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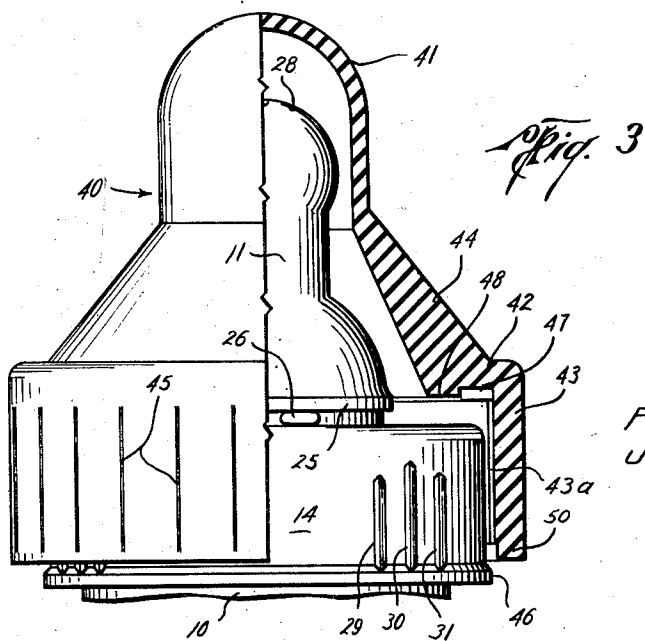
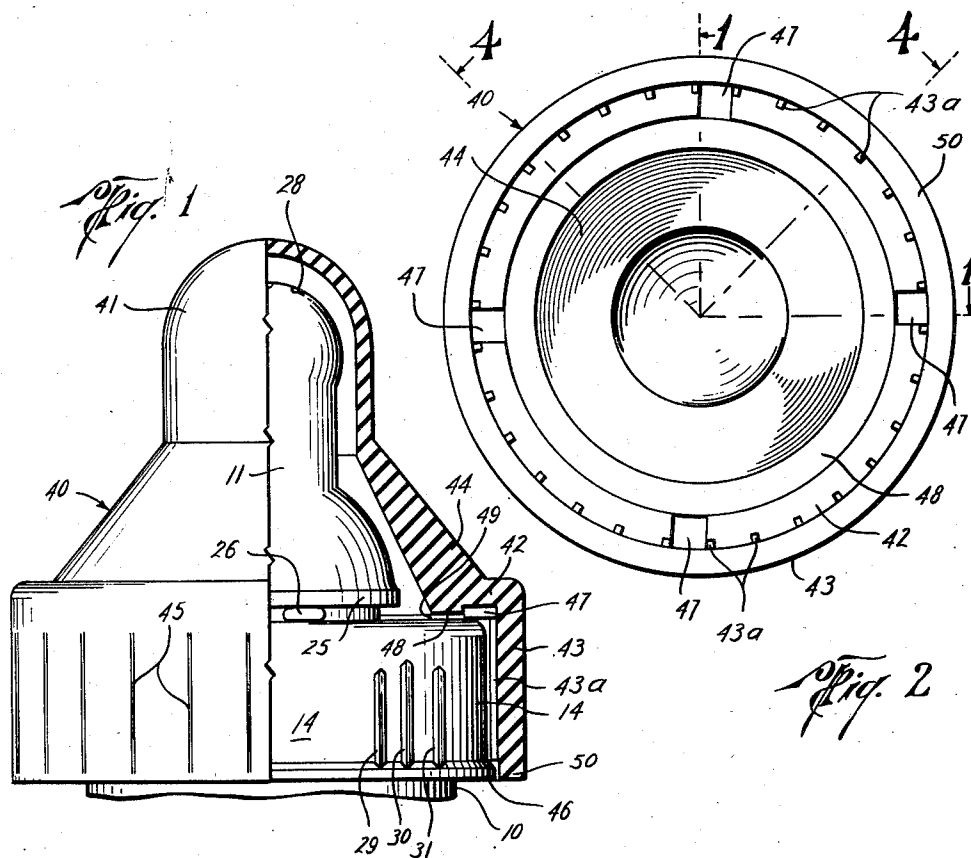
F. E. BOSTON ET AL

