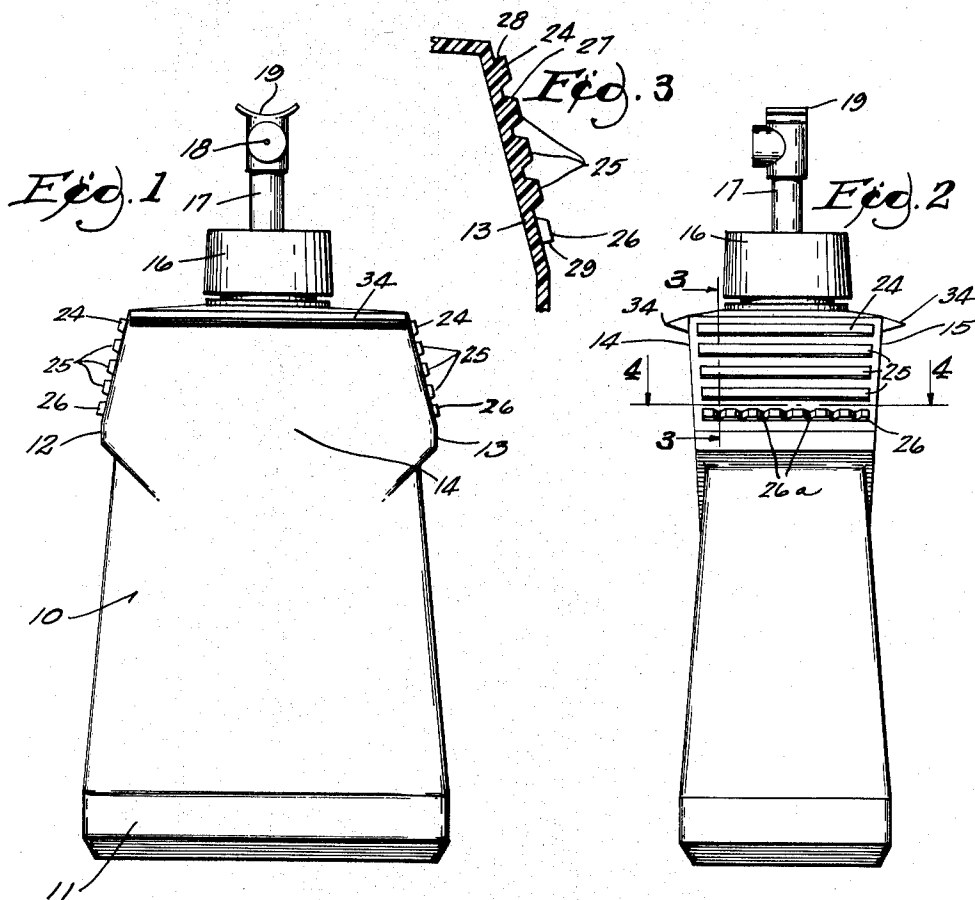
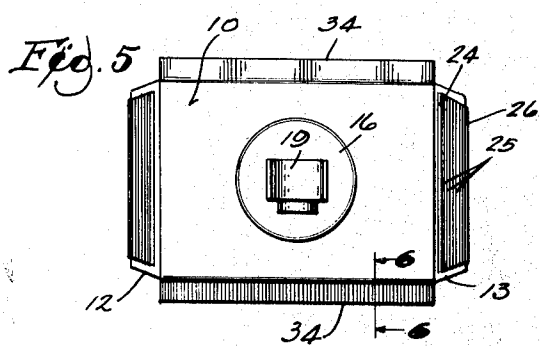
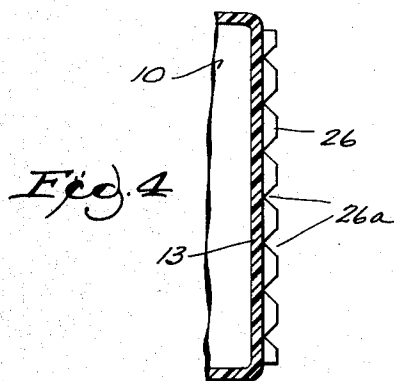
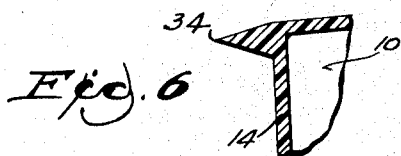


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W. F. GROTE
WINDOW CLEANER BOTTLE

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WINDOW CLEANER BOTTLE

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1 Claim. (Cl. 15—531)

This application is a continuation-in-part of S.N. 264,812, filed March 13, 1963, now abandoned.

