

Sept. 2, 1952

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2,608,972

GUIDE FOR HYPODERMIC SYRINGES

Filed May 16, 1949

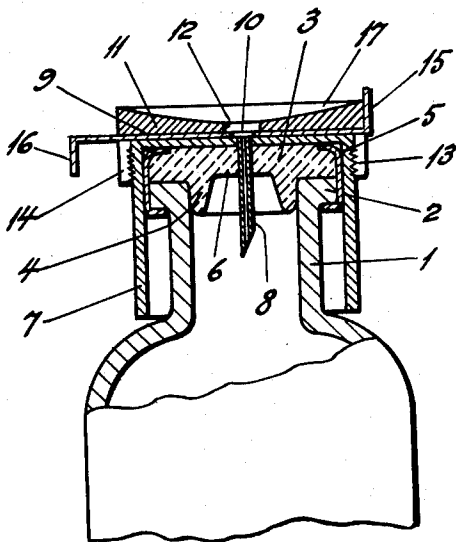


Fig. 1.

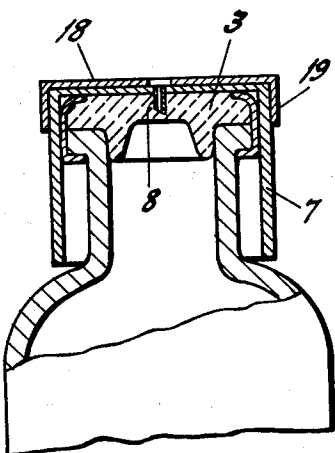


Fig. 3.

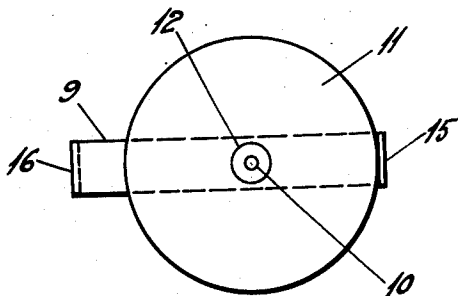


Fig. 2.

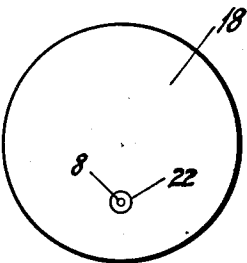


Fig. 4.

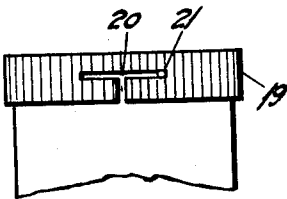


Fig. 5.

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2,608,972

GUIDE FOR HYPODERMIC SYRINGES

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SwedenApplication May 16, 1949, Serial No. 93,492
In Sweden February 23, 1948

1 Claim. (Cl. 128—272)

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Sterile injection solutions are often distributed in bottles and other containers closed by rubber plugs, which are to be punctured by means of the needle of the injection syringe, whereupon the solution is drawn into the syringe and the needle is retracted. The aperture made in the plug is automatically closed owing to the elasticity of the rubber.

However, on piercing the relatively hard rubber plug the syringe needles, which are often very fine, are easily bent or damaged, whereafter it may be risky to use the same.

The present invention has for its object the elimination of this drawback. More particularly the invention refers to a device comprising a cap adapted to be applied to the neck of a container and provided with a relatively thick hollow needle intended to entirely or partially pierce the plug, and to serve as a protective guide for the needle of the injection syringe.

The invention is illustrated in the accompanying drawing in which Fig. 1 is a sectional view of a first embodiment of the device as applied to a bottle neck; Fig. 2 is a plan view of the device shown in Fig. 1; Fig. 3 is a sectional view corresponding to that shown in Fig. 1 of a second embodiment of the device; Fig. 4 shows a modification of the device according to Fig. 3 as viewed from above; Fig. 5 is a side view of the upper portion of the device according to Fig. 4.

