A. GILLIES.

TEAT CUP.

APPLICATION FILED DEC. 24, 1910.

1,024,847. Patented Apr. 30, 1912.

Fig. 1.

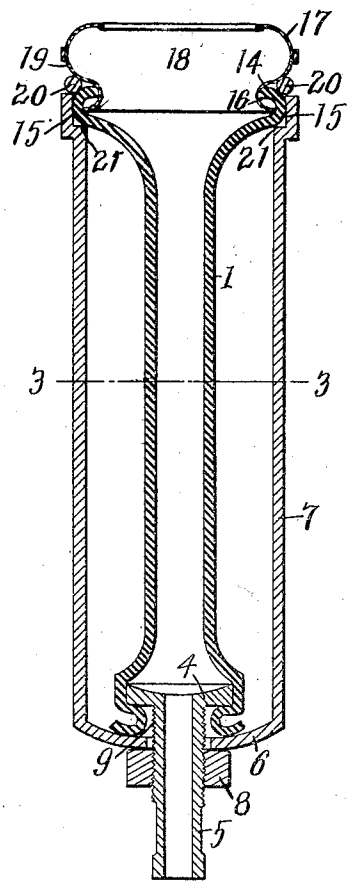


Fig. 2.

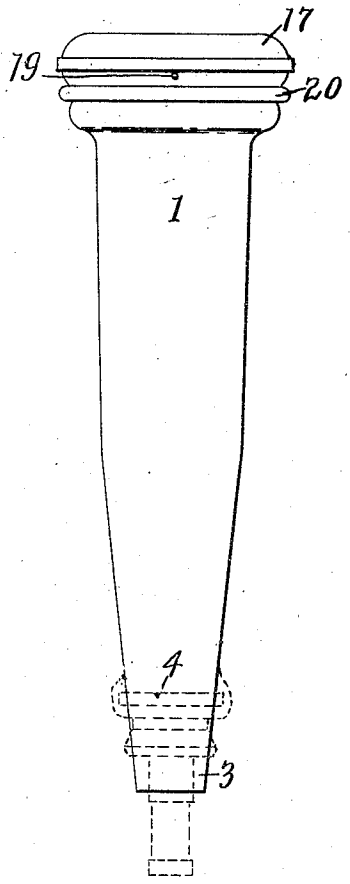


Fig. 3.

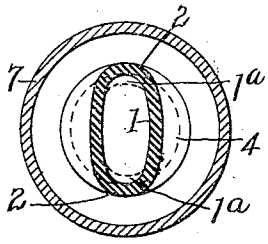
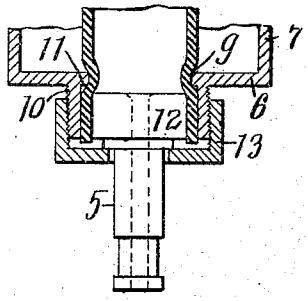


Fig. 4



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UNITED STATES PATENT OFFICE.

ALEXANDER GILLIES, OF HEIDELBERG, VICTORIA, AUSTRALIA, ASSIGNOR TO D. H. BURRELL & COMPANY, OF LITTLE FALLS, NEW YORK.

TEAT-CUP.

1,024,847. Specification of Letters Patent. Patented Apr. 30, 1912.

Application filed December 24, 1910. Serial No. 599,090.

To all whom it may concern:

Be it known that I, ALEXANDER GILLIES, a subject of the King of Great Britain, residing at Banksia Street, Heidelberg, in the State of Victoria, Commonwealth of Australia, dairyman, have invented Improvements in Teat-Cups, of which the following is a specification.

This invention relates to improvements in double-chambered teat cups comprising an outer casing which is rigid, or nearly so, and an inner flexible tube of rubber, the outer chamber being formed between the casing and the inner tube and the inner chamber being formed within the inner tube. A teat cup of this general character is shown, for instance, in my Patent No. 918,438, April 13, 1909.

The objects of the invention are to render the parts of the cup readily separable for cleaning or repairing, to reduce the wear on the inner tube which arises from the movements of the tube caused by the intermittent deflation and inflation thereof, and to improve the squeezing action of the tube upon the teat when the tube is deflated and collapsed.

In the accompanying drawings: Figure 1 is a vertical section of a teat cup embodying these improvements. Fig. 2 is a detached elevation of the inner tube and mouthpiece. Fig. 3 is a horizontal section on line 3—3, Fig. 1. Fig. 4 is a fragmentary vertical section, showing the preferred construction of the connection between the lower portions of the tube and casing.

