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2,629,888

DEVICE FOR CLEANING FEEDING NIPPLES FOR INFANTS

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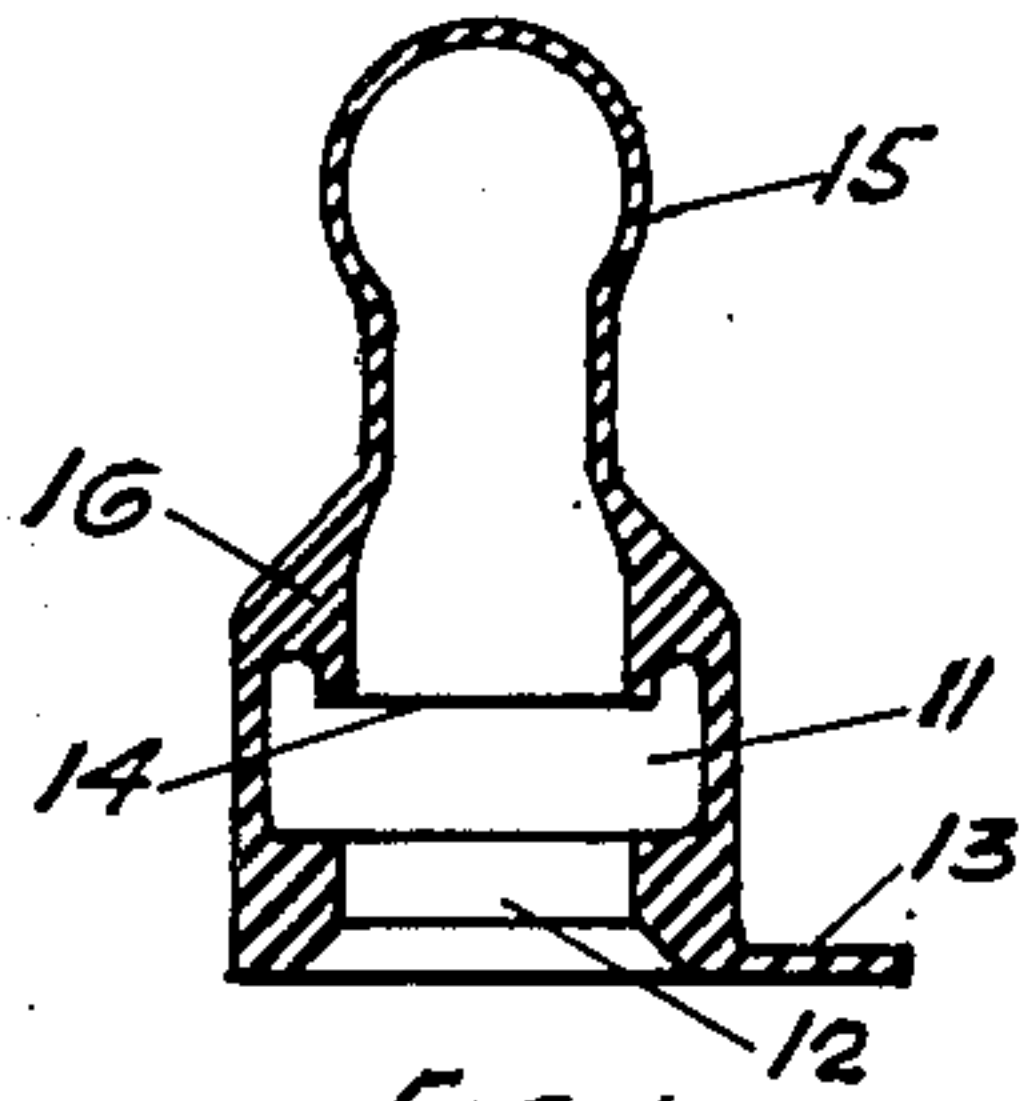


