

June 30, 1953

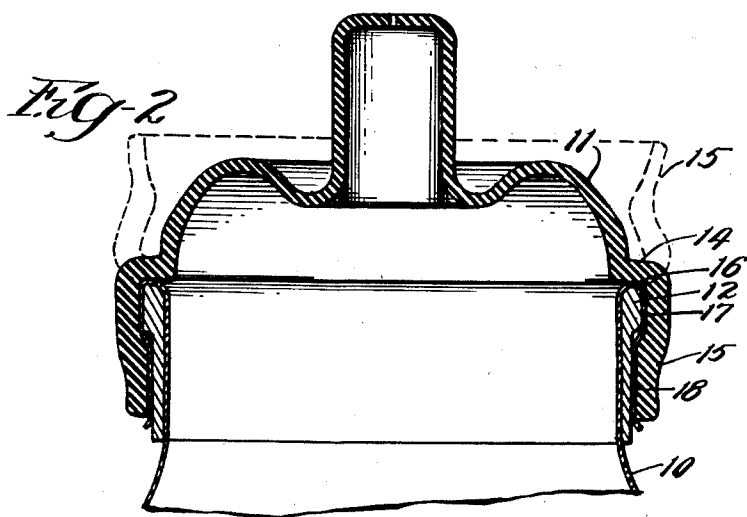
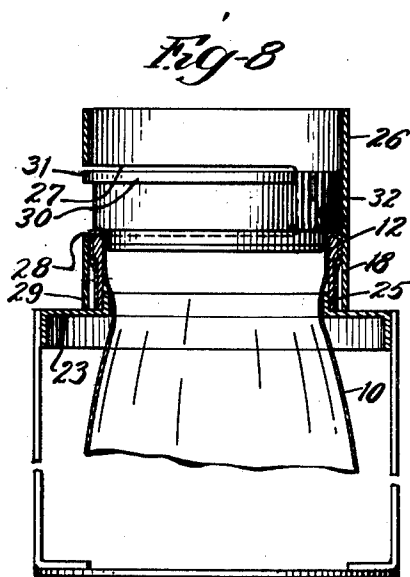
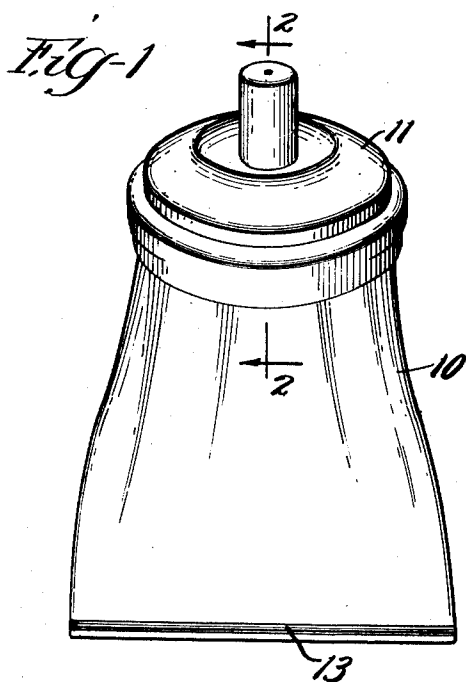
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2,643,448

