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A. HERSTEIN

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BABY BOTTLE

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Fig. 1.

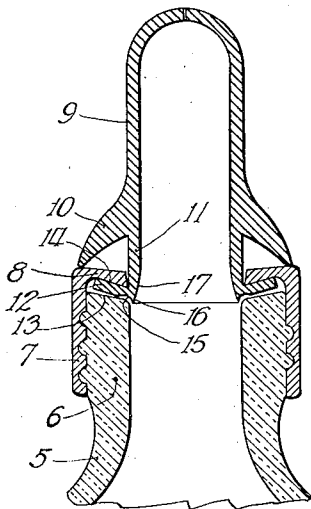


Fig. 2.

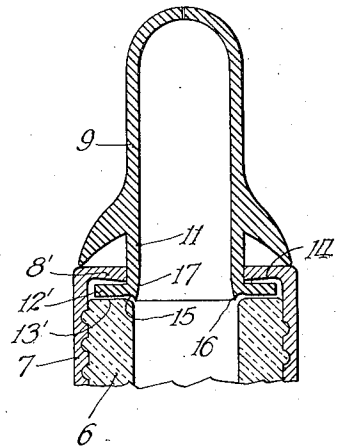
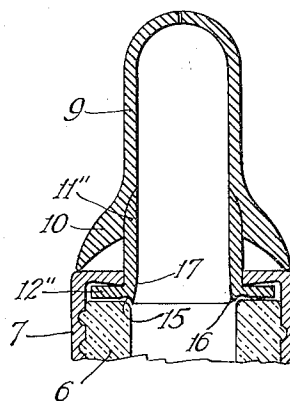


Fig. 3.



Inventor
Abe Herstein

By: Jabel Carlson & Wells Attys.

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BABY BOTTLE

Abe Herstein, Chicago, Ill., assignor to William Fusske and himself, both of Chicago, Ill., as joint-trustees

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10 Claims. (Cl. 215—11)

My invention relates to baby bottles and more particularly to an improved bottle nipple and cap for baby bottles.

It is the principal purpose of this invention to provide a novel fastening means whereby the nipple may be securely fastened to the bottle in such a way as to prevent their separation except by unscrewing a screw cap on the bottle.

It is also a purpose of the invention to provide a device of this character wherein the rubber portion of the nipple may be readily separated from the screw cap for sterilizing purposes, and the nipple may be again mounted on the cap without encountering the difficulty of expanding the nipple over the bottle.

Further it is a purpose of my invention to provide a novel cap and nipple combination for baby bottles in which the cap so grips the nipple to the bottle as to cause the lower edge of the nipple to fit closely against the inner corner of the bottle and provide a smooth even surface for the flow of the liquid from the bottle to the nipple.

Other and more specific objects and advantages of the invention will appear as the description proceeds in connection with the accompanying drawing. It is to be understood, however, that the drawing and description are illustrative only and are not to be taken as limiting the invention except in so far as it is limited by the claims.

In the drawing—

Fig. 1 is a vertical sectional view through the top of a bottle and a nipple embodying my invention;

Fig. 2 is a similar sectional view showing a slightly different form of construction; and

Fig. 3 is a vertical sectional view showing a further modified form of construction.

Referring now in detail to the drawing, the bottle 5 has a neck portion indicated by the numeral 6 upon which the cap 7 is adapted to be screwed, the cap and bottle being provided with the usual screw threads. This cap 7 may be constructed of any of the commercial materials suitable for this purpose such for example as the Betel cap. The cap 7 has an inturned flange 8 at the top thereof in which the nipple 9 is mounted. It will be noted that the flange 8 surrounds a central aperture through which the nipple has a portion extending.

The nipple 9 has a heavy thickened shoulder 10 adapted to curve down in the form shown and rest upon the top of the cap. Below this shoulder 10, there is provided a neck portion 11 of the

nipple which neck portion extends down and joins the collar portion 12. This collar 12, as shown in Fig. 1, is set at an angle on the neck portion 11 so as to extend upwardly and outwardly.

The top 13 of the bottle neck 6 is bevelled in Fig. 1 so as to slope downwardly toward the center of the neck. Similarly, the lower surface 14 of the flange 8 is bevelled to slope downwardly toward the center of the bottle neck, but the surface 14 makes a somewhat greater angle with the horizontal than the top of the bottle 13.

