Oct. 11, 1955 J. A. CLEMENS 2,720,328

NIPPLE CONSTRUCTIONS

Filed Jan. 23, 1951 2 Sheets-Sheet 1

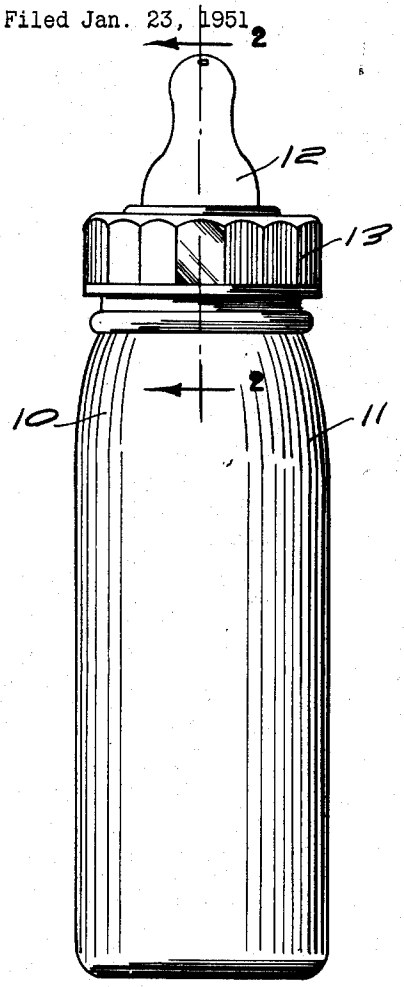


FIG. 1

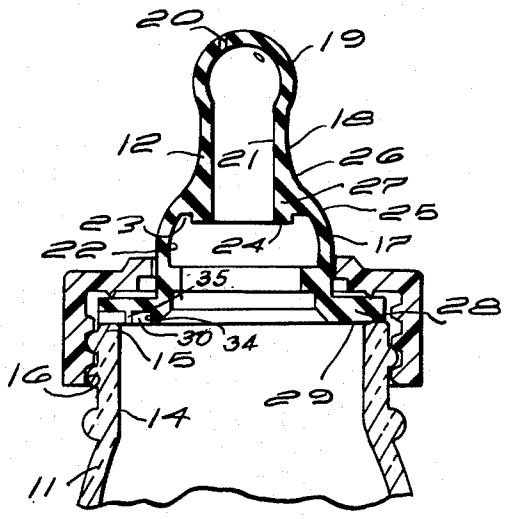


FIG. 2

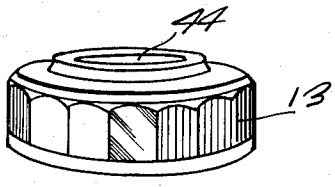


FIG. 3

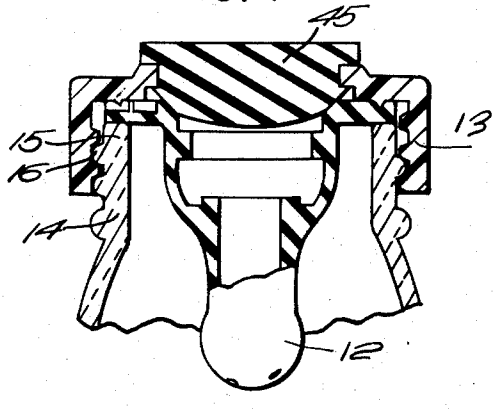


FIG. 5

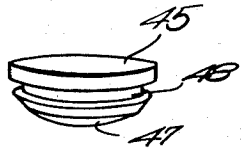


FIG. 4

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NIPPLE CONSTRUCTIONS

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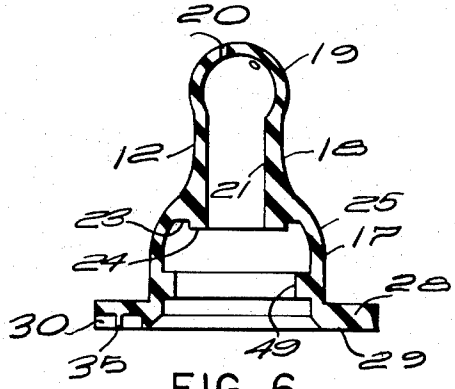