NURSING UNIT ASSEMBLING TOOL

Filed July 1, 1950

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig-3

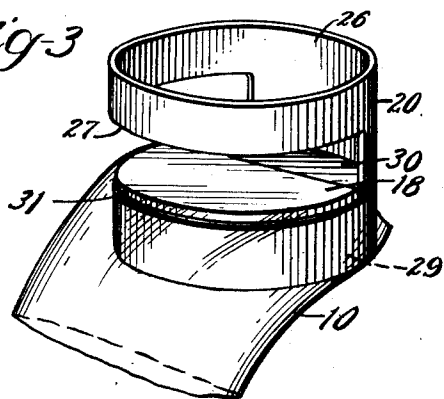


Fig-6

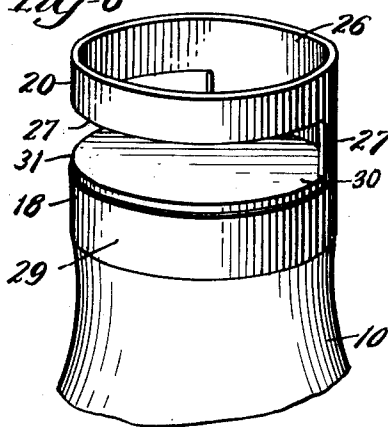


Fig-4

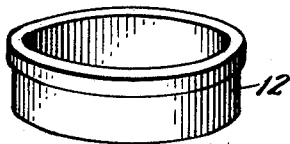


Fig-5

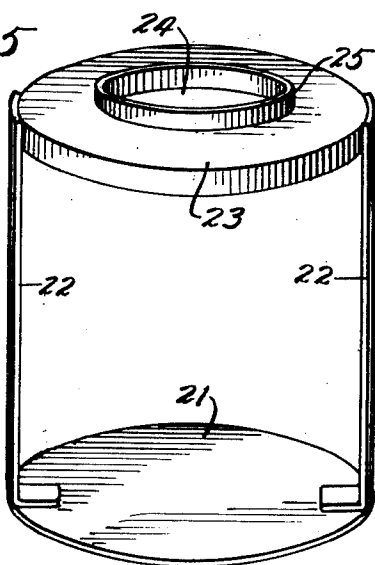
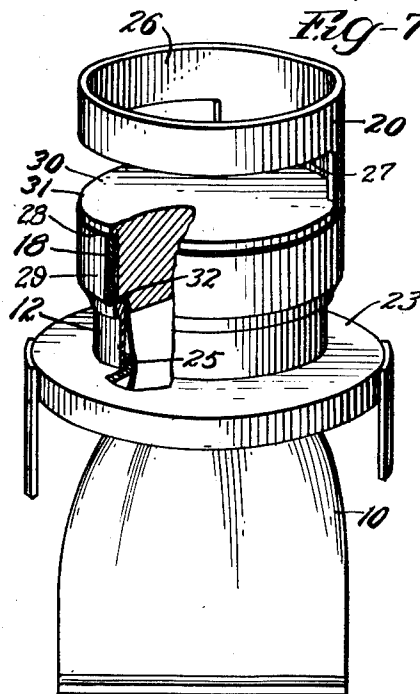


Fig-7



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NURSING UNIT ASSEMBLING TOOL

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Application July 1, 1950, Serial No. 171,695

7 Claims. (Cl. 29—235.5)

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This invention relates to nursing devices and is particularly concerned with a device or tool adapted to be used in connection with the assembly of a nursing unit of the type which comprises a flexible disposable bottle, a nursing nipple and a connecting clamping ring or fixture adapted to hold the margins of the mouth of the bottle in clamped relation with a reversible skirt on the base of the nipple.

It is a general object of this invention to provide a device for use in assembling a flexible disposable bottle with the clamping ring and nipple of a nursing unit of the type disclosed in the copending application for a Nursing Unit and Method and Apparatus for Assembling the Same, by Walter Dorwin Teague et al., Serial No. 41,554, filed July 30, 1948, now Patent Number 2,604,222, issued July 22, 1952.

Nursing units are now in use commercially which comprise a flexible disposable bottle adapted to be assembled in connected relation with the base of a nursing nipple and held connected therewith by a clamping ring over the margins of which the top portions of the bottles are reversely folded. In connection with the assembly of such units a tool or device is provided for opening the mouth of the disposable bottle and assembling the same with the margins of the bottle in reversely folded relation around the top of a clamping ring preparatory to placing thereover the skirt of the nipple which clamps the margins of the bottle on the ring. Such a device eliminates unnecessary handling of the bottle and prevents contamination thereof which is likely to occur if this assembling operation is performed with the fingers.

It is an object of the present invention to provide a simple, easily operated and efficient device for expanding the mouth of a disposable nursing bottle and assembling the same with the marginal portions adjacent the mouth thereof in reversely folded relation on a clamping ring or fixture.

It is a further object of the invention to provide a simple two-piece mouth-expanding fixture which is readily adapted for use in assembling a flexible nursing bottle with a clamping ring which connects the same in communicating relation with the nursing nipple, without danger of contaminating the portions of the bottle which are exposed to contact with the nursing fluid when the bottle and nipple are completely assembled and ready for use.

It is a still more specific object of the invention to provide a nursing bottle top expander of

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the type described wherein an inner clamping disk is arranged within a tubular outer expanding member which is provided with a peripheral slot permitting the portions thereof carrying the clamping disk to be inserted within the mouth of the bottle and rotated about an axis extending transversely of the longitudinal axis of the bottle to position the mouth of the same in expanded relation around the end edges of the device and in position for assembly with a clamping ring by inserting the body of the bottle within the ring and holding portions near the top of the bottle in engagement with the top edges of the ring while moving the outer expanding member of the device axially and in encompassing relation to the ring to position the top edges or margins of the bottle thereon in reversely folded relation.

These and other objects of the invention will be apparent from a consideration of the nursing device and assembling tool which are shown by way of illustration in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a nursing unit of the type with which an assembling tool embodying the present invention is adapted to be used;

Fig. 2 is a section to an enlarged scale taken on the lines 2—2 of Fig. 1;

Fig. 3 is a perspective view of an assembling tool incorporating the principles of the invention;

Fig. 4 is a perspective view of the inner clamping ring forming part of the nursing unit when assembled;

Fig. 5 is a perspective view of a suitable stand for supporting the nursing unit during the assembling operations;

Fig. 6 is a perspective view of the assembling tool with the bottle positioned thereon;

Fig. 7 is a perspective view illustrating the manner of positioning the bottle on the clamping ring; and

Fig. 8 is a section illustrating the bottle in assembled relation on the clamping ring just prior to the removal of the assembling tool.