In the drawing reference numeral 1 designates the neck of a bottle containing the injection solution. At its upper end the neck is formed with a lateral flange 2. A rubber plug 3 serves to close the bottle, said plug being provided with an annular flange 4 extending downwardly into the neck. The rubber plug 3 may be permanently secured to the bottle neck by means of a metal sleeve member 5, the upper and lower edges of which are bent to engage the upper side of the rubber plug 3 and the underside of the flange 2, respectively.

The middle portion 6 of the rubber plug 3 is relatively thin and is intended to be punctured by a needle at the removal of injection liquid.

According to Figs. 1 and 2 a cap 7 is used which is applied to the bottle neck and which is provided with a central, relatively thick or coarse hollow needle 8. When applying the cap 7 to the bottle neck the needle 8 easily pierces the rubber plug 3 without being bent or otherwise damaged. Through this relatively thick piercing needle 8 the more easily damaged needle of the injection syringe may be introduced into the bottle for removal of injection solution. During this oper-

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ation the piercing needle 8 serves as a guide and as a straight and unobstructed passage for the fine needle of the injection syringe and prevents the same from being bent or damaged.

A closure may be provided at the upper end of the piercing needle 8. This closure may be constructed in various ways. As an example Fig. 1 shows a lengthened, flat slide 9 provided with an aperture 10 and mounted between the upper surface of the cap 7 and the underside of an end piece 11, which is threaded on to the cap 7 and which has a central aperture 12. The ends of the slide 9 protrude through openings 13 and 14 in the cylindrical side wall of the end piece 11 and are preferably bent as shown at 15 and 16. The directions so that they unmistakably indicate the position of the slide and make it possible to see at once, whether the channel in the piercing needle 8 is open or closed. In Fig. 1 the slide member is shown as displaced to a position in which it uncovers said channel. By pressing the downwardly extending end 16 of the slide the latter is displaced to the right, the channel in the piercing needle 8 being thereby closed. By suitably tightening the end piece 11 the friction at the displacement of the slide may be adjusted.

The outer surface 17 of the end piece 11 is preferably made slightly concave so that the same is easy to clean and to dry.

In the embodiment shown in Fig. 3 the cap 7 is provided with a central short needle 8 which pierces the rubber plug 3 only partially, thus leaving a rubber layer intended to be punctured by the needle of the syringe at the removal of injection solution from the bottle. Said rubber layer, however, is so thin that it cannot damage the fine syringe needle, which is guided by the thick piercing needle 8. The cap 7 may also be provided with an end piece 18 with an aperture and a cylindrical flange 19. According to the modification shown in Fig. 4 the piercing needle 8 may also be eccentrically provided within the cap 7, the end piece 18 being turnably mounted on the cap and provided with a T-shaped slot 20 in its flange 19 which slot is engaged by a pin 21 projecting from the cap 7. The end piece 18 is provided with an eccentrically located aperture 22 which in the position of the end piece shown in Figs. 4 and 5 registers with the channel of the piercing needle 8. By turning the end piece 18 the channel in the needle 8 is closed. The flange 19 is preferably fluted as shown in Fig. 5.

If the piercing needle 8 is eccentrically arranged one may, after having pierced the rub-

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ber plug 3 at one place, remove the cap and, after a slight turning, apply the same again to the bottle, the needle 8 then making another aperture in the plug. Since in this case the needle 8 does not entirely pierce the rubber plug, the aperture in the lower portion of the latter, on extracting the syringe needle after filling the syringe with liquid, will be automatically closed owing to the elasticity of the material. Thus, there will be no great demand on the tightening between the cap 7 and the turnable closure 18.

Various modifications of the device are conceivable within the scope of the appended claim.

What I claim is:

In a device for facilitating the removal, by means of an injection syringe, of injection solution from a container whose neck is sealed by means of a member of a pierceable material, a cap adapted to be applied to said neck, a relatively thick hollow needle forming a straight and unobstructed passage secured in an eccentric position to said cap and adapted to pierce said pierceable member and to serve as a protective

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guide for the fine needle of the injection syringe, and an end piece turnably mounted on said cap and provided with an eccentrically located aperture which may be brought into and out of alignment with the channel of the piercing needle by a turning movement of the end piece.

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