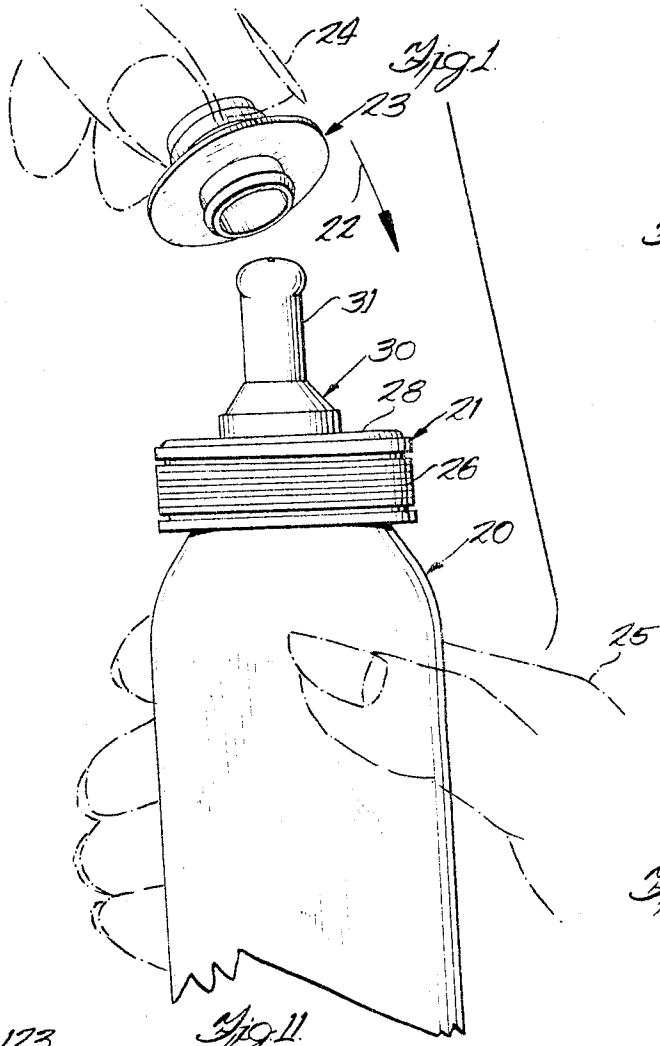
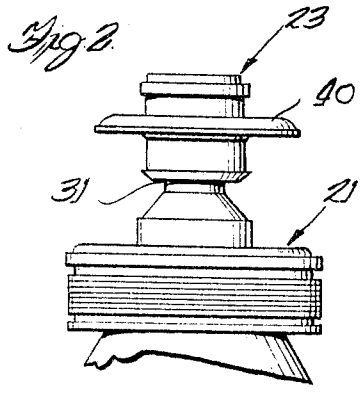
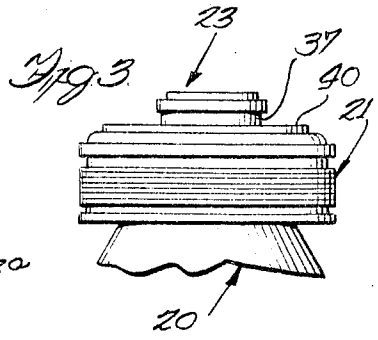
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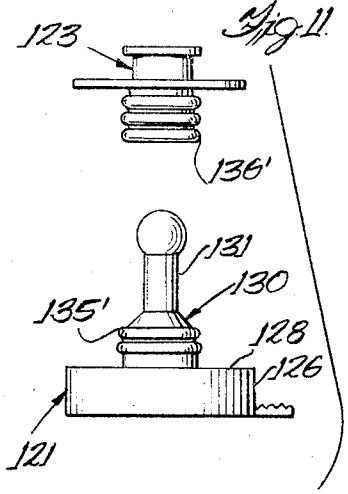
TWO-POSITION NURSING NIPPLE WITH INTERLOCKING SANITARY COVER

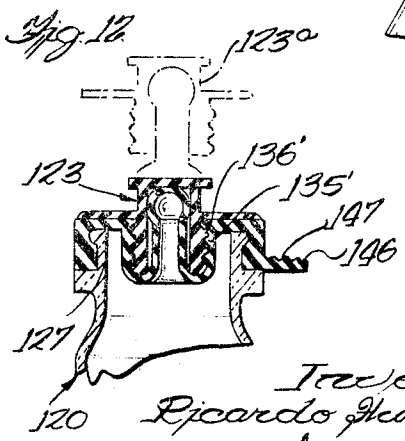
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Sept. 13, 1966 R. HURTADO SOTO 3,272,202

TWO-POSITION NURSING NIPPLE WITH INTERLOCKING SANITARY COVER

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Fig. 4.