2,834,496

SKIRTED NURSER HOOD

Filed Sept. 16, 1955

2 Sheets-Sheet 1



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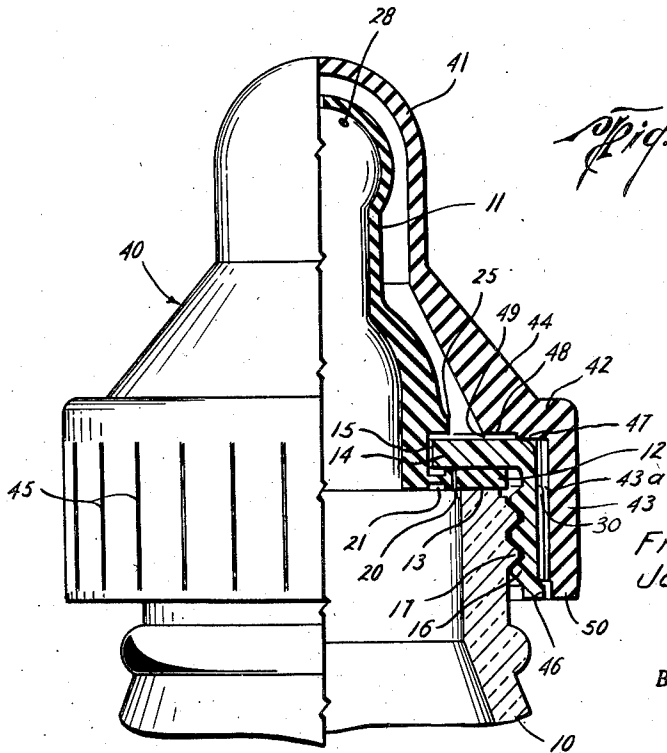
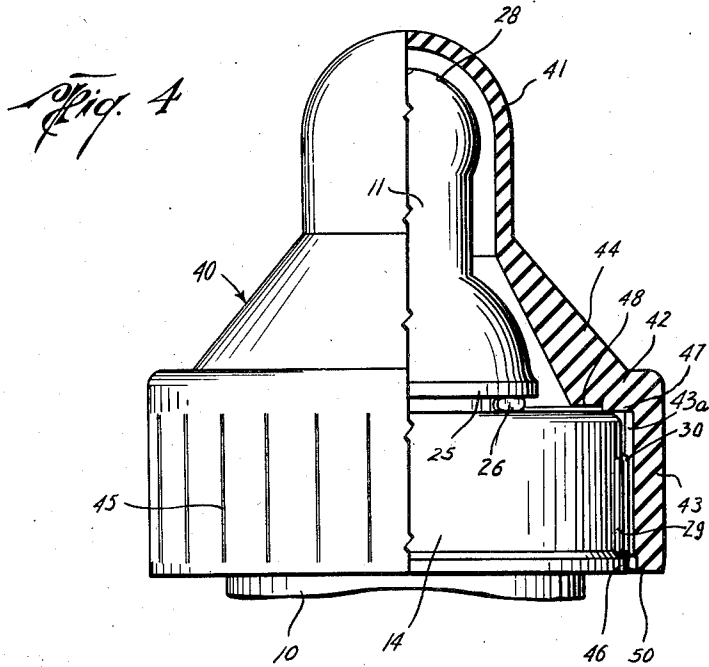
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SKIRTED NURSER HOOD

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6 Claims. (Cl. 215—11)

This invention pertains to a nurser hood and more particularly to such hood used in connection with a nurser whose nipple is held to the bottle by means of a screw cap. It is to be understood that a nurser hood is a cover for the nipple to prevent contamination thereof in various ways, such as by contact with a person's hands, after the nipple has been sterilized, and to prevent liquid from leaking out of the nurser as might occur through the nipple if the nurser were turned over.