Referring to the drawings there is illustrated a nursing unit of the character here involved and an assembling tool or bottle mouth expanding device which is adapted to be used in connection with the assembling of the illustrated nursing unit.

The nursing unit, which is of the character disclosed in copending application, Serial No. 41,554 referred to above, comprises a flexible dis-

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posable bottle member 10, a nursing nipple 11 and a clamping ring or fixture 12. The bottle 10 is in the form of a flattened tubular section having a transversely extending seal 13 at one end and being open at the other end. Bottles of this character are supplied commercially in connected roll form being separated into individual units by cutting the same from the end of the roll. The nursing nipple 11 is provided with a base portion 14 having a reversible skirt member 15 integrally formed therewith. The clamping ring 12 consists of a relatively narrow tubular section of rigid material which is provided at its top margins 16 with an outwardly directed peripheral flange 17, the outer diameter of which is somewhat greater than the outer diameter of the body of the same and being also substantially greater than the normal inner diameter of the skirt portion 15 of the nipple when in unassembled relation.

In using the illustrated nursing unit the bottle 10 is first assembled with the clamping ring 12 by positioning the body of the bottle 10 within the clamping ring 12 and reversely folding the margins 18 of the bottle 10 over the outer surface of the clamping ring 12. This assembling operation is preferably accomplished in a manner to be described. With the bottle 10 and ring 12 assembled, the bottle 10 is filled with the nursing fluid and the nipple 11 with the skirt 15 in upwardly turned position, as indicated in dotted lines in Fig. 2, is positioned with the base 14 resting on the top edge 16 of the clamping ring 12 and the skirt 15 is reversed to the downward position enveloping in clamping relation the reversely folded margins 18 of the bottle 10 and the clamping ring 12. An external clamping ring (not shown) may be provided for positioning exteriorly of the skirt 15 to more securely clamp the members in connected relation.

The bottle mouth expanding device or assembling tool 20 is employed in connection with the assembling of the top margins 18 of the bottle 10 with the inner clamping ring 12. The clamping ring 12 is supported for the assembling operation on a suitable stand which may be of the character illustrated in Fig. 5. Such a stand comprises a suitable base 21, upstanding frame members 22 and a top plate member 23 having a central aperture 24 defined by an upstanding shoulder or flange formation 25. The clamping ring 12 is positioned over the shoulder formation 25 as shown in Figs. 7 and 8.

The assembling tool 20 comprises a tubular section or body portion 26 which is provided with a slot 27 extending around a substantial portion of the periphery thereof intermediate the ends of the section 26. The slot 27 is of sufficient depth to permit the entry of one side of the mouth of the bottle 10 as shown in Fig. 3. The lower edge 28 of the slot 27 is spaced from the bottom end of the tubular section 26 a predetermined distance to provide a marginal portion 29 sufficient for engagement with the interior of the marginal portions 18 of the bottle 10 to a depth approximately the depth of the reversed portions thereof shown in Fig. 2. A clamping disk 30 is positioned within the lower portion of the section 26. The disk 30 is provided at its top edge with a peripheral shoulder 31 extending partially around the circumference and which is movable vertically within the slot 27. The shoulder 31 engages the lower edge 28 of the slot 27 when it is at the limit of its movement in the downward direction. The disk 30

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is provided at its lower peripheral edge with a reduced portion providing a groove or recess 32 with a downwardly facing shoulder which is adapted to seat on the top edge 16 of the clamping ring 12 when the assembling tool 20 is positioned thereon the reduced portion of the disk being adapted to extend downwardly within the ring 12. The clamping disk 30 and the tubular section 26 may, if desired, be provided with adjacent surfaces which taper slightly upwardly and outwardly to insure that the disk 30 will not be forced through the bottom of the section 26 in using the device.

