Nov. 28, 1933. W. G. KLEINE 1,937,278

VENT FOR NURSING BOTTLES

Filed May 23, 1932

Fig. 1

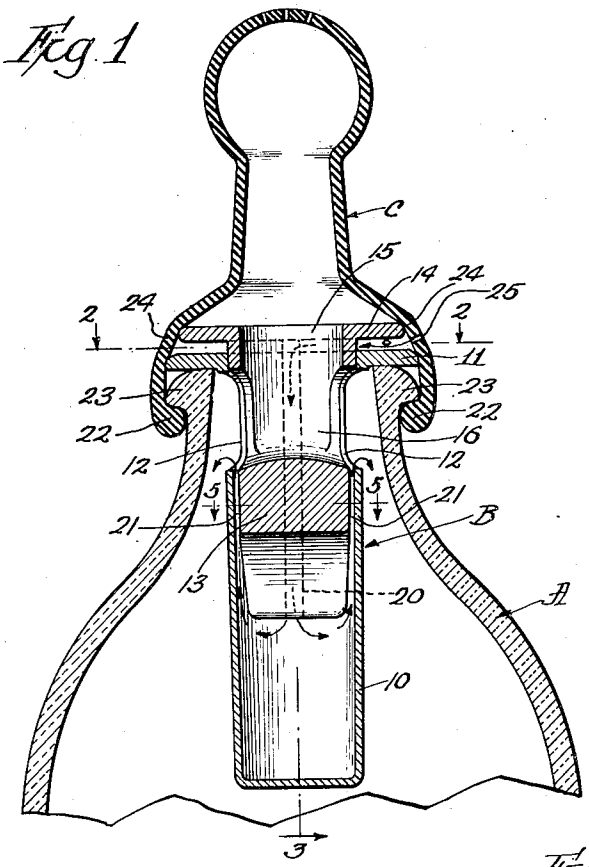


Fig. 2

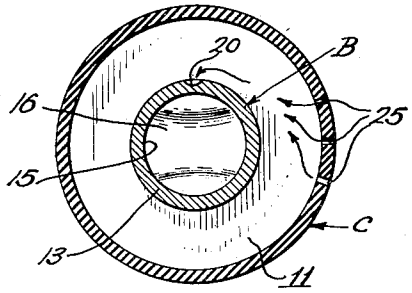


Fig. 3

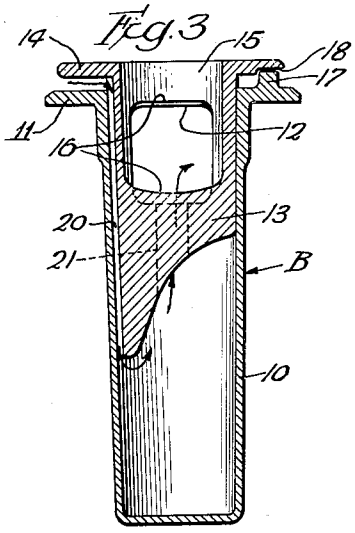


Fig. 5

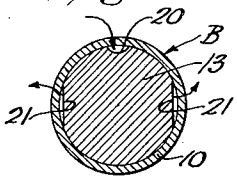


Fig. 4

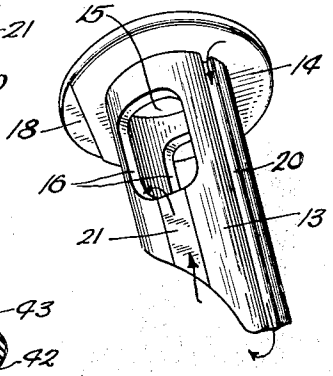


Fig. 6

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VENT FOR NURSING BOTTLES

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Application May 23, 1932. Serial No. 613,000

4 Claims. (Cl. 128—252)

This invention, which relates generally to nursing bottles, is concerned particularly with a vent for preventing the building up within a bottle of a vacuum sufficient to cause the collapse of the rubber nipple which is secured over the bottle mouth.

The present device is advantageous, in that the number of parts are reduced to a minimum, and in that the several openings in the parts are readily accessible so as to facilitate cleaning thereof for sanitary purposes.

As a suggestive embodiment of my invention, reference is made to the accompanying drawing, in which,—

Fig. 1 is a view in sectional elevation of the vent, which is secured, as by the nipple, to the bottle mouth;

Fig. 2 is an enlarged view in transverse section, the section being taken on the line 2—2 of Fig. 1;

Fig. 3 is a longitudinal sectional view of the vent, the section being taken on the line 3 of Fig. 1;

Fig. 4 is a perspective view of one part of the vent hereinafter referred to as the closure;

Fig. 5 is a view in transverse section of the vent parts assembled together, the section being taken on line 5—5 of Fig. 1; and

Fig. 6 is a view in sectional elevation of a modified form of vent adaptable to a wide mouth bottle.

Referring to the drawing, there is shown a bottle A having my improved vent B fitted in the bottle neck and held therein by a nipple C, the bottle and nipple being of any standard design. The vent may comprise a cup 10 having at its upper open end a laterally extending flange 11 adapted to close the bottle mouth. Openings 12 are formed in the cup adjacent the flange through which the liquid in the bottle may pass to the nipple. The inside of the cup is slightly tapered to frictionally engage a closure 13 receivable therein, the closure being also tapered, and of a size to exactly fit the interior of the cup.