Thus, when the cap is screwed down upon the bottle neck, the collar 12 is pinched at the inner edge between the bottle top and the edge of the cap surrounding the neck 11.

The reason for this particular structure is twofold. In the first place, it prevents the collar 12 from slipping out from between the two surfaces 13 and 14 when the pressure is applied. In the second place, this pinching of the collar at the point where it joins the neck 11 together with the little hollowed out groove 15 tends to draw the nipple down into the cap and bottle as the cap is tightened on the bottle.

Since the edges of bottles are almost invariably rounded, this is of particular advantage in causing the tip 16 to be drawn down snugly against the bottle. The inner surface of neck 11 curves outwardly as shown at 17 toward the tip 16 to bring this tip almost in alignment with the inner wall of the bottle neck. When the pressure is applied by means of the cap upon the collar 12, the effect is to cause the lower surface of the collar 12 to creep outwardly on the surface 13 as the little groove 15 is brought down against the curved edge of the bottle neck. This action draws the tip 16 tightly against the bottle and provides a comparatively smooth even surface where the nipple joins the bottle so as not to obstruct the flow from the bottle into the nipple.

The length of the neck 11 between the shoulder 10 and the collar 12 is at least equal to the width of the collar 12 plus the thickness of the cap flange 8 at its inner edge so that, when the nipple is being inserted in the cap, the collar 12 which folds up around the outside of the neck 11 will extend through the hole in the cap and snap out into the position shown in Fig. 1. Since the shoulder 10 is quite thick immediately above the neck 11, it gives sufficient strength to the nipple at this point to permit the nipple being forced into the cap, and the lower edges of the shoulder 10 spread outwardly and yield enough for the insertion of the nipple in the cap. After the nip-

ple is once inserted in the cap, it is obvious how the cap and nipple are secured to the bottle.

It will be noted that the tip 16 at the inner edge of the collar 12 extends down slightly below the line of the lower surface of this collar so that it will overlap the rounded inner edge at the top of the bottle neck.

Referring now to Fig. 2, in this case, the structure is identical with Fig. 1 and the function the same except for certain changes which I will now describe.

In the first place, the top of the flange 8 in Fig. 1 is sloped downward slightly toward the center while the flange 8' in Fig. 2 is straight across on the top. Also in Fig. 2 the collar 12' and the top of the bottle at 13' run practically horizontal. The under surface 14' of the cap is bevelled to slope downwardly toward the center, but, since the top of the bottle neck is flat, this bevel is not so pronounced. The groove 15, neck 11, tip 16, and curved surface 17 are precisely the same in Fig. 2 as in Fig. 1, and the operation of the device is exactly the same. It will be noted, however, that in the case of Fig. 1 a special bottle top is required, while in Fig. 2 a nipple and cap may be fitted onto a standard bottle which has a flat top surface.

Referring now to Fig. 3, in this case the distinction made over the structure shown in Fig. 2 lies in the fact that the neck 11'' is made of a relatively stiff or hard rubber and connects the main body portion of the nipple and the shoulders 10 with the collar 12'' which may be precisely the same in structure as that shown in Fig. 2 except that it is secured onto the bottom of the hard rubber piece 11''. By specifying that the neck 11'' is hard rubber, I do not mean to infer that the neck must be rigid, but that it is considerably stiffer than the soft rubber used for the nipple and the collar 12''. Of course, the three pieces—that is, the nipple proper, the neck 11'', and the collar 12''—are molded or vulcanized or cemented together so as to be in effect one piece.

The structure shown in Figs. 2 and 3 permits the mounting of the nipple in the cap 7 in precisely the same way as in Fig. 1 except that in Fig. 3 the stiff rubber portion of the neck makes a little more sturdy structure.

From the above description, it is believed that the construction and advantages of this device will be readily apparent to those skilled in this art.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, a bottle having the top edge thereof bevelled to slope downwardly toward the center, a cap having a central aperture in the top and having the top portion around said aperture also bevelled to slope downwardly on the under surface, a nipple having an upwardly and outwardly extending collar engaging the under surface of said cap and clamped between the cap and the bottle neck, said nipple having a relatively stiff insert extending downwardly into said cap and joining said collar.