The assembling tool 20 is used in the following manner: The bottle 10 is opened slightly by relative movement of the top margins 18 thereof and positioned over the bottom portion 29 of the same with one side of the bottle top in the slot 27 as illustrated in Fig. 3. The bottle 10 is then expanded by holding the top of the section 26 in one hand, with the thumb pressing the top margin of the bottle 10 against the peripheral surface of the section 26 on the side opposite the slot 27, and by pulling on the body of the bottle 10 until the other side of the margin is drawn downwardly relative to the section 26 until the margins 18 of the bottle are stretched around bottom portion 29 of the section 26 as shown in Fig. 6. With the mouth of the bottle 10 in expanded relation around the lower portion 29 of the expander 20, the body of the bottle 10 is passed through the clamping ring 12 and the aperture 24 in the supporting stand until the clamping disk 30 is positioned with the groove 32 receiving the top edge 16 of the clamping ring 12. The clamping disk 30 is then held tightly against the top edge 16 of the ring 12 and the outer expander member 26 is forced downwardly toward the plate 23 on the supporting stand to force the margins 18 of the bottle 10 into reversely folded relation around the clamping ring 12 and free of the bottom portion 29 of the tool 20. The tool 20 is then removed and the bottle 10 is in proper position on the clamping ring 12 for filling the same with the nursing fluid and thereafter completing the assembly of the nursing unit by the application of the nursing nipple 11 as previously described.

While in the illustrated device specific details of construction are referred to, it will be understood that other details of construction may be resorted to within the spirit of the invention.

I claim:

1. A device for opening and expanding the mouth of a receptacle formed of flexible sheet material, said device comprising a relatively short open-ended tubular outer member having a slot in the wall thereof extending partially around the periphery, an inner clamping disk member slidably positioned in one end of the tubular member and movable toward the other end thereof, said disk member having a peripherally extending portion projecting into the slot in the wall of the tubular member and limiting the relative movement of said members.

2. A device for opening and expanding the mouth of a flexible nursing bottle comprising an outer tubular section and an inner clamping disk, said outer section being open at one end and having a peripherally extending aperture in the side wall adjacent said open end and said inner clamping disk being movable toward and away from the open end of said outer member and having portions interengaging in the aper-

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ture in the wall of said outer member limiting the movement of said disk.

3. A device for opening and expanding the mouth of a receptacle formed of relatively flexible sheet material, said device comprising a relatively short open-ended tubular member having a slot in the wall thereof extending partially around the periphery, an inner clamping disk member slidably positioned in one end of the tubular member and movable toward the other end thereof, said disk member having a peripherally extending flange projecting into the slot in the wall of the tubular member.

4. A device for opening and expanding the mouth of a flexible bag comprising an outer tubular member open at both ends and an inner clamping member, said outer member having a peripherally extending aperture in the side wall adjacent one end thereof and said inner clamping member having a limited movement within said outer tubular member toward and away from said end thereof, a flange on said inner clamping member interengaging in the aperture in the wall of said outer member and said inner clamping member having a portion of reduced diameter at the one end thereof forming a peripheral shoulder facing in the direction of said one end of said outer member.

5. A device for expanding the marginal portions of a nursing bottle formed of relatively flexible sheet material and for assembling the same in reversely folded relation around a top fixture ring prior to placing thereon a nursing nipple having a reversible skirt which is turned down over the reversely folded marginal portions to clamp the same to the fixture ring, said device comprising a relatively short open-ended tubular section having a slot in the wall thereof extending partially around the periphery for receiving therein a portion of the top margins of the receptacle whereby the same may be stretched over the lower portion of said device to hold the receptacle in open condition for insertion of the body of the same in said fixture ring, and an inner clamping disk member positioned in one end of the tubular member and slidable axially of the tubular member relative to said end, said disk member having peripheral portions extending into the slot in the wall of the tubular member and having other peripheral portions adjacent the end of said tubular member adapted to clamp the receptacle against the top edge of the fixture ring while the tubular section is moved relative to the same to reversely

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fold the top marginal portions outwardly around said ring.

6. A device for expanding the marginal portions of a receptacle formed of relatively flexible sheet material and for assembling the same in reversely folded relation around a top fixture ring prior to placing thereon a nipple having a reversible skirt which is adapted to be turned down over the reversely folded marginal portions of the receptacle to clamp the same thereto, said device comprising an open-ended tubular member having a slot in the wall thereof extending partially around the periphery for permitting one end of the device to be inserted in the top of the receptacle whereby the top marginal portions of the receptacle may be stretched over the end portion of the device and held in open condition, and an inner clamping member slidably positioned in the tubular member and movable axially thereof, said inner member having portions extending into the slot in the wall of the tubular member and having end portions adapted to clamp the top marginal portions of the receptacle against the top edge of the fixture ring while the tubular section is moved relative to the same to reversely fold the top marginal portions outwardly around said ring.

7. A device for opening and expanding the mouth of a receptacle which is characterized by a tubular section formed of flexible sheet material, said device comprising an outer tubular member and an inner disk-like member, said outer member being open at one end and having an aperture in the side wall thereof extending partially around the periphery and in spaced relation to said open end, said inner member being positioned for axial movement toward and away from the open end of said outer member and said inner and outer members having interengaging means for limiting the axial movement of said inner member relative to said open end of said outer member and said aperture.

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