Oct. 9, 1956 E. H. BETTS, JR 2,765,958

ADHESIVE HOLDER AND DISPENSER

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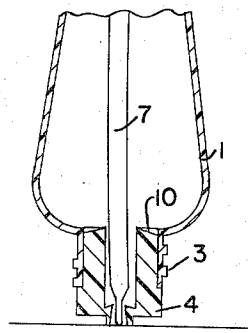


FIG. 2

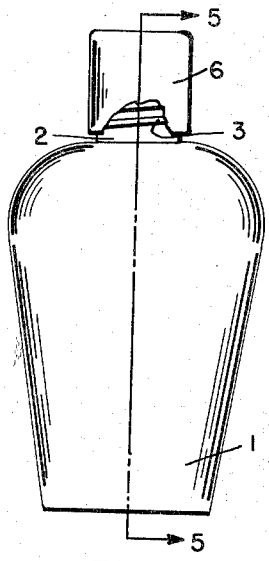


FIG. 1

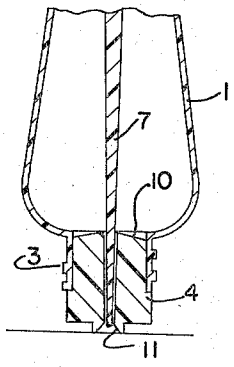


FIG. 3

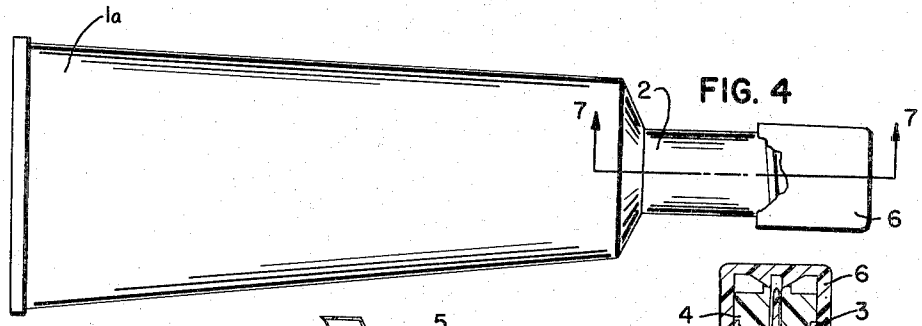


FIG. 4

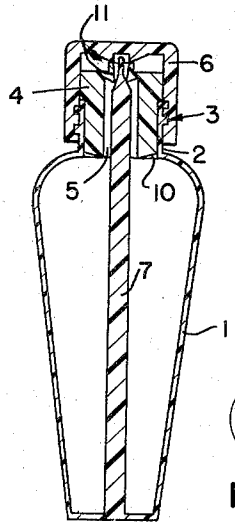


FIG. 5

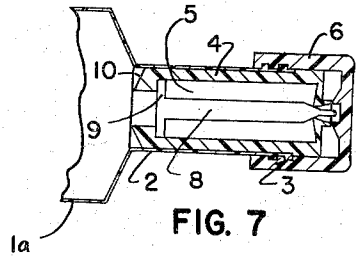


FIG. 7

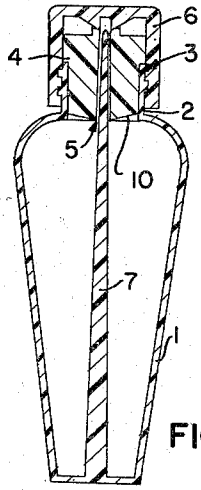


FIG. 6

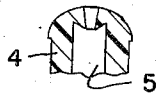


FIG. 8

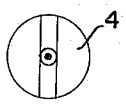


FIG. 9

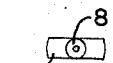


FIG. 10

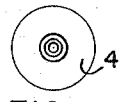


FIG. 11

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ADHESIVE HOLDER AND DISPENSER

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7 Claims. (Cl. 222—150)

This invention relates to dispensers for adhesives and more particularly to aqueous solution adhesives. Heretofore dispensers commonly used with aqueous solutions of adhesives have been rigid, with a flexible dispensing top composed of a rubber base material. The chief objection to containers of this type is that the dried adhesive accumulates about the discharge aperture and adheres strongly to the dispensing orifice, rendering the dispenser unusable and making it necessary to pry and peel the dried accumulated adhesive from the area around the aperture in the head.

An object of this invention is to provide an improved adhesive holder and dispenser which will resist plugging up when allowed to stand in exposure to air, which will always be ready for immediate use, which dispenses adhesive in narrow or broad lines as desired, which will be convenient and trouble free in use, and simple and inexpensive in construction.

Another object of the invention is to provide an improved dispenser having a head which will be free of a congealed adhesive when it is reused after the dispenser has been allowed to stand for periods during which the adhesive has an opportunity to dry and cause a hardened and strongly adherent encrustation to remain about the aperture in the dispensing head.