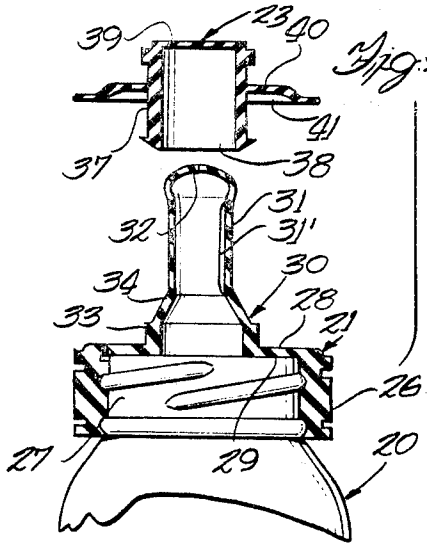


Fig. 5.

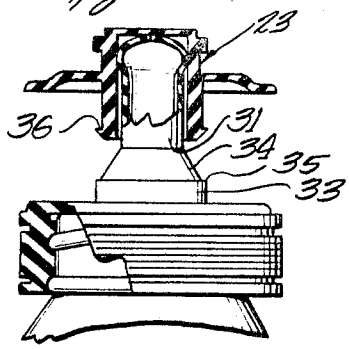


Fig. 7.

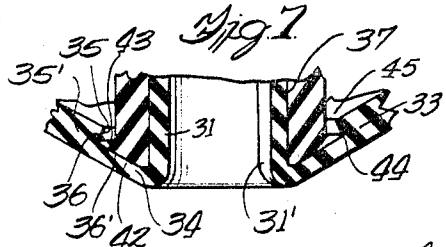


Fig. 6.

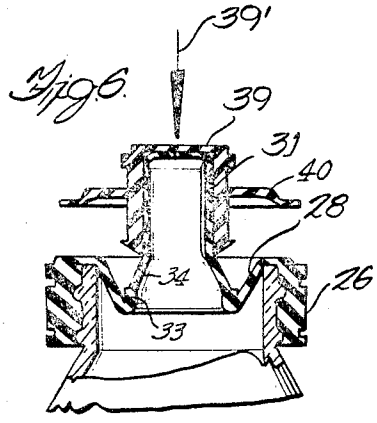


Fig. 8.

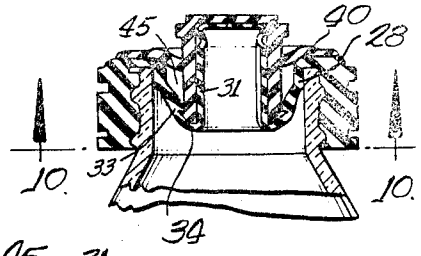


Fig. 9.

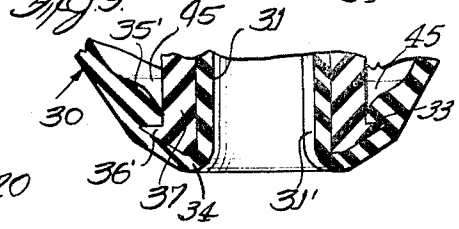
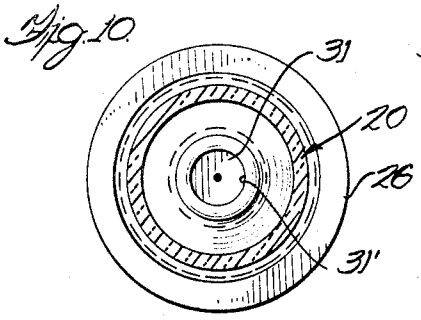


Fig. 10.



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3,272,202

TWO-POSITION NURSING NIPPLE WITH INTERLOCKING SANITARY COVER

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Filed Sept. 5, 1963, Ser. No. 306,762
10 Claims. (Cl. 128—252)

This application is a continuation-in-part of my co-pending application entitled, "Nursing Unit," Serial No. 184,735, filed April 3, 1962, and now abandoned.