FIG. 1

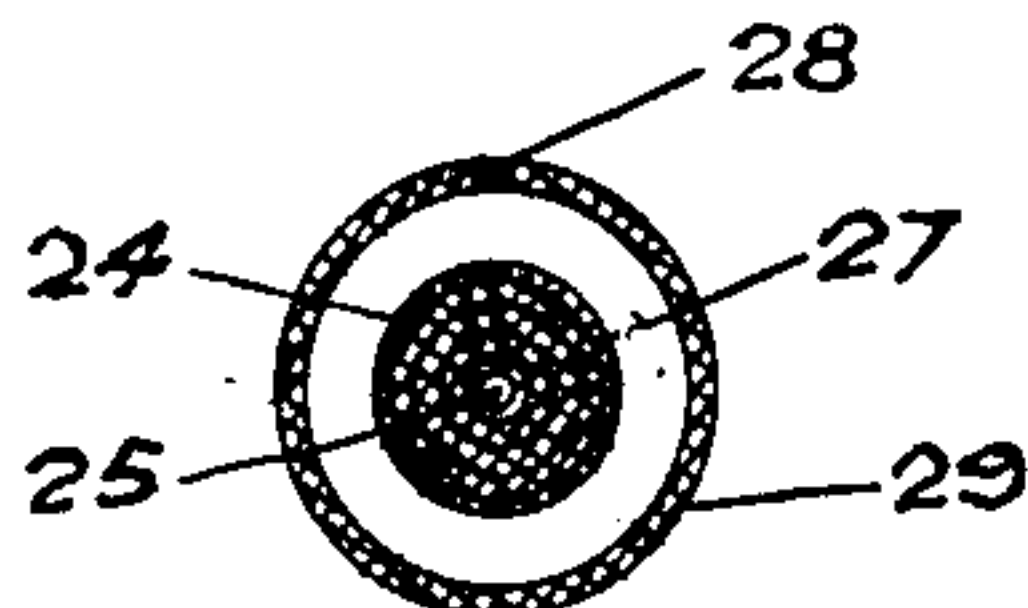


FIG. 3

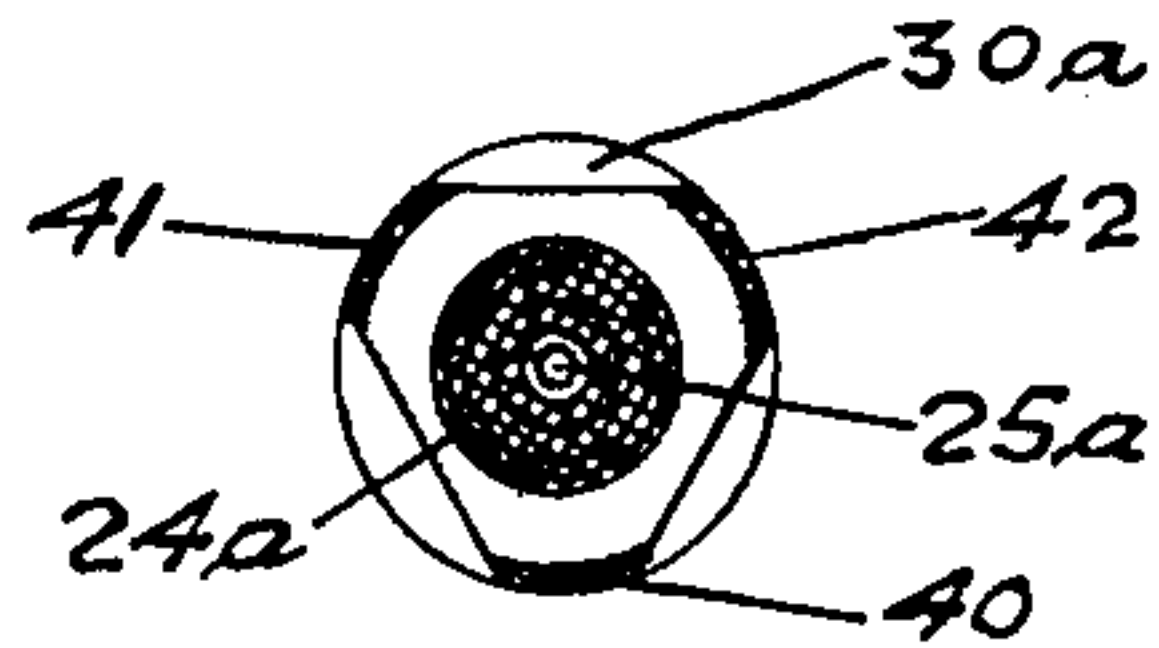


FIG. 3a

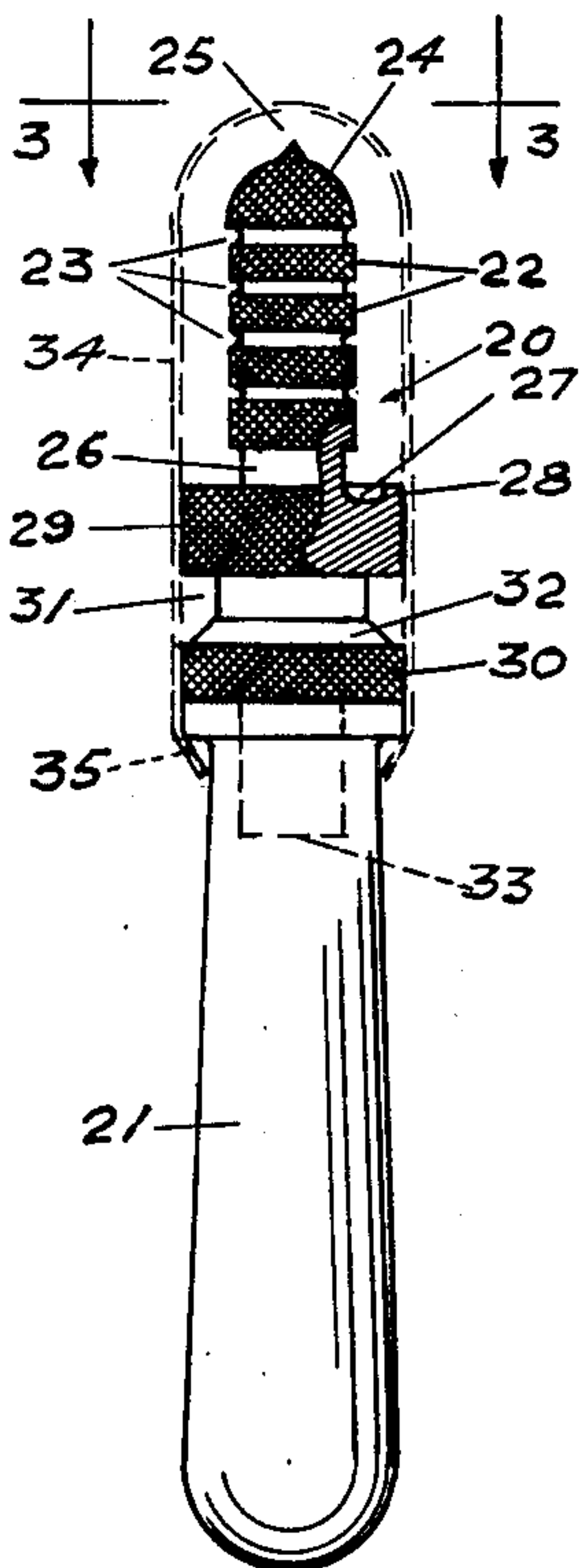


FIG. 2

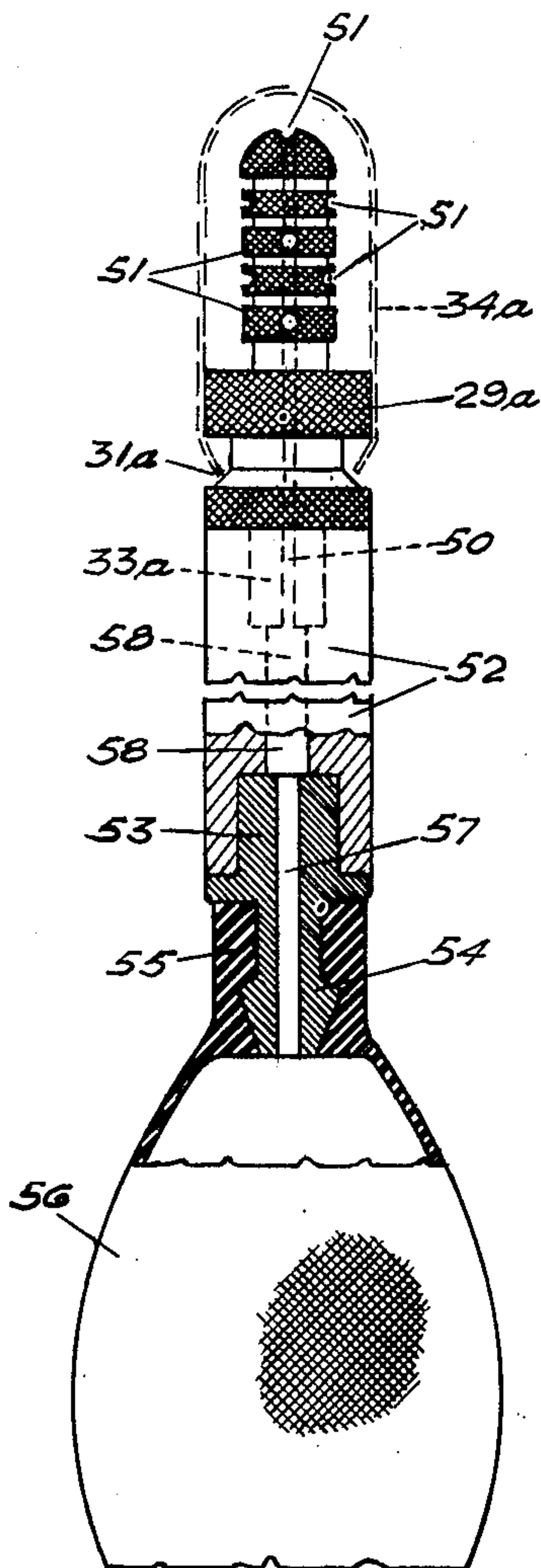


FIG. 4

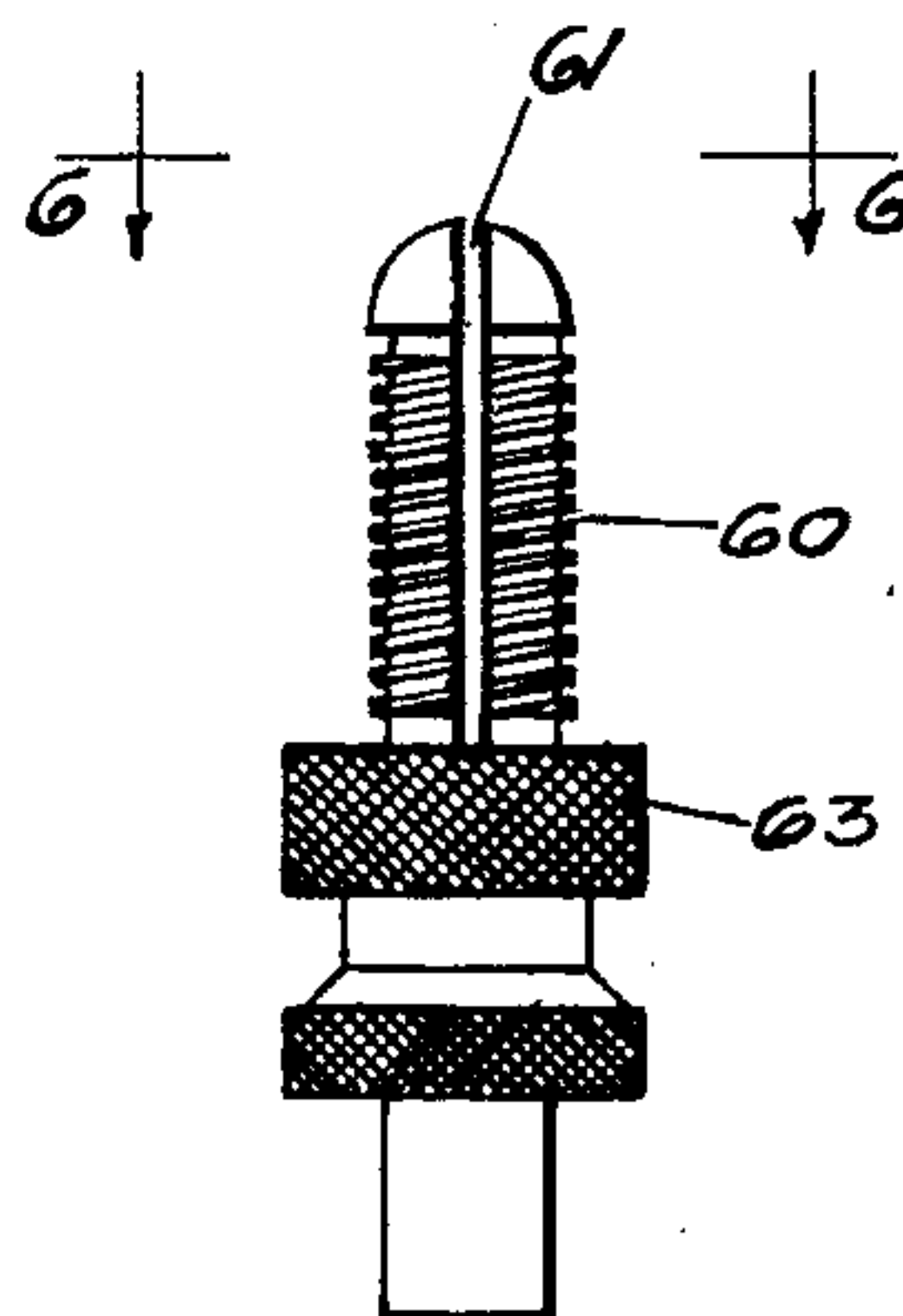


FIG. 5

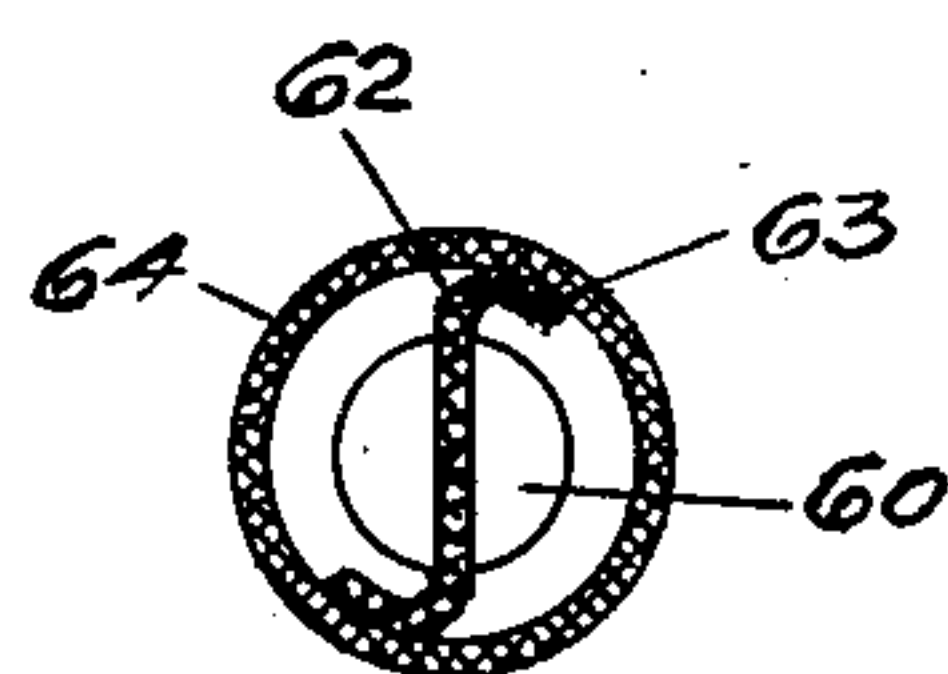


FIG. 6

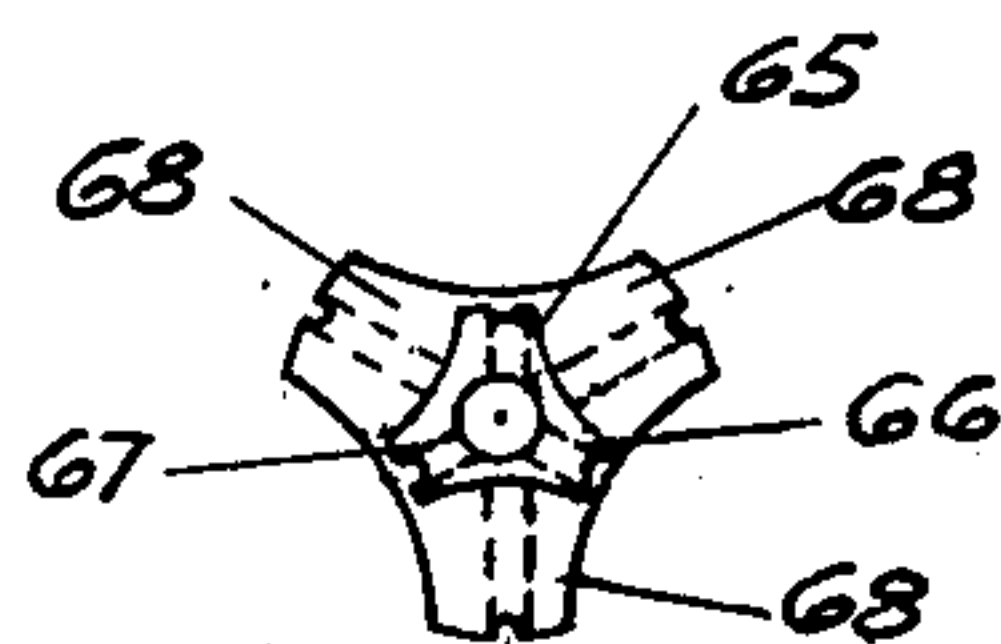


FIG. 7

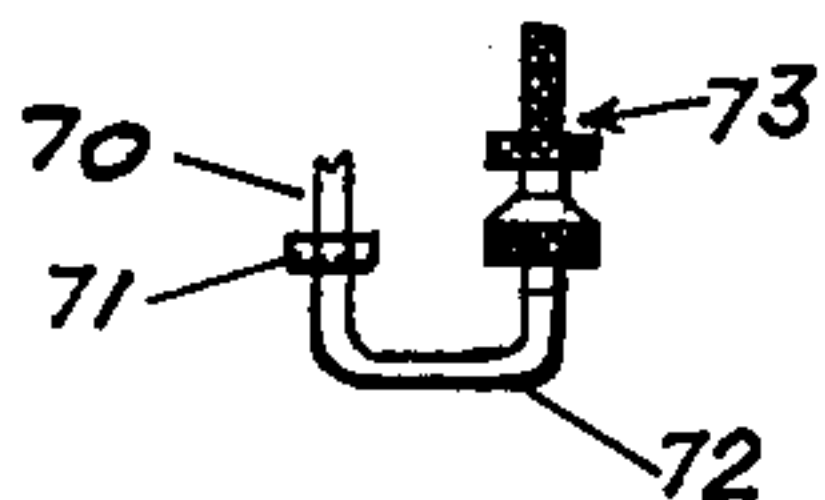


FIG. 8

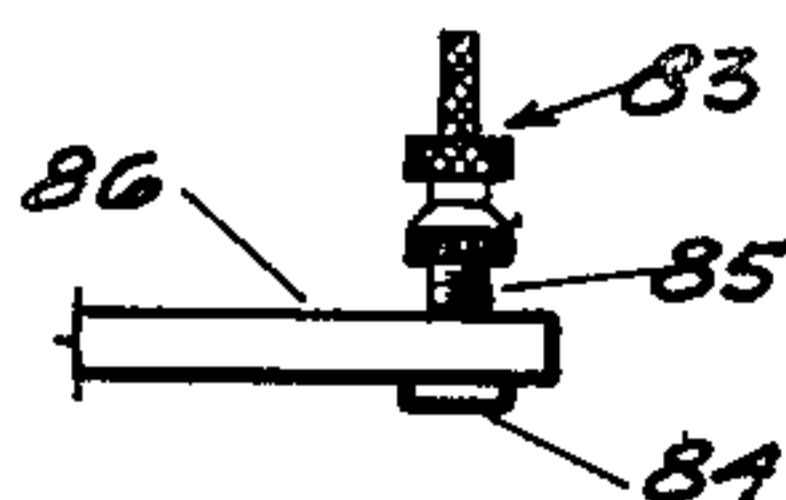


FIG. 9

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2,629,888

DEVICE FOR CLEANING FEEDING NIPPLES
FOR INFANTS

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9 Claims. (Cl. 15—136)

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This invention is concerned with a device for cleaning feeding nipples for infants.

