

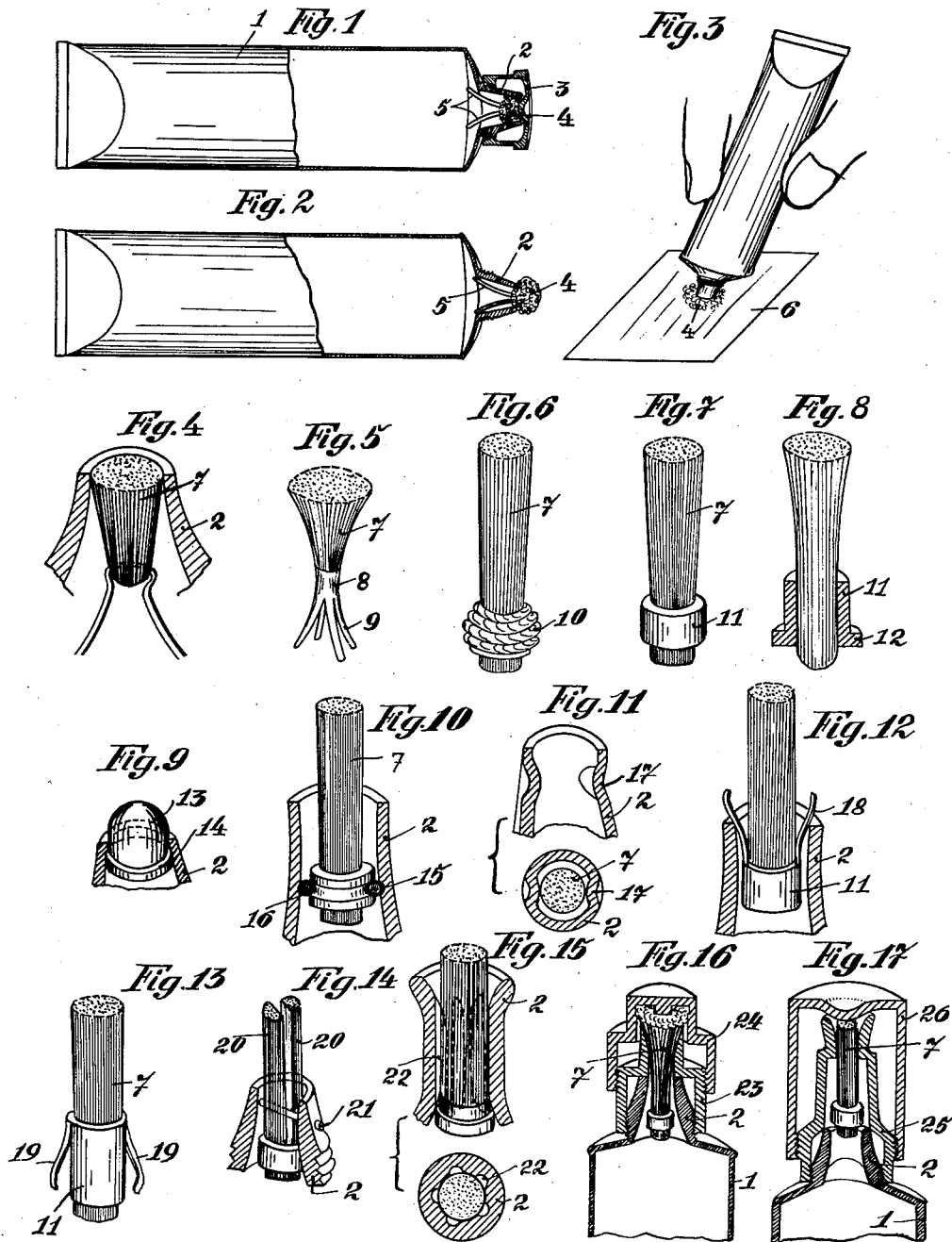
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TUBE AND SIMILAR CONTAINER FOR PLASTIC AND VISCOUS SUBSTANCES