The closure is provided at its upper end with a flange 14 adapted to be positioned in parallel relation to the cup flange when the closure is assembled in the cup, as shown in Figs. 1 and 3. The closure is provided with a central bore 15 which is traversed by lateral openings 16 which are adapted to register with the openings 12 in the cup when the two parts are assembled. To insure this registration, a projection 17 formed on the flange 11 is adapted to co-operate with a groove 18 on the flange 14 in a manner whereby the closure is prevented from being tightly assembled in the cup unless the tongue and groove are in alignment.

The body of the closure is provided exteriorly with a longitudinal groove 20, and is further provided with slightly flattened surfaces 21 which extend along the body from the end thereof to the openings 16. The purpose of the groove and flats will presently be described.

When the cup and closure have been assembled together, as shown in Fig. 3, the vent is placed in the neck of a bottle with the flange 11 resting upon the mouth thereof. The nipple is then placed over the vent and bottle neck in the manner shown in Fig. 1, so that the reinforced edge 22 of the nipple engages below the lip 23 on the bottle mouth to secure the parts together. It will be noted that the flaring walls 24 adjacent the nipple base contact the periphery of the flanges 11 and 14 to seal the space therebetween. After the nipple has been properly placed over the vent, a hot wire or needle may be forced through the nipple between the flanges to form holes 25 through which air is admitted to the space between the flanges.

The air enters the bottle in a manner indicated by arrows in the several figures, the air travel being as follows: Through the openings 25 in the nipple, air enters the space between the flanges 11 and 14, thence proceeds along the groove 20 to enter the air pocket in the cup 10, thence along the flats 21 and out through the opening 12 in the cup to enter the bottle. With the bottle in a substantially inverted position from that shown in Fig. 1, which would be the normal feeding position, the liquid may flow uninterruptedly through the openings 12, 16 and 15, and out through the nipple head. The liquid is prevented from entering the air pocket in the cup because the space provided by the flats 21 is very small, being only about .003 of an inch. It will be seen that surface tension of the liquid together with air passing outwardly through this space prevents the liquid from backing up into the air pocket.

The modified form shown in Fig. 6 comprises an adapter 28 for closing the space between the edge of a wide mouthed bottle A' and the flange 31 on the cup 30. Lugs 29 extend from the adapter to center the same with respect to the bottle. The adapter is preferably dished slightly so that when it is inverted all the liquid can easily drain to the nipple C' through the openings 35 and 36 in the closure 33. The adapter is provided with a recess 37, in which is fitted

the flange 31 in a manner to prevent air from passing therebetween.

As in the construction first described, the nipple C′ is provided with openings 45 through which air passes into the space between the flanges 31 and 34, and thence through a passage to the air pocket in the cup 30. In this form, the reinforced edge 42 of the nipple, which is of a standard construction, is stretched over the periphery of the adapter and over a lip 43 adjacent the bottle mouth, thus stretching the flared part 44 of the nipple, so that it contacts the adapter and the periphery of the flange 34 to seal the space therebetween.

The parts which make up the vent are preferably made of metal which is nickel or chromium plated so as to facilitate cleaning and sterilizing, an operation which is desirable each time the device is used.

I claim:

1. In a nursing bottle which includes a nipple attached to the mouth thereof, a venting device comprising a cup extending into the bottle neck and in spaced relation therewith, the cup having connecting openings for permitting the unobstructed flow of the liquid from within the bottle to the nipple, and a closure within the cup which forms an air pocket therein, there being an air passage of restricted area through which air enters the pocket and other passages by which the air leaves the pocket to enter the bottle.

2. In a nursing bottle which includes a nipple having openings in its tip attached to the mouth of the bottle, a venting device comprising a cup having an air pocket extending within the bottle neck and in spaced relation thereto, and having lateral communication between the cup and the bottle mouth through which liquid passes to the nipple, there being passages in the nipple and restricted passages in the cup whereby air enters the pocket through openings in the nipple remote from the openings in its tip, the air passing from the pocket through other restricted passages to enter the bottle.

3. In a nursing bottle which includes a nipple, a venting device comprising a cup having an annular flange adjacent its mouth fitted in the bottle neck, the cup and closure having aligned lateral openings between the cup and annular flanges and a closure having an annular flange, the closure being seated within the cup to provide an air pocket therein, said venting device being held in the bottle neck by the nipple which engages the flanges and the bottle neck, there being passages in the nipple and restricted passages in the closure whereby air enters through the nipple openings between the flanges to enter the air pocket and then through other restricted passages to enter the bottle.

4. In a device of the type described, the combination with a nursing bottle to which is attached a nipple, of a vent fitted in the bottle neck and held therein by the nipple, the vent having an annular air passage around its end adjacent the nipple, there being openings in the nipple in alignment with the air passage, the vent having an air pocket in its end opposite the annular passage, the vent being further provided with restricted passages connecting the air pocket with the annular air passage and the interior of the bottle, said restricted passages being independent of openings through which liquid passes from the bottle to the nipple.

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