A nipple of this type is made in the form of a rubber cap or shell and is attached to a nursing bottle to serve as a mouthpiece. In order to clean such a nipple it is necessary to turn it inside out so as to expose its inside walls for scrubbing and washing, whereupon it is manipulated in reverse order to restore it to normal feeding use.

The procedure, simple as it appears, requires strength and skill, and is generally attended with difficulties which are time-consuming and irritating. The manipulation is damaging to the fingers and may be damaging to the material of the nipple. It is unsanitary and its irritating difficulties may induce negligence in cleaning which may result in detriments affecting the well-being of the infant.

The present invention furnishes a device adapted to clean a nipple of the above noted type in an effortless and sanitary manner, and without requiring the bothersome manipulations intimated in the foregoing paragraphs.

The various objects and features of the invention will be brought out in the detailed description which is rendered below with reference to the accompanying drawings. In these drawings,

Fig. 1 shows a well known feeding nipple in section;

Fig. 2 illustrates in diagrammatic manner, partly in elevation and partly in section, an embodiment of a cleaning device made in accordance with the invention;

Fig. 3 is a top view of the device as seen when looking in the direction of the arrows 3—3 in Fig. 2;

Fig. 3a indicates a modification in a showing analogous to Fig. 3;

Fig. 4 represents another embodiment, partly in elevation and partly in section;

Fig. 5 shows a further embodiment;

Fig. 6 is a top view of the device, Fig. 5, as seen when looking in the direction of the arrows 6—6; and

Figs. 7, 8 and 9 indicate modifications.

Like parts are numbered alike throughout the drawings. Known details and elements will be referred to only to the extent required for conveying an understanding of the invention.

The nipple shown in Fig. 1 is well known and universally used. It is made of a good grade of rubber commonly employed for sanitary and medical appliances. The nipple comprises a lower portion forming a chamber 11 with an angular, re-

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stricted opening 12. Numeral 13 indicates an extension flap which facilitates manufacture of the nipple as well as its handling. Into the chamber 11 projects an annular lip or extension 14 forming an annular axially inwardly extending recess. The mouthpiece 15 extends axially from the lower portion, as shown. The nipple is attached to the top of the neck of a nursing bottle, which enters into the chamber 11, its rim extending into the annular space or recess formed by the axially projecting extension 14. Further details of the nipple, per se, may be had from U. S. Patents Nos. 1,748,731 and 1,957,969.