Other objects and advantages will be apparent from the following description of several embodiments of the invention, and the novel features will be hereinafter particularly pointed out in connection with the appended claims.

In the accompanying drawing:

Fig. 1 is a front elevation of a dispenser which is constructed in accordance with this invention;

Fig. 2 is a partial section of a dispenser in the dispensing position;

Fig. 3 is a partial section of another dispensing container using a different type head and spindle, also in dispensing position;

Fig. 4 is a front elevation of a collapsible tube type of dispenser with a head constructed in accordance with this invention;

Fig. 5 is a vertical section taken along line 5—5 of Fig. 1 and embodying this invention;

Fig. 6 is a vertical section taken along line 5—5 of Fig. 1 but showing another embodiment of this invention;

Fig. 7 is a horizontal section taken along line 7—7 of Fig. 4 illustrating another embodiment of the invention;

Fig. 8 is a partial section showing a modification of the dispenser head constructed according to this invention;

Fig. 9 is a plan view of the head shown in Fig. 5 with the cap removed;

Fig. 10 is a plan view of the spindle used in Fig. 7;

Fig. 11 is a plan view of another type of dispensing head constructed in accordance with this invention.

In the embodiment of the invention illustrated in Figs. 1 and 5, the dispenser includes a collapsible or squeezable container or bottle 1, with an open neck portion 2, with threads 3 on the exterior surface of the neck portion.

The opening in the neck portion is closed by a wall or plug 4, having a dispensing passage 5 endwise therethrough. This plug is positively secured in the neck passage in any suitable manner such as by cementing it therein. A cap 6 screws over the neck portion so as to be removable therefrom and its top seats against the outer end of the plug to close the opening or passage 5 therethrough. A spindle 7 is connected to the inside face of the bottom wall of the container or bottle 1, extends upwardly therefrom and into and along the passage 5 of the plug 4, and slightly beyond the outer face of the plug. This spindle is freely flexible and resilient so that it can flex easily when compressed endwise, and when released will return to its original shape.

The passage 5 of the plug has an inward, annular restriction close to its outer end, that serves as a valve seat facing into the bottle or container. The free end portion of the spindle which lies within the passage 5 has a reduced end which passes through the seat, and this reduced end is obtained by an upwardly converging or tapered section which normally engages against the seat and closes the opening therethrough, with the smaller, free end passing slightly beyond the outer face of the plug.

When the neck end of the container is pressed against a surface to which one desires to apply the adhesive, such as a paper sheet, the endwise pressure will force the free end of the spindle inwardly, which is permitted the lateral flexing of the spindle, and this moves the tapered part from the seat in the plug. This allows the liquid adhesive to flow out through the passage 5 upon the paper surface. This flowing of adhesive is accelerated by pressure on the side walls of the container or otherwise squeezing the container or bottle while the plug is pressed against the surface receiving the adhesive solution. The cap, is, of course, removed before attempting to dispense any adhesive.

The components in the views shown in Figs. 2, 4, and 6 through 10 which are the same as those shown in Figs. 1 and 5 have been given the same reference numerals to eliminate the necessity of redescription.

In the embodiment shown in Fig. 6, the spindle 7 is tapered from the inside bottom face of the container 1, upwardly therefrom and into and along the passage 5 of the plug 4, ending slightly below the outer face of the plug. The spindle 7 is made substantially rigid by its shape, and when pressure is applied to the side walls of the container or it is otherwise squeezed, the temporary protrusion of the spindle end through the orifice will dislodge any globule of hardened adhesive that may have formed in the discharge orifice, and because the adhesive does not wet the surface it never adheres tightly thereto and can be easily dislodged with a minimum of pressure. The free end of the spindle 7 does not bear against a seat as in the embodiment shown in Fig. 5.

In the embodiment shown in Fig. 7 the passage 5 is formed to provide a seat in its lower portion to support the spindle 8. The spindle, a plan of which is shown in Fig. 10, is extended in a transverse direction to its vertical axis forming an oblong 9, its width not exceeding the diameter of the spindle, its length being slightly less than the diameter of the passage 5. The method of operation of this dispenser illustrated in Fig. 7 resembles that of the dispenser illustrated in Figs. 1 and 5 as previously described. The tube 1a containing the adhesive is of the collapsible type such as used to hold toothpaste, the adhesive being put under pressure by the progressive rolling up of the tube in use.

Fig. 8 is another embodiment depicting an alternative type of head which may be employed, wherein the outer surface of the head is dome shaped. Either type of container may be used in conjunction therewith.

Fig. 9 is a plan view of the head as illustrated in Figs.

2 and 3 and 5 through 7. When pressure is applied to the container or tube, and the adhesive is emitted through the orifice in the head, the spread of adhesive applied to a surface may be varied by rotating the container.