FIG. 6

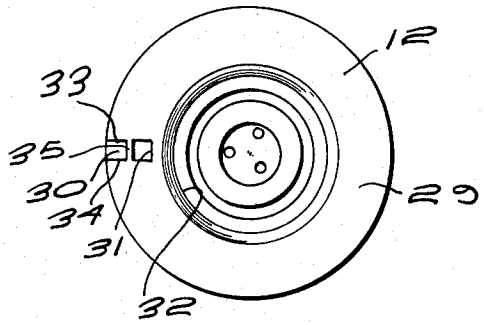


FIG. 7

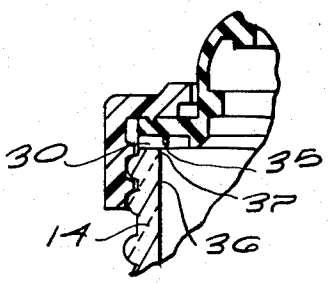


FIG. 8

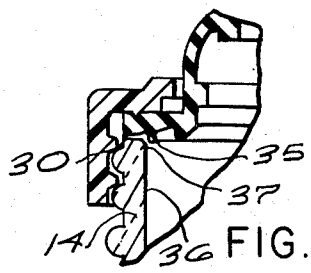


FIG. 9

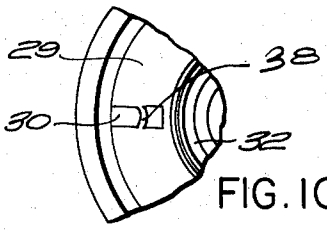


FIG. 10

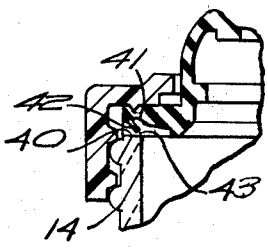


FIG. 13

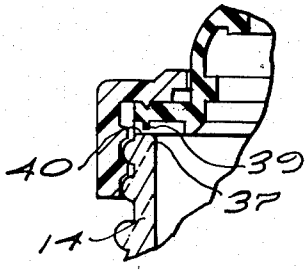


FIG. 11

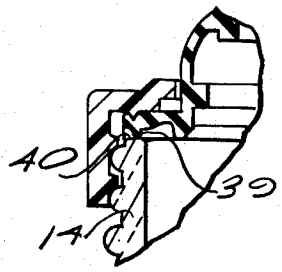


FIG. 12

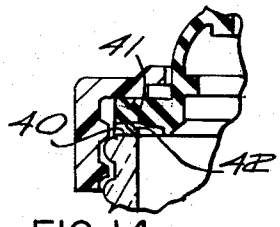


FIG. 14

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2,720,328

NIPPLE CONSTRUCTIONS

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Application January 23, 1951, Serial No. 208,048

8 Claims. (Cl. 215—11)

The present invention relates to infant feeding devices and has particular reference to a unit nursing bottle and nipple combination.

The principal object of the invention is to provide a nursing bottle and nipple combination which can be manually set to control and to regulate the feeding.

Another object of the invention is to provide a nursing bottle and nipple combination which has a controllable open vent to the interior of the bottle.

A further object of the invention is to provide a nursing bottle and nipple combination which is readily adjusted to feed at a desired rate.