The cleaning of such a nipple, which is shown in Fig. 1 in approximately full size, that is, its turning inside out for cleaning purposes, is not as easy a matter as could be inferred from the simple requirement as stated. Insertion of a finger clear into the interior of the mouthpiece 15 would obviously facilitate the turning inside out by simply rolling the nipple over the inserted finger. This is not possible because the inside of the mouthpiece 15 is of relatively small diameter, smaller than the size of the finger of an average adult. Accordingly, a finger inserted into the opening 12 will just about reach to the depth where its tip engages the annular extension 14. The material forming the mouthpiece 15 must now be pressed and squeezed toward the bottom portion of the nipple, while the bottom portion is pulled and stretched laterally outwardly and pressed in opposite direction to curl it around the relatively massive section 16. After the lower portion of the nipple is finally curled inside out and placed around the section 16, further pulling and stretching is required, and at the same time pressure is exerted on the mouthpiece 15 to force it into its inside out position relative to the bottom portion.

In order to realize the difficulties of the operation, it must be considered that the inside walls of the nipple are covered with a slippery film of food residue which prevents a firm grip. Fingernails interfere with the proper manipulation. They may be damaged or may in turn inflict damage on the nipple. The operation requires a surprising amount of strength and, for efficient performance, an amount of skill which cannot be assumed in an uninitiated person and, accordingly, has to be acquired by irritating and painful repetition. The unsanitary aspects of the operation result not only from the handling of the nipple under such trying circumstances—it must be considered that the nipple must be manipulated in reverse order after cleaning it—but

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from the negligence and perhaps resort to artifices which the difficulties may induce in a busy and harassed person who is young and inexperienced in the task. Among artifices that may be resorted to, to save the fingers and to ease the task, may be mentioned the use of extraneous objects to assist in forcing the mouthpiece into its inside out position for cleaning, and then again into its normal position after cleaning, which may damage the nipple and introduce foreign matter. If the scrubbing is neglected, the food residue accumulating within the nipple may adversely affect the infant by producing digestive disorders and abdominal distress. Severe neglect may have serious consequences.

All these difficulties are remedied by using a cleaning device made in accordance with the invention.

The new device, as shown in Fig. 2, comprises a cleaning or scrubbing member generally indicated by numeral 20, which is associated with a handle 21.

The general shape of the scrubbing member conforms substantially to the inside configuration of the nipple. It comprises a shank portion carrying roughened, grooved or knurled annular sections 22 separated by grooves such as 23, and a grooved or knurled top 24 which may be provided with a small projection 25. The shank is reduced at 26 and terminates in an annular axially extending shallow depression or recess 27 formed by the annular extension or lip 28 of the knurled or grooved barrel section 29. The face or rim of the annular extension 28 is likewise roughened or knurled as indicated in Fig. 3.

A knurled or roughened bottom section 30 is provided which is separated from the barrel section 29 by an angular groove 31. The inclined wall 32 of the groove 31 may be suitably roughened or knurled, if desired. From the bottom section 30 extends the fastening or coupling section 33 which connects with the handle 21.

The cleaning member may be made of any desired and suitable non-corrosive material, preferably a molded plastic material. Stainless steel or the like may also be used. The handle may likewise be made of any desired and suitable material, for example, a molded plastic material. The coupling extension may be tapered, if desired, and may be cemented within a similarly tapered recess within the handle. If desired the handle may be provided with a coupling extension for insertion into a recess in the cleaning member, instead of providing an extension on the cleaning member for insertion into a recess in the handle. Both the cleaning member and the handle may be made integrally.

A cap or cover in the form of a shell made of suitable material is indicated in Fig. 2 in dotted lines, marked by numeral 34. The cover may be provided with a longitudinally extending slot or slots near its free end, and may be crimped as indicated at 35 so that it may be easily attached and removed. It protects the working parts of the cleaning member against contamination when not in use.

The various operating parts of the cleaning or scrubbing member, as described above, are dimensioned somewhat smaller than the inside of the nipple so as to permit relatively effortless insertion. The nipple is simply slipped over and onto the cleaning member to position the shank 20 within the cavity of the mouthpiece 15 and the barrel section 29 within the nipple section 11. The projection 25 extending from the top of the

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shank is intended for entry into the suction opening of the nipple. The bottom portion of the nipple, which carries the restricted opening 12, will then be positioned within the groove 31 of the cleaning member and the annular lip or extension 28 of the cleaning member with its grooved or knurled face will lie in the annular recess formed by the axially depending extension 14 of the nipple.

The cleaning operation will be apparent from the foregoing description of the structure. The nipple is held on the cleaning member by one hand and is worked against it by alternate, gentle compression and relaxation, that is, squeezing it rhythmically against the cleaning member while the latter is manipulated by the other hand in a composite, mainly angular motion to cause scrubbing action of the roughened or knurled surfaces on the inside walls of the nipple for the purpose of loosening up and removing the film of food residue deposited thereon. The projection 25 exerts a scrubbing action in the suction passage of the nipple.

The cleaning operation may be carried on within a body of liquid—water alone or water containing a suitable sterilizing agent—or within a sanitary or sterilizing solution, or under running water. The nipple may be repeatedly removed from the scrubbing member, rinsed and released for further scrubbing until clean. The cleaning operation is facilitated by the coaction of the parts of the cleaning member with the elastic walls of the nipple which is gently worked and squeezed in a kneading action against the cleaning member, producing a pumping-like operation which tends to expel food residue and to circulate liquid through the nipple while it is being scrubbed and cleaned.

The cleaning device may be separately brushed to remove from its crevices and cleaning surfaces any food residue, and may be put in its assigned place after replacing the cover to protect it.