Fig. 11 is a plan view of another type of head which is constructed in accordance with this invention and may be employed in any of the containers illustrated in the accompanying drawing, wherein the width of adhesive applied is of a fixed width, that width being predetermined by the width or diameter of the raised boss surrounding the upper opening of the dispensing orifice.

Figs. 2 and 3 show two types of dispensing heads, constructed in accordance with this invention, in dispensing position against paper surfaces.

Any material may be used to form the dispensing head herein described particularly the discharge passage exposed to the adhesive and also the outer end of the head, providing it has a repellancy to water which is greater than that of soft resilient rubber. While materials such as nylon, or the polyvinyl chloride or copolymers of vinyl chloride and vinyl acetate, may be used with some degree of success, they are not as satisfactory or are they as effective in repelling water and water compounds as the synthetic material known as polyethylene, and for that reason polyethylene is the preferred material of those now available to be used in the practice of this invention. The material of the head should be decidedly non-wettable by water.

The inner end faces of the heads are beveled off as at **10** in the portions immediately surrounding the entrance end of the discharge passage **5**. This reduces the tendency for globules of the adhesive to collect and solidify at the entrance to the passage.

The outer ends of the passages **5** are outwardly flared, as at **11**, so that if any adhesive should inadvertently harden in the outer end of the passage where exposed to the air, it may be more easily displaced or dislodged, because of the taper or flare, than from a cylindrical passage at the orifice.

The body of the container may be made of any flexible thin material, which will enable the container to be squeezed to express the contents thereof thru the discharge orifice, and any of the freely flexible plastics such as polyethylene are very useful for this purpose. Polyethylene is preferred because it is of low cost, easily molded, and is highly repellent to water so that the adhesives such as liquid glue, mucilage, or other water solutions of adhesives will not firmly adhere thereto.

It will be understood that various changes in the details, materials and arrangement of parts, which have been herein described and illustrated in order to explain the nature of this invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. A device for holding and dispensing an aqueous solution of an adhesive, which comprises a container for said solution having freely flexible, opposite side walls and a delivery head in one end, said head having a delivery orifice therethrough, the end of said container opposite said head having a spindle extending therefrom to said head and into and terminating at its free end within said orifice, but with its portion within said orifice smaller in cross section than said orifice, whereby when said opposite side walls are pressed toward each other, the resultant shortening of the length of the container will cause movement of the free end of said spindle along the walls of said orifice to dislodge therefrom any adhesive that has solidified in the orifice, the surface of the end of said spindle that is within the orifice and the surface of the head along the orifice being of a material which is substantially non-wettable by water.

2. A device for holding and dispensing a solution of an adhesive having a vaporizable solvent, which comprises a container having a dispensing passage leading therefrom through which an adhesive solution may be discharged from the container, a spindle secured at one end in said container and having its other end free and disposed in and slidable endwise along said passage, said free end being materially smaller than said passage, whereby said adhesive solution can move along said passage and spindle as it is dispensed, the wall of said passage and the surface of that portion of said spindle which is within said passage being of a material not wet by said solution, whereby if any of said solution solidifies within said passage, it will not adhere firmly to the spindle or passage wall and the endwise movement of the free end of said spindle in said passage will dislodge any adhesive solidified in the passage and open the passage for the free discharge of adhesive solution from the container.

3. The device of claim 2 with said spindle laterally flexible and normally terminating at its free end slightly beyond the outer end of said passage, whereby when the outer end of said spindle is pushed inwardly, the spindle may flex laterally to permit such pushing inwardly of its free end to dislodge any adhesive that is solidified in said passage.

4. The device of claim 2, with the container formed of flexible side walls and the spindle anchored to a wall of said container adjacent the end opposite from said discharge passage, whereby when the side walls are pressed toward each other, said container will contract in length and cause said spindle to move endwise of and along said passage in a direction outwardly of the container to loosen and dislodge from the passage any of the adhesive which may have solidified in and adhered to the passage wall or to the free end of said spindle.

5. The device of claim 2 in which the passage has a seat and said spindle has a shoulder which engages said seat, when the spindle is free, to normally cut off entrance of air into said container, but which shoulder moves away from said seat to open the passage when the free end of the spindle is moved along said passage in one direction.

6. The device of claim 2, with said spindle laterally flexible and normally terminating at its free end slightly beyond the outer end of said passage, whereby when the outer end of said spindle is pushed inwardly, the spindle may flex laterally to permit such pushing inwardly of its free end to dislodge any adhesive that is solidified in said passage, said passage having an annular seat facing the interior of said container and said spindle having a shoulder which engages with said seat when the spindle is released to unflex, and which disengages from said seat and passes adhesive solution outwardly when the outer end of said spindle is pushed inwardly.

7. The device of claim 2, with the walls of the container formed of a flexible elastic, material.

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