This invention relates to a sanitary cover for a nursing nipple, and, more particularly, to a unique combination of a sanitary cover and a nursing nipple.

One of the principal problems attendant on infant feeding is maintenance of the nursing bottle, particularly the nipple, in sterile condition. The formula or other liquid nutriment constitutes a fertile medium for the growth or organisms, and hence a variety of expedients have been followed by the prior art workers in order to achieve this desirable sterile condition of the nipple and surrounding support surfaces. Generally, the prior expedient shave utilized some kind of cap cooperating with the supporting bottle or closure which has necessitated laborious installation and removal. The complexity of the prior art expedients has made it possible for mis-application or mis-operation with a frustration of the desired objective of maintaining nipple sterility. In contrast to this, the instant invention provides a simple yet extremely effective hygienic seal for the nipple and one that operates by cooperating with the nipple itself. According to the instant invention, the sanitary cover is automatically placed in hygienic sealing relation relative to the nipple as the nipple is moved to its retracted position, and reaily removable as part of the movement extending the nipple. The provision of such a closure and the effective seal provided thereby constitutes an important object of the invention.

Another object of the invention is to provide a cooperating sanitary closure and nipple wherein the nipple is of the two-position type, i.e., the nipple tip part being retractable within the breast part to define an annular space, with the sanitary closure being releasably held in the annular space.

Still another object of the invention is to provide a uniquely constructed sanitary cover for a nipple and the combination thereof wherein the nipple and closure have juxtaposed surfaces effective to provide a secondary, generally cylindrical, seal for maintaining the mouth-engaging portion of the nipple in sterile condition.

Other objects and advantages of the invention may be seen in the details of construction and operation set down in this specification.

The invention is explained in conjunction with the accompanying drawing, in which—

FIG. 1 is a fragmentary perspective view of an embodiment of the invention showing the sanitary cover in the process of being installed upon a nursing nipple;

FIG. 2 is a fragmentary side elevation view of the assembled sanitary cover and nursing nipple which would be the condition of the elements following the operation indicated in FIG. 1;

FIG. 3 is a view similar to FIG. 2 but showing the nipple, equipped again with the sanitary cover, but in the so-called "retracted" position;

FIG. 4 is a fragmentary elevational view, partially in section, of the sanitary cover and nipple-equipped bottle where the sanitary cover is about to be installed on the nipple, i.e., a showing analogous to that pictured in FIG. 1;

FIG. 5 is another fragmentary elevational view, partially in section, of the parts of FIG. 4 but showing the sanitary cover just after it has been installed on the nipple;

FIG. 6 is a view similar to FIG. 5 but showing the nipple in an initial stage of retraction;

FIG. 7 is an enlarged fragmentary sectional view of the interconnecting cooperative parts of the nipple and cover at a stage just subsequent to that seen in FIG. 6;

FIG. 8 is a fragmentary elevational view, partially in section, of the assembled cover and nipple when the latter is in its retracted position;

FIG. 9 is a view similar to FIG. 7 but showing the inter-engaging parts in the condition they assume during the retracted position of the nipple seen in FIG. 8;

FIG. 10 is a sectional view such as would be seen along the sight line 10—10 applied to FIG. 8;

FIG. 11 is an exploded elevational view of a modified form of the invention; and

FIG. 12 is a fragmentary elevational view, partially in section and partially in phantom line, of the modification seen in FIG. 11.

Referring now to the drawing, the numeral 20 designates a nursing bottle equipped with a nipple closure generally designated 21. The action indicated by the arrow 22 in FIG. 1 includes the positioning of a sanitary cover generally designated 23 held in the left hand 24 of a person whose right hand 25 is grasping the bottle 20.

In the illustration given, the nipple closure is equipped with a depending skirt 26 which cooperates in the usual fashion with the bead-equipped neck 27 of the bottle 20 (see FIG. 4) to hold the nipple closure on the neck. It will be appreciated that alternative forms of nipple closures may be advantageously employed in the practice of the invention such as, for example, a two-piece nipple and apertured screw top.

The nipple 21, as best seen in FIG. 4, includes, in addition to the depending threaded skirt 26, a generally planar, integral top closure part 28 arranged to contact the upper lip 29 of the bottle 20.