This relates to improvements in means for cleaning windows and particularly for cleaning windshields and windows of automobiles.

Building windows and the windshields and windows of automobiles collect dirt of various kinds which frequently requires the use of solvents and scrapers or squeegees and the like for its removal. Some automobiles are provided with means for spraying a cleaner on the windshield areas where the windshield wipers act so that such wipers may act as scrapers or squeegees. Such action of the windshield wipers is not wholly satisfactory and no single implement has been so far provided for cleaning windows or windshields of automobiles and the like and which combines a spray nozzle and a scraper and a squeegee.

The present bottle provides surfaces shaped both to secure a multiple scraping action to remove masses of dirt, and to provide flexible squeegees for removing liquids and dirt suspended therein from the glass. The upper portion of the bottle is substantially rectangular to provide shoulders on which the scrapers and squeegees are respectively formed. There being four shoulders, it is preferable to form groups of scraper on two of the shoulders and squeegees on the other two shoulders, the groups of scrapers and the several squeegees being different in shape and size or both, to be effective under different conditions. The squeegees are made nearly twice the length of the scrapers because scraping is usually required only on small areas while squeegee action is required of large areas.

The bottle may be of the squeeze bottle type with a nozzle-like closure by which the contents of the bottle may be sprayed on a window or windshield. The bottle is then formed to be squeezed together below the shoulders avoiding flexing of the shoulders, when ordinary pressure for liquid ejection is to be exerted on the bottle. The bottle is made generally rectangular to provide two long shoulders for the squeegees and to provide two wide body areas which can be easily squeezed toward or wholly into contact with one another. Obviously the portions of the bottle wall to be squeezed together are not as rigid as the shoulders where the scrapers and squeegees act as reinforcements.

Instead of relying only on flexibility of the bottle wall, for spraying the bottle contents on a window or windshield, the spraying means may be a pump operated by finger pressure and mounted in the bottle cap and having a spray nozzle. When using such pump the bottle will usually be gripped around the relatively rigid shoulders to have a finger readily available for operating the pump. The scraper shoulders are especially easy to grip due to choice of the shoulder dimensions for gripping by an average size hand, the projections from the shoulders and the rigidity of the shoulders. The scrapers and squeegees reinforce the bottle part which should not be distorted upon squeezing the bottle, but should form a liquid receiver portion of the bottle.

In the drawings:

FIG. 1 is an elevation of one side of the present bottle.

FIG. 2 is an elevation of another side of the bottle.

FIG. 3 is a cross section on the line 3—3 of FIG. 2.

FIG. 4 is a cross section of line 4—4 of FIG. 2.

FIG. 5 is a top plan view of the bottle, and

FIG. 6 is a cross section on the line 6—6 of FIG. 5.

Referring to the drawings by numerals, reference numeral 10 designates the major or body portion of a bottle made of a synthetic material which can be molded to various shapes and which may be easily shaped or otherwise treated to secure portions of different rigidity and flexibility. The bottle is preferably substantially rectangular with rounded corners in the body 10 and with an upper shoulder portion and a smaller size body portion from the shoulder portion toward the bottom 11 of the bottle. The upper quarter or third of the height of the bottle is formed with four substantially flat surfaces extending at an acute angle to the center line of the bottle beyond the upper portions of the bottle which form pairs of shoulders 12, 13 and 14, 15. The bottle has the usual screw threaded neck extended above the shoulders 12—15 to receive a known form of spray nozzle if the body portion 10 of the bottle is made sufficiently flexible to eject the bottle contents by squeezing thereon. However, it is preferred to fit the bottle neck with a cap 16 which carries a known type of pressure operated pump 17 having a spray nozzle discharge 18. The shoulders 12—15 are made of a size to be easily gripped by the hand with one finger free to press on the pump. The shoulders have projections on which the fingers and thumbs rest so that the bottle is easily held firmly. The shoulders themselves plus the projections thereon are sufficiently rigid so that there is no tendency to distort the upper portions of the bottle. Below the shoulders 12—15 the bottle walls are relatively thin and flexible so that a simple nozzle may be substituted for the pump and the bottle contents may be sprayed by squeezing the bottle.