Types of nurser hoods already known are adapted to various methods of sterilization of the nurser and contents. In the sterile field method, the various components of the nurser including bottle, nipple, screw cap, and hood, are sterilized unassembled, and the feeding formula is prepared separately; then the formula is placed in the bottles and the nipples and screw caps assembled thereon, the nipples being handled with tongs and the caps handled only from the outside. After filling of the bottles and assembly of nipple and screw cap thereon, the hood is placed over the nipple to prevent accidental contact with various unsterile objects. The hood is also made to seal tight to the nurser so that if the nurser is turned over and formula escapes from the nipple, the hood will prevent it from escaping farther. However, before the hood is put on, the nipple has been exposed to the unsterile room air and the formula has also been so exposed during filling of the bottle. Nevertheless, it is found that with refrigeration the formula in nursers so filled will keep satisfactorily until consumed within the usual length of time.

In the terminal sterilization method, the formula is placed in the bottles, and then the nipples and screw caps and hood assembled thereon, before the nurser has been sterilized. Then the nurser and contents are placed in boiling water and thus sterilized together. Since steam will be generated in the nurser during this process, the hood is provided with a check valve to let out the steam. After the nursers are removed from the boiling water the check valve closes and prevents air from reentering the nurser. The nurser contents thus remain perfectly sterile and can be kept for a long period without spoiling, even without refrigeration. The principal advantage of this method of sterilization, however, lies in its simplicity, since it is not necessary to use tongs in assembling the nipples on the bottles nor use any great care with the assembly of the other parts.

A difficulty which has been experienced with terminal sterilization as last above described is that there is condensation of steam within the hood after the nurser cools and the water thus trapped between the hood and nipple turns the nipple white.

It is an object of this invention to provide a nurser hood that can be used in the terminal sterilization process and which will not trap any steam or water or the like and will hence leaves the nipple of normal color.

A further object of the invention is to provide a nurser hood which can be easily assembled with the other parts of the nurser and which can be easily removed, but will

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not easily be knocked off or in other manner accidentally or unintentionally become displaced.

Another object of the invention is to provide a nurser hood which is inexpensive to manufacture yet strong and durable in use.

Other objects and advantages of the invention will appear from the following description of a preferred embodiment thereof in which:

Figure 1 is a half section showing a hood embodying the invention disposed on the upper end of a nurser of a type described in the aforementioned application, illustrating the relative position of the hood and nurser upon initial assembly and before the start of the terminal sterilization process;

Figure 2 is a bottom view of the hood shown in Figure 1;

Figure 3 is a half section similar to Figure 1 showing the hood elevated relative to the nurser as may occur due to steam pressure during terminal sterilization;

Figure 4 is a half section similar to Figures 1 and 3 except taken on the line 4—4 of Figure 2; and

Figure 5 is a half section through both the hood and the top of the nurser, taken on the line 4—4 of Figure 2.

Referring first to Figures 1 and 5, there is shown the upper end of a glass or plastic nursing bottle 10 over the mouth of which is a nipple 11 made of flexible vulcanized rubber or rubber substitute. The nipple has a flange 12 overlying the bottle lip 13 secured by a plastic (Bakelite) cap 14. Cap 14 has an opening 15 in its top through which the body of the nipple extends. Cap 14 has an internal screw thread 16 which engages an external screw thread 17 around the mouth of the bottle so that flange 12 of the nipple can be securely clamped to the bottle lip 13.

A vent passage 20 through the nipple flange is normally covered at its upper end by cap 14 but when a partial vacuum is created inside the nurser during feeding the nipple is drawn inwardly allowing air to enter the nurser through vent 20, the air coming to the vent by entering the space around the body of the nipple between the body and opening 15 in the cap and then traveling under the cap to the vent 20. Flexure of the nipple is facilitated by thin section 21 in the nipple flange.

Should vent passage 20 become clogged, the nipple is prevented from being drawn all the way into the bottle under vacuum by means of annular shoulder 25. Lugs 26 prevent the shoulder from sealing on top of the cap and blocking entrance of air during normal venting through passage 20.