2. A cap and nipple combination for screw threading onto a bottle, comprising a cap having a top flange the lower surface of which is bevelled to slope downwardly toward the center, a nipple having a neck portion extending through said cap, said nipple having an annular flange at the lower end of the neck portion, and a thickened portion extending downwardly and outwardly from the top of the neck portion to rest on top

of the cap, the flange on said nipple having in the lower surface thereof an annular groove directly opposite the inner edge of the cap flange.

3. A cap and nipple combination for screw threading onto a bottle, comprising a cap having a top flange the lower surface of which is bevelled to slope downwardly toward the center, a nipple having a neck portion extending through said cap, said nipple having an annular flange at the lower end of the neck portion, and a thickened portion extending downwardly and outwardly from the top of the neck portion to rest on top of the cap, the flange on said nipple having in the lower surface thereof an annular groove directly opposite the inner edge of the cap flange, said nipple having a downwardly extending lip at the edge thereof.

4. In combination, a bottle cap adapted to be screw threaded upon a bottle neck, said cap having an aperture in the top thereof and having an inwardly directed flange at the top thereof, the under surface of said flange being sloped downwardly toward the aperture, a nipple having a neck portion extending through the aperture of said cap, a shoulder portion at the top end of said neck portion extending downwardly and outwardly to engage the cap, and a collar portion at the lower end of the neck portion extending outwardly therefrom to be gripped between the cap flange and the top of the bottle neck, said collar being reduced in thickness directly beneath the inner edge of the cap flange, and having a downturned lip at its extreme inner edge for engaging in the bottle neck.

5. In combination, a bottle cap adapted to be screw threaded upon a bottle neck, said cap having an aperture in the top thereof and having an inwardly directed flange at the top thereof, the under surface of said flange being sloped downwardly toward the aperture, a nipple having a neck portion extending through the aperture of said cap, a shoulder portion at the top end of said neck portion extending downwardly and outwardly to engage the cap, and a collar portion at the lower end of the neck portion extending outwardly therefrom to be gripped between the cap flange and the top of a bottle neck, said neck portion of the nipple being of a substantially stiffer material than the remainder thereof.

6. In combination, a bottle cap adapted to be screw threaded upon a bottle neck, said cap having an aperture in the top thereof and having an inwardly directed flange at the top thereof, the under surface of said flange being sloped downwardly toward the aperture, a nipple having a neck portion extending through the aperture of said cap, a shoulder portion at the top end of said neck portion extending downwardly and outwardly to engage the cap, and a collar portion at the lower end of the neck portion extending outwardly therefrom to be gripped between the cap flange and the top of a bottle neck, the length of the neck portion being at least equal to the width of the collar plus the thickness of the cap.

7. A nipple for mounting upon a bottle by means of a cap, said nipple having a neck portion at its open end, a thickened shoulder portion at the top end of the neck portion extending downwardly and outwardly and a collar portion at the lower end of the neck portion extending outwardly therefrom to provide a portion for clamping to the top of a bottle neck, said neck portion being slightly longer than the width of the collar portion and said collar portion being bendable up

against the neck portion for insertion through an aperture in a securing cap.

8. A nipple having a neck portion at its open end, a shoulder portion at the top end of the neck portion and a collar portion at the lower end of the neck portion, said collar portion being comparatively thin whereby it may be folded back against the neck portion and said shoulder portion being thick to prevent collapsing of the nipple, the length of the neck portion between the shoulder portion and the collar being somewhat greater than the width of the collar.

9. A nipple having a neck portion at the open end thereof, a shoulder portion at the top of the neck portion extending outwardly and downwardly therefrom and a collar portion at the lower end of the neck portion extending outwardly therefrom for engagement with the top of a

bottle neck, said collar portion having an annular groove in the lower surface thereof opposite its connection to the neck portion of the nipple, the length of the neck portion between collar portion and said shoulder portion being somewhat greater than the width of the collar portion.

10. A nipple having a neck portion at the open end thereof, a shoulder portion at the top of the neck portion and a collar portion at the lower end of the neck portion extending outwardly therefrom for engagement with the top of a bottle neck, the length of the neck portion being slightly greater than the width of the collar, the neck portion of the nipple being of a substantially stiffer material than the remainder thereof whereby to avoid collapsing of the neck portion.

ABE HERSTEIN.