Upstanding from the central portion of the planar part 28 is a breast part generally designated 30 which merges into a tubular generally cylindrical tip part 31. The tip part 31 is equiped with a dispensing aperture 32.

Still referring to FIG. 4, it will be seen that the breast part includes a tubular generally cylindrical section 33 and a laterally-extending generally conical shoulder section 34. The conical shoulder section 34 is adjacent the bottom portion of the tip part 31 and extends outwardly and downwardly to the tip of the cylindrical section 33. As is shown in FIGS. 5 and 7 at the intersection of the cylindrical section 33 and shoulder section 34 there is provided a generally right-angled angular step 35. The function of the step 35 is to cooperate with a similar step 36 provided by the laterally-extending rib 36 at the lower end of the sanitary cover 23 as shown in FIGS. 5 and 7.

The sanitary cover 23, as illustrated in FIG. 4, includes a generally cylindrical section 37, open at its lower end 38, and closed at its upper end 39, as indicated in FIG. 4. Intermediate the two above-mentioned ends, the cylindrical portion 37 is equipped with a radially extending, annular flange 40 which is seen to be dished at 41, i.e., concavely related to the juxtaposed, planar part 28, as illustrated in FIG. 8.

The previously mentioned step 36 is defined by convergent surfaces 42 and 43 constituting rib 36' (see FIG. 7). The surface 43 is essentially planar and radially disposed relative to the cylindrical portion 37. The surface 42 is essentially conical to develop a relatively sharp peripheral edge at 44 for engagement with the step 35 during depression of the tip part 31.

It will be appreciated that the nipple generally designated **21** is a "two-position" nipple wherein the tip **31** is in the extended position seen in FIGS. 1 and 4 for the seating operation, and in the retracted condition seen in FIGS. 3 and 8 during storage (as under refrigeration) pending use in feeding.

In operation, the bottle **20** is filled with formula or other liquid nutriment, after which the bottle and its contents is subjected to sterilization temperatures. Simultaneously therewith, the nipple closure **21** and the sanitary cap **23** are also sterilized. With the bottle **20** still warm, the nipple closure **21** is applied through a suitable threading action wherein the skirt **26** is grasped for manipulating the nipple closure **21**. This avoids contaminating the nipple closure surfaces thereabove, particularly the flat part **28**, the breast part **30**, and the tip part **31**, which are the parts engageable by the lips of an infant during feeding. Immediately thereafter, the sanitary cover **23** is grasped as illustrated in FIG. 1 and mounted on the tip part **31** to provide the configuration of elements seen in FIG. 2. Alternatively, the nipple and cap may be applied prior to sterilization. In FIG. 2 and also in FIG. 5, it is seen that the cap **23** has been slidably mounted on the nipple tip part **31**, whereupon the application of downward pressure on the closed end of the cap **39**, as illustrated by the arrow **39'** in FIG. 6, converts the assembly to the condition seen in FIGS. 3 and 8. The lower end of cover cylindrical section **37** is adjacent conical section **34** and presses over against as the nipple is moved from extended to retracted position.

During the depression of the tip part **31**, as illustrated in FIG. 6, the initial flexure or folding occurs in the flat part **28**, and shortly thereafter there occurs a reversal of the breast part **30** to achieve the condition seen in FIGS. 7 and 8 wherein the sloping shoulder section **34** is folded upon itself to dispose the step **35** downwardly and in locking engagement with the step **43**. The section **34** thereby extends around the bottom of the annular space **45** (see FIGS. 7, 8 and 9). It will be appreciated, as is best seen in FIG. 9, that the breast part **30** and the tip part **31** (when the latter is depressed) form an annular space **45** which grippingly receives the cylindrical portion **37**, the wall thickness of the cylindrical portion **37** being slightly greater than the corresponding width of the annular recess or chamber **45**. It will be noted that the rib **36'** engages the conical section **34** immediately below its juncture with breast part section **33** as defined by step **35**. Thus, the engagement of the bead or rib **36'** with the overlying shoulder **35'** developed by the step **35** provides an additional means of securing the cover **23** on the nipple **21**. The gripping action developed by the confronting portions of the breast part **30** and the tip part **31** in itself provides a frictional engagement between the cooperating parts.

