Oct. 20, 1942. M. J. ESTENES 2,299,572

DISPENSING PACKAGE

Filed Aug. 1, 1941

Fig. 1.

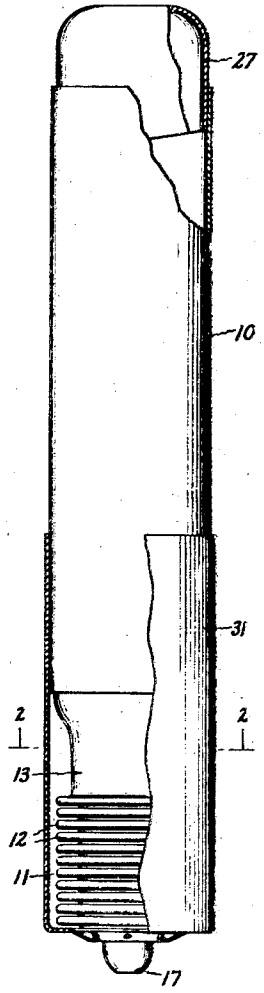


Fig. 3.

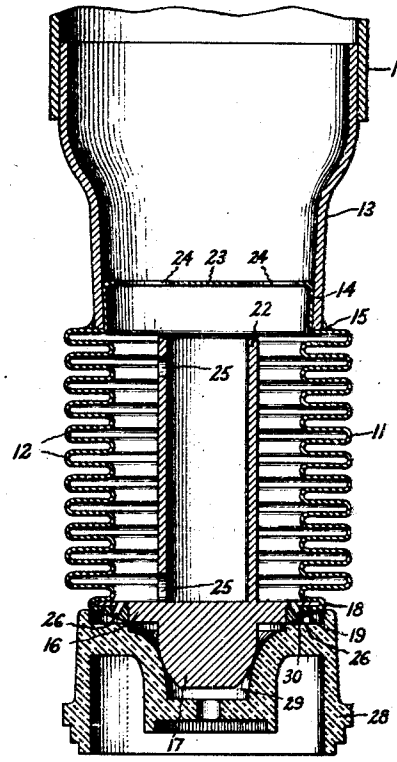


Fig. 2.

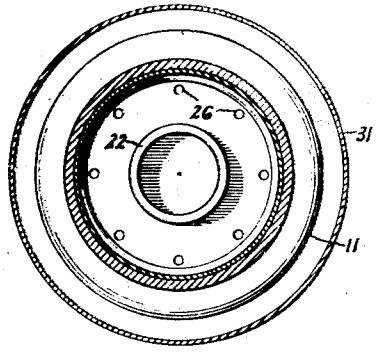
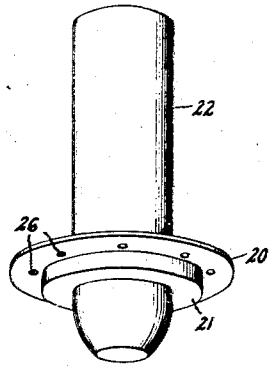


Fig. 4.



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DISPENSING PACKAGE

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Application August 1, 1941, Serial No. 404,953

3 Claims. (Cl. 15—136)

My invention relates to dispensing packages, particularly to dispensing packages for liquids, and has for its object a reliable and inexpensive package providing for the application of a liquid, such as glue, to a work piece.

In carrying out my invention in one form, I provide a cylindrical container of a size which can be conveniently grasped by the hand. To one end of this container I secure a compressible bellows device which communicates with the interior of the container and is provided with apertures through which the liquid may be exuded. Thus by engagement of the end of the bellows with the work and compression of the bellows, the liquid in the container is forced out of the apertures onto a work piece.

For a more complete understanding of my invention, reference should be had to the accompanying drawing, Fig. 1 of which is a side elevation view of a dispensing package embodying my invention; Fig. 2 is an enlarged sectional view taken along the line 2—2 of Fig. 1 looking in the direction of the arrows; Fig. 3 is an enlarged longitudinal sectional view of the device shown in Fig. 1; while Fig. 4 is a perspective view of the end and bearing member for the compressible bellows.

Referring to the drawing, my invention in one form comprises a cylindrical container 10 of such size that it may be conveniently grasped by the hand of the operator. At its lower end, as seen in the drawing, this container is provided with a compressible bellows device 11. This bellows device is made of a suitable thin spring material such as brass or bronze. It is cylindrical in form and is formed or shaped into a plurality of deep peripheral corrugations 12. These corrugations give the device the property of compressibility in an endwise direction, the device by reason of its resiliency returning to its original form upon the removal of the pressure.

To facilitate the connection of the compressible bellows 11 to the container 10, a neck or tapered portion 13 is formed on or secured to the lower end of the container and a portion of reduced diameter forming a flange 14 on the upper end of the bellows is inserted in the lower end of this neck 13. The two parts are then secured rigidly and tightly together by means of a soldered or welded joint 15 on the exterior, this joint forming an hermetic seal between the two parts.

On its lower end the bellows has secured tightly to it a cylindrical plate or bearing member 16 provided with an exterior central centering projection 17. As shown, the lower edge 18 of the bellows is bent around the periphery of the plate 16 and clamped onto the plate. A permanent joint is formed by a soldered or brazed connection 19 between the two parts. As shown in Fig. 4, the plate 16 has a relatively thin peripheral portion 20 and a thicker central portion 21, and the exterior angle between the parts 20 and 21 is preferably filled with the soldering or brazing material of the joint 19.