The entire operation is relatively effortless, efficient and sanitary. It obviates the cumbersome turning inside out of the nipple and all the difficulties and irritations connected therewith, and also saves the fingers as well as the nipple from damage.

The modification shown in Fig. 3a applies to the shape of the intermediate or barrel section of the cleaning member. The numerals used in Fig. 3a, with the suffix "a," indicate parts appearing in Figs. 2 and 3 without suffix. Accordingly, 30a denotes the knurled bottom section; 24a, the top of the shank; 25a, the projection extending from the top. The section 29 of Figs. 2 and 3 appears in Fig. 3a in angular shape, forming a number of knurled or roughened sectors 40, 41 and 42, each having an axially and radially extending roughened or knurled tooth for cleaning and scrubbing engagement with the lateral and radial walls of the recess formed by the annular extension 14 of the nipple shown in Fig. 1.

The embodiment illustrated in Fig. 4 provides means for injecting liquid, water or water containing a sterilizing agent, or a sterilizing solution into the nipple during the cleaning thereof.

The cleaning member of the embodiment Fig. 4 corresponds in general to the one shown in Figs. 2 and 3. The various corresponding sections are easily identified and have therefore not been numbered. The scrubbing member is, however, provided with a central boring 50 which communicates with passages in the shank terminating on the outside as indicated at 51. According-

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ly, liquid conducted into the boring 50 will escape through the passages 51 and exert a rinsing, irrigating and cleaning function. Passages corresponding to the passages 51 may, of course, also be provided in the intermediate scrubbing section 29a of the embodiment, Fig. 4.

The scrubbing member is associated with one end of a coupling or handle member 52 carrying at its other end a bushing-like closure 53 provided with an extension 54 which is fitted and, if desired, cemented within the neck 55 of a suitable bulb, e. g., a rubber bulb 56. The bushing-like member 53 has a central boring 57 which communicates with a central boring 58 in the coupling or handle 52 and hence with the boring 50 in the cleaning member.

The parts are suitably shaped and joined so as to furnish a unitary structure. The extension 33a of the cleaning member (corresponding to extension 33 of Fig. 2) may be tapered and cemented within a corresponding recess in the handle 52. The same applies to the bushing 53. The parts may also be screw-threaded if desired. The handle 52 may be made integral with the bushing-like member 53 and its extension 54, and form a unitary structure therewith. The coupling 52 may be dispensed with and the extension 33a may be formed similar to the extension 54 for direct connection with the bulb 56. These and other structural modifications are well within the disclosure and need not be further discussed.

A cover 34a is indicated in Fig. 4 in dotted lines corresponding to the cover 34 shown in Fig. 2 and having identical functions. In case of the embodiment Fig. 4, the cover is crimped at its free end for clamping engagement within the groove 31a of the cleaning member. The cover may, of course, be made longer so as to extend over the entire scrubbing member including its lowermost cleaning section substantially in accordance with the showing of Fig. 2.

The operation of the embodiment, Fig. 4, is similar to the one described in connection with the embodiment Fig. 2; that is, the nipple to be cleaned is simply slipped over the roughened shank and over the roughened enlargements of the device. The handle 52, which is rigidly connected with the cleaning member, furnishes a grip for working the cleaning member with respect to the nipple in order to carry out the cleaning operations substantially as described in connection with the embodiment Fig. 2. In the present case, however, the bulb 56 may be filled with the cleaning fluid prior to the cleaning operation and the fluid may be expelled, as desired, during the cleaning operation, by working the bulb with the small and ring fingers against the palm of the hand, while the index and middle fingers and the thumb hold the handle 52 or, in the absence of the handle, the neck of the bulb.

Fig. 5 shows a cleaning member essentially constructed like the cleaning members of the embodiments Figs. 2 and 4, but having a differently roughened surface on the shank 60, namely, in the form of a spiral or helical, or thread-like groove. A transverse slot 61 may be provided, which extends throughout the shank 60. In this slot may be inserted a piece of gauze or the like, noted in Fig. 6 at 62. The helical groove may be dispensed with when using the gauze. The intermediate cleaning section 63 is formed just like the intermediate or barrel sections 29 and 29a of Figs. 2 and 4, comprising a roughened rim 64 which corresponds to the similarly roughened lip

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28 of Figs. 2 and 3. The structure shown in Fig. 3a may be substituted.

The cleaning member, Fig. 5, may be provided with a suitable handle corresponding to the embodiment Fig. 2, or may coact with an irrigating device such as the bulb 56 of Fig. 4.

Helical or spiral grooves such as shown in Fig. 5 may also be provided on the shanks of the cleaning members shown in Figs. 2 and 4 instead of the annular grooves. Annular, spiral or helical grooves may also be provided on the intermediate or barrel sections 29, 29a and 63 shown in Figs. 2, 4 and 5, respectively. The helical groove, if provided, in addition to the scrubbing function, will operate in the nature of a conveyor for expelling the material scrubbed out from the inside of the nipple.