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TUBE AND SIMILAR CONTAINER FOR
PLASTIC AND VISCOUS SUBSTANCES

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6 Claims. (Cl. 91-67.4)

This invention relates to tubes and similar containers for plastic and viscous substances, such as adhesives, creams, colouring matter, and the like, and has for its object to provide such containers with accessory means permitting of the uniform distribution or spreading of the contents directly from the orifice of the container. In accordance with the invention a distributing or spreading member is provided which is arranged to be freely slidable in the neck of the tube together with the substance to be expressed, and which is provided with a stop or other means for limiting its forward movement. Such stops are formed of collars, clasps, springs, and the like. In use, the compression of the tube in the usual manner causes the distributing member to be expelled together with the substance in the tube until arrested by the stop, after which the tube is ready for the direct application of the contents in a convenient and uniform manner to any surface on which it is required. After use, the distributing member is simply pressed back into the neck of the tube, after which the latter is closed in the usual manner by means of a screw cap or the like. Since the distributing member, which may consist of one or more small sponges, flaps, pads, brushes, or the like, is embedded in the plastic substance when not in use and is adapted on the squeezing of the tube to be expelled together with a certain quantity of the substance, it will be clear that this member is kept always supple and ready for immediate use. This feature distinguishes the tube provided by the present invention from known tubes in which a distributing member is provided which is fixedly mounted out of contact with the contents, and in which the plastic substance has to be supplied to this member through passages which become particularly readily stopped or clogged up. Further, tubes of which the neck is completely filled out with any kind of means for distributing the contents, whether flexible or otherwise provided they are fixed and not movable, are only adapted for use with thinly liquid substances and not with viscous adhesives, pastes, creams, and the like. In consequence of the fact that in the tube according to the present invention the distributing member is freely slidable in the neck of the tube and is embedded in the plastic contents of the tube when not in use, this tube remains fit for use when left for weeks unstoppered, as tests have proved, since, when the tube is left open, merely a thin skin of the plastic substance hardens across the orifice, and this skin is broken as soon as the tube is squeezed,

and at the same time the distributing member is expelled in a state to be used immediately.

A further feature of the invention consists in the provision in the neck of the tube of notches or grooves into which elastic means on the distributing member are adapted to enter for spring engagement, so that the pressure required for the distributing operation can be exerted without the distributing member being thereby pushed back in the neck of the tube, and merely additional pressure suffices to enable the distributing member to be returned before closing the tube. This feature is particularly suitable for tubes containing pastes, such as cosmetic cream and the like, in which case the distributing member can take the form of a solid or perforated rubber hemisphere having a small flange for limiting its movement in the neck of the tube.

In order to facilitate the outflow of particularly viscous substances there can also be provided in the neck of the tube one or more channels or grooves which permit of the passage of the substance between the distributing member and the inner surface of the neck of the tube. The movable distributing member can also be provided in a separate neck or extension piece adapted to be mounted on an ordinary tube. In the latter case it is also possible to house the distributing member partly in the neck proper of the tube, as will be described in due course.

In the following description reference should be had to the figures of the accompanying drawing in which the subject matter of the invention is illustrated with the aid of several constructional examples. In this drawing Fig. 1 shows one form of the tube in accordance with the invention in the closed state, and partly in section, while Fig. 2 shows the same tube in the open condition and ready for use.

The tube 1 (Fig. 1) of collapsible material is provided in its neck 2, which is adapted to be closed by means of the screw cap 3, with a small sponge 4 as distributing member. With this sponge there is incorporated the spread spring 5. As can be seen from Fig. 2, which shows the sponge 4 expressed by squeezing of the tube, this spring 5 limits the extent to which the distributing member can emerge from the tube. Fig. 3 illustrates in perspective view the manner in which for example an adhesive is applied to a surface 6 from the tube 1 by means of the sponge 4. Fig. 4 shows the tube neck 2 provided with a brush 7 as distributing member in place of the sponge 4 shown in Figs. 1-3. In the modified form shown in Fig. 5 the brush 7 is pro-