Also secured centrally to the plate 16 on its upper side, as seen in the drawing, and preferably formed integrally with the plate is a tubular member 22 which extends inside the bellows in concentric relation therewith to a point adjacent the upper end of the bellows, as seen in the drawing. This tubular member moves upward when the bellows is compressed and its upper end engages the barrier wall 23 forming the upper end wall of the bellows device whereby the compressibility of the bellows is limited to a desired amount. Also the tubular member is of such size that its upper end will engage the inner wall of the bellows in the event that the bellows is unevenly compressed thereby to prevent bending of the bellows beyond the resilient limit of its material and permanent distortion of the bellows. The wall 23 is provided with apertures 24 through which liquid in the container flows downward into the bellows and tubular member 22, and apertures 25 are provided in the upper and lower ends of the tubular member to facilitate the free flow of liquid. Also, the plate 16 is provided with a plurality of spaced apertures 26 arranged in a circle extending through the solder 19 into the interior of the bellows. The liquid material in the package is fed out of these holes 26.

In the operation of the device, the container 10 is partially or completely filled with the liquid to be dispensed, such as glue, and then the container is sealed at the top by means of a tight cap 27. The cap is preferably constructed, as shown, with the plane of its lower end extending obliquely with respect to the axis of the container thereby to facilitate the insertion of the cap in the container. The container is then grasped by the hand of the operator and the bearing projection 17 placed against the work to which the liquid is to be applied and pressure exerted, whereby the bellows is compressed and a desired amount of liquid forced out through the openings 26. It will be understood that the compression of the bellows creates a fluid pressure in the container, which is sealed except for the apertures 26,

whereby the liquid is forced out of the apertures. As the liquid is dispensed, air is drawn into the container through the apertures 26 by the expansion or springing back of the bellows to its original form when the pressure is removed.

In Fig. 3 I have shown the application of the device to a work piece 28 consisting of a cylindrical knob made of moulded material. In fact, the lower end of the dispensing device is especially adapted for this type of work piece. As shown, the centering projection 17 fits loosely into the central depression 29 in the knob whereby the lower end of the device is centered and the feed apertures 26 are held just above the flat circular shoulder 30 in the upper end of the knob. Thus when the bellows is now compressed, a quantity of the liquid is forced out of the apertures 26 onto this shoulder 30. The dispensing device is then removed and a circular plate (not shown) closing the upper end of the knob is put in place on the shoulder 30 and secured by the groove.

Thus it will be observed that this dispensing operation can be carried out very quickly and a quantity of glue can be applied to each of a large number of knobs in a very short time.

In the operation of the device for dispensing glue, the glue after repeated applications to work pieces becomes smeared over the lower end of the bellows and eventually may impede the collapsing of the bellows and feeding of the glue to the work piece. Preferably, therefore, as shown in Fig. 1, I provide a cylindrical metal sheath 31 forming a shield for the bellows. This sheath is of such diameter as to slide freely over the cylindrical container portion 10 in telescopic relation therewith. Its lower portion extends over and encloses the bellows while its lower end is partially enclosed so as to fit onto the member 16 to which it is suitably secured as by soldering to form a tight joint. Thus the glue is prevented from getting into contact with the bellows.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto, since many modifications may be made and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A dispensing package for liquids comprising a container for holding a quantity of the liquid to be dispensed, a compressible bellows secured to said container with one end communicating with the interior of said container, a member provided with an aperture closing the other end of said bellows and forming a bearing member for engagement with a work piece, said container being sealed except for said aperture so that when said bearing member is brought into engagement with a work piece and pressure toward said work piece applied to said container to compress said bellows a fluid pressure is produced in the interior of said container and the liquid in said container is forced out of said aperture onto the work piece, and an outer tubular shield for said bellows secured to said end member enclosing said bellows and extending into sliding relation with said first tubular member.

2. A package for dispensing a liquid onto a predetermined portion of a work piece comprising a tubular member, a compressible cylindrical bellows having one end secured to one end of said tubular member and communicating with the interior of said tubular member, an end member provided with an aperture secured to and closing the other end of said bellows except for said aperture, a cover for the other end of said tubular member, said cover being removable to provide for the deposit of a quantity of liquid into said tubular member and said cover sealing said tubular member and bellows except for said aperture so that when said tubular member is held in an upright position with said bellows at the lower end with said end member in engagement with a workpiece, and said tubular member then depressed so as to compress said bellows, a fluid pressure is produced in the interior of said tubular member and the liquid in said tubular member is forced out of said aperture onto the portion of said work piece engaged by said end member, a tubular stop secured to the inner side of said end member and extending in central spaced relation with said bellows thereby to prevent damaging lateral displacement of said bellows, and a perforated wall in said tubular member arranged to be engaged by said stop thereby to limit the compression of said bellows.

3. A dispensing package for liquids comprising a tubular member for containing the liquid to be dispensed, a cap sealing one end of said tubular member, a compressible cylindrical bellows having one end secured to the other end of said tubular member and communicating with the interior of said tubular member, an end member sealing the other end of said bellows provided with a guide projection, said end member being provided with a plurality of spaced apertures around said projection for dispensing liquid onto a surface located by said projection, a tubular stop secured to the inner side of said end member and extending in central spaced relation with said bellows thereby to prevent damaging lateral displacement of said bellows, a wall provided with apertures in said tubular member adjacent the upper end of said stop thereby to be engaged by said stop and limit the compression of said bellows, and an outer tubular shield for said bellows secured to said end member enclosing said bellows and extending into sliding relation with said first tubular member.

MICHAEL J. ESTENES.