a frictional substance or an adhesive. Also, if desired, the bands may be constructed of a magnetic material so that the bands will be magnetically attracted to a metal dispenser receptacle.

FIGS. 6 and 6a disclose yet another embodiment of the cleaning apparatus for use with a dispenser receptacle having a cap 70 or cap type spray or dispensing apparatus. The cap 70 is preferably cut or slotted as shown at 72 to receive an adapter means 74 of substantially the same cross sectional configuration as slot or aperture 72. It should be realized, of course, that the cut or slot in the receptacle cap or body can be of any configuration with the only requirement being that the adapter means be of a configuration which will allow it to fit into the slot or cut and to be suitably secured therein. Additionally, adapter means 74 can be constructed to fit the curvature of the dispenser receptacle, or it can be of a resilient nature so that a "snap" fit is possible.

The adapter means 74 and blade means 81 have a channel 76 which is aligned with the spray aperture 78 of the spray pump or nozzle located in cap 70 when the cleaning apparatus is correctly positioned in the receptacle and when cap 70 is depressed to actuate the nozzle of the spray dispenser. The solvent spray or fluid is forced through aperture 78 and channel 76 upon the surface to be cleaned. Channel 76 is preferably funneled at 75 to receive the liquid or spray from the dispenser receptacle. Channel 76 can be branched so that the solvent or cleaning fluid can travel along the length of the blade means 81 and be dispensed from orifices in the blade means, contacting the surface to be cleaned at several points. In the preferred embodiment, cleaning blade 80 and blade holder 82 are secured to the adapter means 74 by an integral support 84. If desired, the adapter means 74 can have a section removed or be cut away, as shown at 90 in FIG. 6a, so that the cleaning fluid or spray issuing from spray aperture 78 will pass over blade means 81 directly onto the surface to be cleaned.

An additional embodiment of the invention is shown by FIGS. 7 and 8, in which the adapter means 100 has an aperture 102 therethrough which is preferably threaded at 104 to fit over the threaded cap or body of a dispenser receptacle. The adapter means 100 can be secured to the blade holder 106 and/or the cleaning blade 108 either integrally or by any other suitable means such as riveting, bonding or adhesives. If desired, aperture 102 can be channeled so that it will snap fit on a flange of the dispenser receptacle.

It should be noted in the above-mentioned embodiments that the cleaning blade is preferably set at an angle in respect to the plane of the support collar or adapter means, as for example 45° but not to be limited to this setting, so that the front blade tip will ride better when contacting the surface to be cleaned.

In the embodiments of the cleaning apparatus shown, the body of can 14 forms a handle for manipulating the cleaning apparatus such that it can be operated with either hand.

The dispenser receptacle can be a plastic bottle with a hand pump, an aerosol can or it can be of a construction where the liquid contents can be sprayed, under

pressure by compressing the walls of the receptacle. It is also apparent that the blade and blade holder can be integrally constructed so that the blade and blade holder are merged as one.

A preferred form of the embodiment shown in FIG. 2 is shown in more detail in FIGS. 9–13. This form is particularly adapted for manufacture with plastic materials. It is specifically adapted for removable attachment to a rim of a pressurized spray dispenser such as rim **26** on can **14** in FIG. **1**.

A plastic blade holder **150** of substantially linear dimensions has an approximately U-shaped cross section in which a squeegee blade **152** is clamped. The blade holder **150** is integrally attached to one end of an open window support structure **154** at an angle approximately 45 degrees. The other end of support **154** is integrally attached to an adapter **156** as shown in FIG. **9**.

Adapter **156** includes a generally U-shaped open slot **158** for slipping around a spray nozzle such as is usually contained in push-button **32** shown in FIG. **1**. Underneath the top of adapter **156** is a generally semicircular or U-shaped recess **160** which is dimensioned to snugly receive the lip or rim of the pressurized spray can. In addition raised bosses **162** and **164** are provided for engaging the spray can rim thus insuring a tight and secure mechanical connection between the can rim and the adapter **156**. Of course, the dimensions of recess **160** and bosses **162, 164** are chosen to permit sliding attachment by any ordinary individual as well as relatively easy removal such that the attachment may be reused on other sprayer cans.