As shown in Figure 1, the nipple 11 has one or more liquid outlet openings 28 in its tip. The cap 14 has a plurality of groups of ridges 29, 30, 31 around its periphery to provide a hand grip facilitating tightening and loosening of the screw cap. This is particularly desirable in adjusting the tightness of the screw cap which in turn varies the effective size of vent hole 20 in the nipple flange which, being tangent or closely adjacent to the inner edge of the bottle lip, will be distorted and closed when the cap is screwed down tightly, thereby limiting the rate of flow from fluid outlets 28.

Referring now to Figure 2 as well as Figures 1 and 5, a hood 40, preferably made of flexible resilient vulcanized rubber or the like, has an upper cover portion 41 surrounding the body portion of nipple 11 that is exposed above cap 14, a flange portion 42 extending over the top of cap 14 and a skirt 43 extending down around the sides of cap 14. Portion 41 is thickened adjacent flange 42 as shown at 44. The interior of skirt 43 is provided with a plurality of uniformly spaced ribs 43a spaced the same as ridges 29—31 on the cap 14 so as to fit therebetween and engage therewith flank to flank when the hood is rotated while on the cap so that the cap can be turned when the hood is in place. There are a plurality of flat

areas separated by flutes 45 around the exterior of skirt 43 providing a hand grip.

Ribs 43a terminate short of the bottom lip 50 of the skirt so as to leave room for annular flange 46 extending out from the lower edge of cap 14. The outer diameter of flange 46 is only slightly smaller than the inner diameter of skirt 43, leaving enough space for a steam passage therebetween. The ridges 29-31 on cap 14 extend radially the same distance as the periphery of flange 46. The spaces in between ridges 29-31 and the ribs 43a inside skirt 43 and outside cap 14 are closed at their upper ends by flange 42 except at four places where there are recesses 47. The undersurface of flange 42 is relieved on its inner periphery at 48, leaving a space 49 between the top of cap 14 and the bottom of the inner periphery of flange 42, and recesses 47 communicate with this space.

When the nurser with hood in place, as shown in Figure 1, is first heated during the terminal sterilization process, hot air and water vapor can escape from the nurser through openings 28 in the tip of the nipple and pass down inside the hood, travel under the relieved portion 48 of flange 42, thence through recesses 47 and down between the skirt 43 of the hood and the outside of cap 14, and finally pass over flange 46 to the atmosphere.

If the heating is so rapid that there builds up increased vapor pressure or steam, the pressure will cause the hood to be elevated, as shown in Figure 3, opening the entire space between skirt 43 and the sides of cap 14 for the passage of such gases or aeriform fluid.

After sterilization is completed, the nurser is allowed to cool. When the nurser is cooling, the gases in the nurser will condense and contract, creating a partial vacuum or reduced pressure inside the hood and atmospheric air will be drawn into the nurser through the same path by which steam previously escaped. This will sweep clear the space between the hood and nipple so that no water will condense and be trapped in this space.

After the nurser has cooled, if the hood is elevated as shown in Figure 3, it will be normally pushed down to the original position. In this position, as best shown in Figure 4, flange 42 engages the top of cap 14 so that except for recesses 47 the space between the hood and nipple is closed and any formula leaking out of nipple 11 will in most cases be prevented from escaping farther.

The hood will also protect the nipple against contamination by contact with unsterile objects during transportation and storage. Due to the large area of contact between the rubber hood and the screw cap, the hood will not easily fall off the nurser or be brushed off of it accidentally, although it will slide freely enough to allow easy removal when desired.

It is to be noted that the only means of ingress to the nurser is under the lip 50 of the skirt of the nurser. The downwardly facing opening between the lip 50 and the cap 14 is not easily entered by any falling object, so that the nipple and nurser contents are protected against any dirt, water, or other debris sprayed into the atmosphere.

Although the nurser hood is particularly designed for use in connection with the terminal sterilization method of preparing formula in nursers, the hood can also be used with advantage when the formula is prepared and the nurser filled according to the sterile field method.

While rubber is the preferred material for the hood because a rubber hood can be easily made to fit snug on the nurser due to the resiliency of the rubber, nevertheless, the hood may be made of other materials such as hard plastic while retaining many of the advantages of the invention.