With the above and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings,

Fig. 1 is an elevation showing the nurser combination of nursing bottle and feeding nipple;

Fig. 2 is a vertical partial section on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a preferred retaining cap;

Fig. 4 is a perspective view of a preferred closure disk;

Fig. 5 is a section similar to Fig. 2, the parts being positioned for travelling or for storage in a refrigerator;

Fig. 6 is a vertical section through a preferred nipple construction;

Fig. 7 is a bottom plan view of Fig. 6;

Fig. 8 is a sectional detail showing the venting arrangement of parts for the nipple of Fig. 6;

Fig. 9 is a sectional detail similar to Fig. 8, the parts being shown in partial vent closing relation;

Fig. 10 is a partial detail bottom plan view similar to Fig. 7, the nipple having a modified venting construction;

Fig. 11 is a similar bottom plan view, the nipple having another modified venting construction;

Fig. 12 is a sectional detail similar to Fig. 8, including the modification of Fig. 11;

Fig. 13 is a view similar to Fig. 12, the parts being shown in partial vent closing position; and

Fig. 14 is a partial detail bottom plan view of another modification of the venting construction.

It has been found desirable to provide a nurser combination which is readily assembled for feeding, and which may be quickly assembled and arranged for storage in a refrigerator or for travelling, the parts being designed to permit regulation of the rate of feeding to meet different infant feeding requirements.

To this end, I prefer to utilize a nursing bottle of the medium mouth type which has an externally threaded neck, and I provide a feeding nipple which has an annular base flange adapted to seat on the rim of the bottle and to be retained in place by a retainer cap which threads

on the bottle neck to seal the nipple base flange to the bottle rim with regulatable compression.

I further provide the feeding nipple with a novel venting arrangement of the continuously open type, which permits air to flow into the bottle interior during feeding, the parts being designed to control the flow area of the continuously open vent, this being accomplished by a slight threading or unthreading of the retainer cap to change the compression of the nipple flange on the bottle rim, whereby the rate of feed is regulated.

Referring to the drawings, the novel nurser combination **10** includes a nursing bottle **11** of the medium mouth type, and a feeding nipple **12** of novel design which is held on the bottle by a retainer cap **13**. The bottle **11** has the usual neck **14** which terminates in a rim **15**, and the neck is externally threaded as indicated by the reference numeral **16**.

The nipple **12** is of hollow formation, with a generally cylindrical body portion **17** which narrows upwardly into a reduced neck **18**, the upper end of the neck being provided with a slightly enlarged feeding tip **19** of spherical form which has one or more feeding passages **20**. The inner wall **21** of the neck is cylindrical, and preferably extends vertically downwardly; the inner wall **22** of the body portion curves upwardly, and then inwardly and downwardly to provide a recess **23** and a depending annular flange **24** in combination with the lower end of the inner wall **21**. The outer wall **25** of the body portion curves upwardly and then inwardly to merge with the outer wall **26** of the neck **18**, whereby a thickened annular portion **27** of generally triangular cross-section is provided at the junction of the body portion with the nipple neck.

The lower end of the body portion **17** of the nipple is provided with an annular outwardly extending base flange **28**, the lower surface **29** of the flange having at least one recess **30** formed therein. As illustrated in Fig. 7 the preferred shape of the recess is generally rectangular, with an inner side **31** adjacent the center opening **32** of the nipple and lateral sides **33**, **34**, the recess having a thin flexible dam **35** extending between the sides **33**, **34** in spaced parallel relation to the inner side **31** of the recess.

An upstanding rib may be provided adjacent one or both of the sides **33**, **34** of the recess if desired. The preferred location for the flexible dam **35** is closely adjacent the inner wall **36** of the bottle neck rim when the nipple is seated on the bottle neck, whereby a slight gap is provided between the dam and the bottle rim. When the retainer cap is screwed down, see Fig. 9, the nipple base flange is compressed and the gap **37** decreases in size, thus reducing the air vent opening, whereby the volume of air inflow through the continuously open vent is controlled in accordance with the extent of turning of the retainer cap.

The flexible dam illustrated in Fig. 7 extends directly across the recess and is spaced slightly inwardly from the inner surface of the bottle rim. Since a straight dam resists inflow of air, the dam may be slightly arcuate as illustrated at **38** in Fig. 10 to increase the flexibility of the dam, the structure being otherwise the same as shown in Figs. 6, 7 and 8. This construction provides a greater inflow of air when there is a sharp drop in pressure within the nursing bottle.