vided with a holder or ferrule 8 which is forked as to its lower part to form elastic tongues 9. Fig. 6 shows a similar brush 7 with a stop formed of a wrapped thread 10. In Fig. 7 the brush is provided with a ferrule 11 for its stop, which ferrule in the modified form shown in Fig. 8 is further provided with a flange 12. Fig. 9 shows a rubber hemisphere 13 as distributing member, this latter having a bead 14 to serve as a stop in the neck 2. Fig. 10 shows a tube neck 2 having an annular groove 15 with which the stop on the brush 7 can engage by means of an elastic ring or bead 16. In order to enable the distributing member to be inserted in the finished filled tube and to be held in position therein, an indentation 17 is impressed in the neck 2 after the insertion of the distributing member 7, as shown in Fig. 11, which indentation serves as a stop to the forward movement of the distributing member. In Figs. 12 and 13 distributing members 7 are shown which are provided on their collar 11 with springs 18 and 19 which can be compressed to enable the distributing member to be inserted in the neck 2 from the front end, and which spring apart in the interior of the neck and then serve to limit the movement of this member in the neck. Fig. 14 shows a further modification in which the distributing member 20, 20 is split or forked and a transverse pin 21 passing through the gap between the two portions limits the movement of this member. Fig. 15 shows the arrangement of longitudinal channels or grooves 22 in the tube neck 2 for the purpose of facilitating the outflow of the plastic substance. In the modified form shown in Fig. 16 there is mounted on the neck proper 2 of the tube 1 a separate neck or extension piece 23 which is adapted to be closed by means of a cap 24, and which serves to house the distributing member 7 which latter is partly slidable in the tube neck 2. In the form shown in Fig. 17 the separate extension piece 25 is so constructed that it receives the distributing member 7 in its entirety. A cap 26 serves for the closure of this extension piece 25.

I claim:

1. In a collapsible tube for containing viscous substances and having a neck, a stemless brush freely slidable in the neck of the tube and submerged in the contents of the latter when in inoperative position, said brush being adapted to be extruded from the neck of the tube together with a portion of the contents thereof by pressure applied to the tube, and stop means on said brush for limiting the outward movement thereof.

2. In a collapsible tube for containing viscous substances and having a neck, a stemless brush freely slidable in the neck of the tube and submerged in the contents of the latter when in inoperative position, said brush being adapted to be extruded from the neck of the tube together with a portion of the contents thereof by pressure applied to the tube, and a ferrule on said brush for limiting the outward movement thereof.

3. In a collapsible tube for containing viscous substances and having a neck, a stemless brush freely slidable in the neck of the tube and submerged in the contents of the latter when in inoperative position, said brush being adapted to be extruded from the neck of the tube together with a portion of the contents thereof by pressure applied to the tube, a ferrule on said brush, and spread springs on said ferrule for limiting the outward movement of the brush.

4. In a collapsible tube for containing viscous substances and having a neck, a stemless brush freely slidable in the neck of the tube and submerged in the contents of the latter when in inoperative position, said brush being adapted to be extruded from the neck of the tube together with a portion of the contents thereof by pressure applied to the tube, and spread springs attached directly to the brush for limiting the outward movement thereof.

5. In a collapsible tube for containing viscous substances and having a neck, a stemless brush freely slidable in the neck of the tube and submerged in the contents of the latter when in inoperative position, said brush being adapted to be extruded from the neck of the tube together with a portion of the contents thereof by pressure applied to the tube, and stop means on said brush for limiting the outward movement thereof, said neck having grooves therein for the passage of the viscous substance between said neck and said brush.

6. In a collapsible tube for containing viscous substances and having a neck, a stemless brush freely slidable in the neck of the tube and submerged in the contents of the latter when in inoperative position, said brush being adapted to be extruded from the neck of the tube together with a portion of the contents thereof by pressure applied to the tube, said neck having a groove therein, and a stop member on said brush for limiting the outward movement thereof and being elastic and adapted to engage in said groove.

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