Although a preferred embodiment of the invention has been shown and described, many modifications thereof can be made by one skilled in the art and without departing from the spirit of the invention, and it is desired to cover by Letters Patent all forms of the invention falling within the scope of the following claims.

I claim:

1. A nurser hood comprising a cover portion closed at its upper end, a flange portion extending radially from the lower part of the cover portion, and a skirt portion extending downwardly from the outer part of the flange portion, and channel means inside said skirt and under said flange to allow the escape of aeriform fluid from a nurser on which said hood is placed, said channel means comprising a plurality of ridges on the interior of said skirt extending downwardly from the flange, and a relieved area on the inner periphery of said flange, said flange having a recess in its under surface connecting said relieved area with the space between ridges on the interior of said skirt.

2. A nurser hood comprising a cover portion closed at its upper end, a flange portion extending radially from the lower part of the cover portion, and a skirt portion extending downwardly from the outer part of the flange portion, and channel means inside said skirt and under said flange to allow the escape of aeriform fluid from a nurser on which said hood is placed, said channel means comprising a plurality of ridges on the interior of said skirt extending downwardly from the flange, and a relieved area on the inner periphery of said flange, said flange having a recess in its under surface connecting said relieved area with the space between ridges on the interior of said skirt, said hood having greater wall thickness at the lower part of said cover portion and inner part of said flange to reduce flexure thereof at the juncture of cover and flange, whereby the hood can be easily removed from a nurser to which it has been applied.

3. A nurser hood comprising a cover portion closed at its upper end, a flange portion extending radially from the lower part of the cover portion, and a skirt portion extending downwardly from the outer part of the flange portion, and channel means inside said skirt and under said flange to allow the escape of aeriform fluid from a nurser on which said hood is placed, said channel means comprising a plurality of ridges on the interior of said skirt extending downwardly from the flange, and a relieved area on the inner periphery of said flange, said flange having a recess in its under surface connecting said relieved area with the space between ridges on the interior of said skirt, said hood having greater wall thickness at the lower part of said cover portion and inner part of said flange to reduce flexure thereof at the juncture of cover and flange, whereby the hood can be easily removed from a nurser to which it has been applied, the skirt portion of the hood having a plurality of recessed flat areas therearound and separated by flutes providing a hand grip.

4. A nurser hood comprising a cover portion closed at its upper end, a flange portion extending radially from the lower part of the cover portion, and a skirt portion extending downwardly from the outer part of the flange portion, and channel means inside said skirt and under said flange to allow the escape of aeriform fluid from a nurser on which said hood is placed, said channel means comprising a relieved area on the inner periphery of said flange and at least one recess extending outwardly of said relieved area beneath said flange and a plurality of vertical ridges at the interior of said skirt leading from the level of said recess to the lower edge of said skirt.

5. A nurser hood comprising a cover portion closed at its upper end, a flange portion extending radially from the lower part of the cover portion and having recess means in its lower surface, and a skirt portion extending downwardly from the outer part of the flange portion and having a plurality of ridges on its inner surface extending downwardly from the lower surface of said flange, whereby the interior of said cover portion is in communication with the atmosphere to allow escape of aeriform fluids therefrom when said hood is placed on a nurser with said flange portion engaging the top thereof.

6. In combination, a nurser comprising a bottle having an external screw thread around its mouth, a nipple having

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a body portion and an annular flange extending radially therearound, said flange at its outer periphery overlying the edge of the bottle around its mouth, a cap having an internally screw threaded depending portion and a top portion overlying the nipple flange and clamping it to the bottle, said top portion having an aperture through which said body portion of the nipple extends, and a hood covering the exposed portion of said nipple and having a flange overlying and engaging said top portion of the cap and a skirt around said depending portion of the cap, and vent means between said cap and hood comprising a plurality of spaced vertical ridges formed in the interior surface of said skirt and at least one recess formed in the underside of said flange to communicate with the openings

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between said ridges and the interior of said hood around said nipple, whereby the space within said hood around the tip of the nipple is in communication with the atmosphere when said flange is engaged with the said top portion of the cap.

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