Still further, when the cap is positioned on the nipple and the latter is in the retracted position as seen in FIG. 8, there is provided a peripheral seal by the coaction of the annular flange **40** with the flat surface **28**, this seal being enhanced by the dished configuration **41** and the normal reduction in interior pressure in the bottle **20** by virtue of cooling the contents subsequent to sterilization with the attendant decrease in air volume. It will be seen (as in FIG. 8) that the diameter of the flange is of the order of twice the diameter of the cylindrical portion so as to provide a substantial overlay of the mount portion **26**, particularly the flat surface **28**. In instances where it is unnecessary to sterilize the surface surrounding the breast portion **30**, the annular flange **40** may be made smaller, or even eliminated.

Preferably, both the nipple **21** and the cover **23** are constructed of flexible resilient material such as rubber, the portions intended not to flex substantially, as in the skirt **26**, being constructed of relatively greater wall thicknesses than the parts **28** and **30**. Referring to the breast part **30**, it is seen that the sloping shoulder section **34** is relatively thinner than the upstanding tubular or cylindrical section **33**. This construction promotes the gripping action previously described and the supplemental shoulder **35'** (see FIG. 9) is advantageously oriented for coaction with the step **36** developed by the bead **36'**.

The tip or teat part **31** may be equipped with a longitudinally-extending, axially disposed strengthening rib **31'** (see FIGS. 4 and 9) which serves to prevent complete collapse of this part of the nipple and therefore maintains a passage for the equalization of pressures, thereby eliminating the need for any looseness in the fit between the nipple mounting portion **26** and the bottle neck **27** ordinarily employed for admission of air to compensate for withdrawn fluid. In some instances, the provision of ribbing as at **31'** can be employed to stiffen the tip part and thereby develop greater frictional engagement between the nipple tip part **31** and the interior of the cylindrical portion **37**. With the embodiment previously described, the removal of the cover **23** is ordinarily effective to move the nipple from retracted to extended position. Because of the engagement between the lower end of cover portion **37** and the nipple breast part **30**, the lifting of the cover also lifts the breast part causing the retracted nipple to return to its extended condition for nursing use.

A modified form of the invention is seen in FIGS. 11 and 12, wherein the numeral **121** designates generally a nipple closure received on the neck **127** of a nursing bottle generally designated **120**. As before, the nipple closure **121** includes a depending skirt part **126** and a flat top closure part **128** from which upstands a breast part generally designated **130**. Also as before, the breast part **130** merges into a tip part **131**. Slidably received on the tip part **131** is a sanitary cover generally designated **123**, and shown in its outer position in broken or phantom line in FIG. 12, wherein the same is designated **123*a***. The retracted position of cover **123** and the nipple tip part **131** are illustrated in solid lines in FIG. 12. One difference between the showing of FIG. 12 and that of FIG. 8 lies in the provision of a plurality of interlocking ribs **136'**, and a plurality of coacting ribs or beads **135'** on the breast part **130**. Additionally, the closure nipple **121** may include a gripping tab **146** if it is desired to mount the nipple closure **121** by a snap-on action as contrasted to the threaded action associated with the embodiment seen in FIGS. 1–10. For proper grip, the tab **146** has serrations **147**.

The inventive construction provides advantages over what has gone before, particularly in the use subsequent to sterilization of the bottle contents. In one procedure, the two pieces, nipple and cap, are boiled, and while still wet, placed over the bottle top as seen in FIG. 2 for example, and thereafter the depressing force **39'** applied. The lower rim of the nipple may be lifted slightly with the thumb in order to allow compressed air to escape from the bottle. Subsequent to storage and just prior to use, removal of the cap by grasping the same analogous to the showing in FIG. 1 results in simultaneous extension of the tip part **31** while maintaining the sterility of the tip part.