The lower portion of adapter **156** may be slightly recessed as shown at **166** in FIG. **11** to accommodate the dome-shaped top portion of the typical sprayer can. In addition the front portion includes a concave section **168** as shown in FIG. **12** extending outwardly past the open window support structure **154** along the intended path of sprayed particles to prevent obstruction of the usual generally conically shaped spray pattern emanating from the spray can nozzle.

After attachment, the spray nozzle will be located behind the open window support structure and the spray may then pass directly through the open window structure onto the area to be cleaned. Preferably, the window structure comprises two upwardly extending legs **170, 172** which meet the adapter at slightly obtuse angles and which meet the blade holder at slightly acute angles as shown in FIG. **11**. This provides a generally trapezoidally shaped open window to minimize any possible interference or obstruction of the sprayed articles.

Of course, the spray can itself functions as the cleaning apparatus handle after being attached thereto as described above. Thereafter, squeegee cleaning of a surface may be accomplished by a spraying operation followed by a separate squeegee operation but where the cleaning process is facilitated since now new or additional cleaning apparatus is necessary. Alternatively, the entire cleaning process may be accomplished in a single operation by simultaneously spraying and applying the squeegee on the surface area to be cleaned as will now be apparent to those skilled in the art.

A slightly modified version of the apparatus of FIGS. **9–13** is shown in FIGS. **14-16**. Here the apparatus is essentially the same except that adapter **156** has been replaced with a simpler adapter **174** which is suitable for use with typical mechanical sprayers rather than pressurized aerosol cans. Here the adapter **174** comprises a generally ring-shaped member **176** having a hole **178** therethrough which is dimensioned to fit over a screw-type liquid bottle top and to be secured to the bottle top by screwing the bottle cap and associated mechanically operated sprayer nozzle down thereover as will be apparent to those skilled in the art. Additionally, the hole **178** may include a recess **180** to accommodate a bottle top flange as will also be apparent to those skilled in the art.

Although this invention has been described with only a few specific embodiments, modifications and variations of these embodiments may be envisioned without departing from the spirit of the invention, as those skilled in the art will readily appreciate. Accordingly, such modifications and variations are considered to be within the purview and scope of this invention.

What is claimed is:

1. A cleaning apparatus for use with pressurized spray — can container of cleaning material, said container having a ring shaped flange of smaller diameter than the container itself, said flange being disposed about and just below an actuatable spray nozzle at its top end, said cleaning apparatus comprising:

an adapter means for removably securing said cleaning apparatus to said spray-can container,

said adapter means including a U shaped recess dimensioned to slidably receive said ring shaped flange therein,

said U shaped recess having an upper inside surface adapted for sliding over the top of said ring-shaped flange and a lower inside surface adapted for sliding over the bottom of said ring-shaped flange,

said upper inside surface extending beyond said lower inside surface and carrying a plurality of depending bosses thereon for locking engagement with said ring-shaped flange,

said upper inside surface also including a U shaped slot for receiving said spray nozzle,

two upwardly extending support arms attached to said adapter means on opposite sides thereof thereby defining a spraying aperture through which cleaning material may be sprayed from said spray nozzle when actuated, and

a blade structure disposed across the upper ends of said support arms and carrying a squeegee blade wiper therealong at an angle with respect to said support arms thereby providing a properly oriented squeegee blade for wiping away the cleaning material sprayed through the aperture disposed therebelow.

2. A cleaning apparatus as in claim **1** wherein a portion of said adapter means located forward of the byte portion of said U shaped slot is concave-shaped to increase clearance for the sprayed cleaning material.

3. A cleaning apparatus as in claim **1** wherein a bottom surface of said adapter means is concave shaped to increase clearance for a dome shaped portion of said spray can container which dome is located just beneath said ring-shaped flange.

* * * * *