If desired, the flexible dam may be positioned so as to be directly above the upper surface of the bottle rim, see Figs. 11 and 12, wherein the dam **39** depends directly over the bottle rim **15** and is spaced from the bottle rim to provide a vent gap **40**. When the retainer cap is screwed down the gap **40** becomes smaller, see Fig. 12, to decrease the height and the size of the venting opening.

When greater flexibility is desired for the dam, it may be inset in an indentation **41** in the upper wall of the nipple recess, to extend downwardly as indicated by the reference numeral **42**, see Fig. 13, thus providing a longer and more flexible dam, which decreases and may close the venting gap **43**, see Fig. 14, upon screwing down of the cap. The dam of Figs. 13 and 14 is inclined towards the center and is spaced from the inner surface of the bottle rim to provide a venting gap **43**, the angularity of the dam preventing outflow of fluid.

The essential feature of my invention is the provision of a continuously open vent to the bottle interior through the base flange of the nipple, the vent including a flexible element such as a dam which may be adjusted in accordance with turning movement of the retainer cap. The dam may be vertical and may be positioned over the bottle rim, and may be curved, and may be set in a recess, in accordance with the extent of the desired flexibility.

When the nursing combination is to be prepared for storage or for travelling, the nipple is placed in inverted position on the bottle as shown in Fig. 5, the cap then pressing down to seal the edge of the bottle rim. The central opening **44** of the cap is now closed by a flexible closure plug **45** of rubber or the like, see Fig. 5. The cap opening has an elevated inwardly directed flange **46**, and the closure plug has a rounded lower surface **47** to snap past the flange **46**, and an annular recess **48** to receive the flange **46**, as shown in Fig. 5.

The nipple construction described, although primarily designed for use with a medium mouth type nursing bottle, may be used with standard narrow mouth nursing bottles, as the rim of the narrow mouth bottle will seat snugly in the nipple body between the recess **23** and an annular inner rib **49**, see Fig. 6, with the flange or lip **24** pressing against the inside of the bottle rim.

Although I have described and illustrated specific constructional embodiments of my invention, the size, shape and arrangement of the parts may be varied and changed to meet different nurser combination requirements, without departing from the spirit or the scope of the invention as defined in the appended claims.

I claim:

1. In combination with a bottle having a threaded annular rim and a threaded retainer cap, a feeding nipple of resilient material comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, and a flexible dam extending across said recess intermediate the ends thereof in spaced relation to the bottle rim.

2. In combination with a bottle having a threaded annular rim and a threaded retainer cap, a feeding nipple of resilient material comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, and a flexible arcuate dam extending across said recess intermediate the ends thereof.

3. In combination with a bottle having a threaded annular rim and a threaded retainer cap, a feeding nipple of resilient material comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower

end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, said recess having an indentation in its upper wall, and a flexible dam extending downwardly from said indentation and across said recess intermediate the ends thereof.

4. In combination with a bottle having a threaded annular rim and a threaded retainer cap, a feeding nipple of resilient material comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, said recess having an indentation in its upper wall, and a flexible arcuate dam extending downwardly from said indentation and across said recess intermediate the ends thereof.

5. A feeding nipple of resilient material for mounting on a bottle rim, comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, and a flexible dam extending across said recess intermediate the ends thereof.

6. A feeding nipple of resilient material for mounting on a bottle rim, comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, and a flexible arcuate dam extending across said recess intermediate the ends thereof.

7. A feeding nipple of resilient material for mounting on a bottle rim, comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, said recess having an indentation in its upper wall, and a flexible dam extending downwardly from said indentation and across said recess intermediate the ends thereof.

8. A feeding nipple of resilient material for mounting on a bottle rim, comprising a hollow body having a reduced neck and a slightly enlarged feeding tip, and an outwardly extending annular base flange at the lower end of the body adapted to seat on the bottle rim, said base flange having a recess in the lower surface thereof extending inwardly to bridge the bottle rim, said recess having an indentation in its upper wall, and a flexible arcuate dam extending downwardly from said indentation and across said recess intermediate the ends thereof.

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