While in the foregoing specification a detailed description of the invention has been set down for the purpose of explanation thereof, many variations in the details herein given may be made by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. In combination, a two-position nursing nipple formed of flexible resilient material and providing an extended nursing position and a retracted storage position, and a sanitary cover for protecting said nipple, said cover being applicable to and removable from said nipple in said extended position while bing releasably secured to said nipple in said retracted position,

said nipple in its extended position further comprising:

(a) an upwardly extending tubular tip part having an apertured outer end,

(b) a breast part below said tip part including an outer shoulder section extending laterally outwardly with respect to the lower end of said tip part and a lower tubular section extending downwardly with respect to the lower end of said shoulder section, and

(c) a mount part extending laterally outwardly with respect to the lower end of said breast part tubular section;

said nipple in its retracted position having portions of said breast part and the lower portion of said tip part arranged in confronting relation with an annular space being provided therebetween;

said cover including a tubular section with a closed outer end and an open lower end, the tip part of said nipple being received in said cover section with the lower end of said cover section adjacent said nipple shoulder section, the lower end of said cover section being contractable with said shoulder section and said shoulder and tubular breast sections rolling around said cover section lower end portion as said nipple is moved from extended to retracted position by depressing the said cover lower end portion of said cover section in said retracted position within said annular space, said annular space having a lateral dimension in at least the lower portion thereof corresponding to the thickness of the lowermost portion of said cover section, the lower end portion of said cover section being provided with rib means projecting laterally outwardly, said rib means in said retracted position engaging the said breast part at the outer side of said annular space, said breast part in said retracted position having a portion extending laterally inwardly over said rib means immediately thereabove for releasably interlocking said breast part and said cover section.

2. The combination of claim 1 wherein said cover is provided with an annular flange extending laterally from the intermediate portion of said cover tubular section, the outer peripheral portion of said flange being engageable with the outer portion of said nipple mount part to provide a seal therebetween when said nipple is in said retracted position with said cover secured thereto.

3. The combination of claim 1 wherein with reference to said retracted position the engaging portions of said cover tubular section and said nipple breast part are provided with interfitting rib means.

4. In combination, a two-position hollow, integral nursing nipple formed of flexible resilient material and providing an extended nursing position and a retracted storage position, and an integral sanitary cover for protecting said nipple, said cover also being formed of a flexible resilient material and being applicable to and removable from said nipple in said extended position while being releasably secured to said nipple in said retracted position,

said nipple in its extended position further comprising:

(a) an upwardly extending generally cylindrical tip part having an apertured outer end,

(b) a breast part including a generally conical section extending downwardly and outwardly from the lower end of said tip part and a generally cylindrical section extending downwardly from the lower end of said conical section, and

(c) a mount part extending outwardly from the lower end of said breast part cylindrical section;

said nipple in its retracted position having the said cylindrical section and the lower portion of said tip part arranged in confronting relation with an annular space being provided therebetween, and said conical section extending around the bottom portion of said annular space;

said cover including a cylindrical section with a closed outer end and an open lower end, the tip part of said nipple being received in said cover cylindrical section with the lower end of said cylindrical section adjacent said nipple conical section, the lower end portion of said cover section being contactible with said conical section and said conical and cylindrical breast sections rolling around said cover lower end portion as said nipple is moved from extended to retracted position by depressing said cover, said cover lower end portion providing a wall thickness greater than a corresponding dimension of said annular space for gripping said lower end portion and releasably securing it within said annular space.

5. The combination of claim 4 wherein said breast part cylindrical section has a substantially greater wall thickness than that of the said conical section.

6. The combination of claim 4 wherein an annular rib is provided around the outside of said cover cylindrical section adjacent the open lower end thereof, said rib being positionable within the said bottom portion of said annular space in said retracted position, and being arranged with respect to said breast part sections to engage a portion of said conical section below said breast part cylindrical section.

7. The combination of claim 6 wherein an angular step is provided at the juncture of said breast part conical and cylindrical sections, said step in said retracted position being positionable in overlying engagement with said cover section rib.

8. The combination of claim 7 wherein said breast part cylindrical section has a substantially greater wall thickness than that of said conical section.

9. The combination of claim 4 wherein said cover is provided with an annular flange extending laterally from the intermediate portion of said cover cylindrical section, said flange having a downwardly dished configuration, the outer peripheral portion of said flange being engageable with the outer portion of said nipple mount part to provide a seal therebetween when said nipple is in said retracted position with said cover secured thereto.

10. The combination of claim 4 wherein said cylindrical tip part is interiorly equipped with rib means extending longitudinally along the inner surface thereof.

References Cited by the Examiner

UNITED STATES PATENTS

2,672,870	4/1954	Alstadt	128—252
2,738,088	3/1956	Perreault	215—11
2,831,596	4/1958	Eyles	215—11
2,987,208	6/1961	Ransom	215—11
3,113,569	12/1963	Barr et al.	128—252

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