Shoulders 12, 13 are much shorter than shoulders 14 and 15 and are formed with a group of bars 24, 25 and 26 (see FIG. 3). The bars extend substantially parallel and a considerable distance from the surface of the shoulders 12, 13 and are shaped with side surfaces 27 sloping toward the shoulder surface to give equal scraping effect regardless of the direction in which the bars are scraped across a window surface. Both scrapers 24 and 26 preferably have leading edges 28, 29 at a right angle and perpendicular to the surface of the shoulder to provide right angle leading edges for exerting more pronounced scraping action in opposite directions. The right angle leading edges 28, 29 of both bars 24 and 26 act on the dirt on the window or windshield in substantially the same way whether the bottle is held for bearing of only one of the leading bars on the glass or for bearing of the top surfaces of all of the bars on the glass. One or both of bars 24, 26 may be serrated as indicated at 26a in FIG. 2 for cutting through dirt in spaced strips and thereby making the remaining dirt strips more amenable to removal by the following continuous bars 25.

Shoulders 14, 15 each have a sharp edged rib or squeegee 34 extending outwardly at right angles to the center line of the bottle. Such squeegees are preferably made symmetrical to be effective in either direction of movement across a surface of the glass. However, the squeegees may be made with single or plural wiping edges as is well-known and may be made substantially thinner than shown. The longitudinal edge portions are quite flexible but the base portions of the squeegee have sufficient mass to resist bending transversely of their length. The above squeegee structure plus the mass of scraper bars and the positioning of shoulders at right angles to one another provides substantial stiffening of the upper portion of the bottle.

The present bottle provides everything necessary in one unitary article to clean windows and the like provided the dirt thereon can be softened by a cleaner. The scrapers 24—29 loosen the softened dirt. In most cases,

wetted areas remain on the glass after the scraping action is completed and provide enough liquid for completion of the cleaning action by squeegees 34. Obviously the cleaner is applied as often as and whenever necessary to soften the dirt if the dirt is not removed with the first pass of scrapers and squeegees over the glass.

The present bottle is formed from a moldable material of which the rigidity may be controlled so that liquid may be ejected from the bottle through a spray nozzle by squeezing the bottle, or the liquid ejecting means may be a hand-operated pump with a spray nozzle discharge. The bottle is substantially four-sided with a shoulder on each side at right angles to other shoulders. Two of the shoulders have an external flat surface at an angle to the center line of the bottle and each of such shoulders have a group of bar-like projections in substantially parallel arrangement and extending at substantially right angles from the surface of the shoulder. The outside bars of each group of bars may be serrated, and are provided with a leading edge formed by surfaces at a right angle. The bars are adapted to act as scrapers to free and collect the dirt from the glass. The other two shoulders each have a single projection in the form of an edged blade extending at substantially right angles to the center line of the bottle and which are relatively flexible to act as squeegees or blades for wiping dirt and liquid off the glass. The shoulders with the scrapers and the squeegee thereon from a relatively rigid structure which is not distorted by ordinary gripping by the user. The body of the bottle below the shoulders is smaller than the shoulders and tapers to wider than the shoulders at the bottom. The wall of the body is

made relatively flexible and is readily squeezed together if that means of ejecting a liquid is to be used.

What I claim:

A bottle of moldable material having means provided with a nozzle for spraying liquid from the bottle onto, a window, the bottle comprising a body of generally rectangular form with end and side shoulders each providing an external surface at substantially right angles to other surfaces thereof and acute angles to the bottle center line, the end shoulders each having a set of projections extending outwardly and of a mass to stiffen the shoulders against flexure and to serve as relatively rigid scrapers for removing dirt from the window, the scrapers being in spaced parallel relation with the leading edges of each set of scrapers at right angles to the end shoulder external surfaces, the side shoulders each having a squeegee extending outwardly therefrom, the squeegees being relatively rigid longitudinally and having flexible edge portions for removing moisture and residual dirt from the window, the longitudinal axis of the scrapers and the squeegees being substantially at right angles to the bottle center line, the bottle portion below the shoulders being flexible for readily squeezing together.

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