Fig. 7 shows a section through the shank of an embodiment employing a different manner of roughening the surfaces of the scrubbing member. The cleaning or scrubbing member is in this case preferably molded from a suitable plastic material in the manner of a syringe. The shank is longitudinally fluted to form a number, e. g., three generally radially projecting longitudinally extending ribs 65—66—67. These ribs may converge on the tip of the shank. Each rib is fluted edgewise or indented to form a central channel and two wiper-like longitudinally extending surfaces. The radius of one of these surfaces may exceed that of the other. The enlargement corresponding to the sections 29, 29a and 63 of the previous embodiments is formed likewise, with a number, for example, with three ribs 68, each rib being longitudinally edgewise indented or fluted to form a channel and two wiping surfaces of identical or of different radii. The ribs in the enlarged section extend up and around its rim which terminates in a shallow annular groove such as 27 in Fig. 2. The ribs in the shank as well as the ribs in the enlargement may be inclined to the axis or may be arranged in the form of a steep spiral. Radial borings communicating with a central passage convey cleaning fluid to the various edgewise extending channels formed on the ribs. The overall radii of the ribs carried on the shank and of those carried on the enlarged section are preferably somewhat greater than the interior radius of the mouthpiece of the nipple and of its chamber, respectively. The nipple is slipped over the structure as in the previous cases, and is gently squeezed and kneaded against it while the cleaning member is angularly moved in a rotating motion. The wiping edges of the ribs remove the food residue deposited on the inside of the nipple and fluid injected into the channels in the manner described in connection with the structure Fig. 4 carries it away. The longitudinal fluting takes in this embodiment the place of the roughening of the cleaning surfaces of the scrubbing member. The action is gentle and avoids scratching of the inside surfaces of the nipple even in the presence of considerable or inadvertent force applied in the cleaning operation.

The device may be furnished as described or may be constructed, in any of the embodiments, as a permanent appliance for a hospital nursery or the like, either in attachment to a faucet or supplying cleaning liquid by the operation of a valve, which may be either hand-operated or treadle-operated. In this case the device is preferably made in the form of a fitting which may be generally J-shaped, as shown in Fig. 8. The vertical bar of the J carries the cleaning member

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73 with its shank, its intermediate and bottom sections, with a coupling 72 representing the bottom lateral and upwardly turning portion of the J which may be attached to a faucet 71, e. g., by a nut 74, or may be in permanent attachment with a liquid supply conduit.

A modification of a permanent cleaning structure of this type is shown in Fig. 9, comprising a liquid supply conduit 86 extending laterally from a suitable mounting and containing a boring through which extends a coupling member projecting from the bottom of the cleaning member 83. The coupling is provided with a lateral boring coacting with the fitting in the manner of a valve. It has a collar 84 at the bottom and an intermediate collar spaced from the fitting by a suitable spring 85, thus holding the cleaning member normally upwardly and the valve closed. The nipple is attached for cleaning and slight downward pressure is exerted to depress the scrubbing member relative to the fitting 86, against the pressure of spring 85, to open the valve so as to supply the cleaning fluid.

The conduit 86 in Fig. 9 may be provided with a swivel-like valve joint in place of the valve arrangement shown. Fluid will then be supplied responsive to angular displacement of the member 86 after placing the nipple on the cleaning member 83.

Any one of the embodiments shown in Figs. 2 to 7 may be used in the structures illustrated in Figs. 8 and 9.

A modification may be made in which the handle of the scrubbing member is made hollow and contains a sterilizing fluid or agent and in which the scrubbing member, per se, is normally deposited when not in use, projecting into the agent or fluid, and is removed from it and placed thereon in reversed position, projecting from the handle for use.

Changes may be made within the scope and spirit of the appended claims.

I claim:

1. A device for cleaning infant feeding nipples of the type made of rubber or the like and having an elongated hollow mouthpiece and an enlarged transversely extending end portion forming an annular interior chamber for receiving the rim of the neck of a nursing bottle in engagement therewith, said chamber being defined at the inner end thereof by an annular lip projecting axially in continuation of the inside wall of said mouthpiece and forming thereat an annular axially inwardly extending recess and being defined at the other end by a radially inwardly projecting annular wall forming a central opening for inserting the rim of the neck of the nursing bottle, said device comprising a scrubbing member forming a shank and an enlargement generally radially extending therefrom at the inner end thereof for insertion into said hollow mouthpiece and into the interior chamber, respectively, of such nipple, the diameter of said shank and said enlargement, respectively, being slightly smaller than the inside diameters of said hollow mouthpiece and said chamber, respectively, said enlargement being axially re-

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cessed to accommodate said annular axially extending lip within said chamber and forming an arcuate axially extending lip for engagement with the bottom of the recess formed by the lip within said chamber, the surfaces of said shank and said enlargement being roughened for the purpose of exerting a scrubbing action on the entire interior wall surfaces of such nipple from end to end thereof to remove food residue deposited thereon.

2. The structure and combination defined in claim 1, wherein said scrubbing member is provided with annular axially spaced grooves.

3. The structure and combination defined in claim 1, wherein said scrubbing member is provided with a helically extending groove.

4. The structure and combination defined in claim 1, wherein said scrubbing member is provided with a transverse slot for receiving a scrubbing element such as gauze or the like.

5. The structure and combination defined in claim 1, together with a centrally axially extending projection disposed at the free end of said shank.

6. The structure and combination defined in claim 1, together with a central boring formed in said scrubbing member and angular passages connected with said boring, and means for supplying a cleaning fluid to said boring for discharge through said passages.

7. The structure and combination defined in claim 1, together with means associated with said scrubbing member forming a hollow handle containing a clearing agent.

8. The structure and combination defined in claim 1, together with a coupling associated with said scrubbing member, and means for supplying cleaning fluid therethrough for discharge into the nipple placed for cleaning onto said scrubbing member.

9. The structure and combination defined in claim 1, wherein an annular groove is provided in the enlargement of said scrubbing member outside thereof to form two axially adjacent sections, one for scrubbing insertion into the chamber of the nipple and an end section for scrubbing the bottom wall of the nipple adjacent the central opening thereof which terminates in the chamber therein.

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