Like reference characters refer to like parts in the several figures.

Referring to Figs. 1, 2 and 3, the inner flexible tube 1 is flattened on two sides or made oval or elliptical in cross section nearly throughout its length, so that the tube has narrow rounded edge portions 2 and practically flat sides. The lower parts of these edge portions converge downwardly so that the lower portion 3 of the tube tapers downwardly. 7 represents the outer casing which is provided with the usual appurtenances and to which the inner tube is secured at its upper and lower ends by practically air-tight joints. By tapering the lower portion of the tube a close connection of the lower end of the tube with the casing is secured and when the tube has become stretched by use a piece may be cut off from the lower end of the tube and the tube still retain the tapering shape. The lower end of the inner tube may be secured to the casing, as represented in Fig. 1, by means of a ferrule or nipple comprising a flanged head or cup 4 which is inserted within the tube and a tubular portion 5 to which the milk pipe (not shown) is attached in the usual way. The lower end portion of the inner tube is folded or tucked in under the head 4 and drawn against the bottom 6 of the outer casing by a nut 8 which bears against the under side of the bottom and is applied to the tubular portion 5 of the ferrule. Or, as represented in Fig. 4, the lower portion of the inner tube may extend through the opening 9 in the bottom of the casing, which opening is slightly smaller in diameter than the tube so that the latter requires to be squeezed to be passed through. The bottom of the casing is provided with a collar 10 arranged outside of a shoulder 11. This collar is externally threaded and receives an internally threaded cap 13 which bears against the under side of the head 12 of the ferrule and presses the latter upwardly, thereby seating the lower portion of the inner tube tightly against the shoulder in the bottom portion of the casing. This annular shoulder projects inwardly and extends around the opening 9. The inner tube in being drawn through this opening impinges against this shoulder and this renders it easy to draw the inner tube taut. This shoulder also holds the inner tube in position against the upward pressure which is exerted by the head 12 of the ferrule when the latter is pushed up into the inner tube. With this construction the lower end of the inner tube becomes flared and is jammed by the head of the nipple or ferrule against the bottom portion of the outer casing. The tapering form of the inner tube permits a piece of the lower end to be removed when the tube has stretched without interfering with the close connection of the tube to the casing. As shown in Fig. 1, the upper edge 14 of the inner tube is formed with a circular outward swell or bulge 15 and is stretched over a beaded or outwardly turned flange 16 forming the lower portion of a rigid mouthpiece 17 which may be of metal or other suitable material. This swell or bulge forms in the

upper portion of the mouthpiece an air chamber 18 which is provided with a small air inlet 19. The inner tube may be secured in position by a rubber ring 20 or other convenient means. The outer casing is provided near the top with an internal shoulder 21 upon which the top portion of the inner tube is seated by the flange 16 of the mouthpiece as the inner tube is drawn down by the bottom fastening. In this manner practically air-tight joints are formed at the top and bottom of the teat cup and the connection of the parts is such that they can be readily separated for cleaning and repairing and can be easily reassembled.

The flattened or oval form of the flexible inner tube causes the bending of the tube in collapsing and inflating to take place along the rounded narrow sides 2 of the tube, whereby the wear on the rubber is greatly reduced and the life of the tube extended, as compared with a tube which is substantially round in cross section. These narrow rounded sides are much better adapted to stand the constant bending back and forth of the tube which takes place by reason of the air pulsations than the wall of a substantially round tube.

In the use of this cup intermittent suction is, or air pulsations are, usually applied to the outer chamber and a constant suction to the inner chamber. When the squeeze against the teat occurs by the collapsing of the inner tube, the latter is temporarily closed below the point of the teat and the teat is momentarily protected against the action of the vacuum, while air is admitted through the mouthpiece. This action is more effective with this flat tube than with the old round tubes which have been used for years. Furthermore, spaces are left down each side between the teat and the inner tube, as indicated in Fig. 3, where the teat is indicated by dotted lines, and this facilitates the downward travel of the air which enters the mouthpiece.

I claim as my invention:

1. In a teat cup, the combination with a rigid outer casing, of an inner flexible tube which is secured at its upper and lower ends to said casing and constructed with two opposing flexible flat sides extending practically from one end portion of the tube to the other, substantially as set forth.

2. In a teat cup, the combination with a rigid outer casing, of an inner flexible tube which is secured at its upper and lower ends to said casing and constructed with two opposing flexible flat sides, the side portions of the tube converging downwardly in the lower part of the tube, substantially as set forth.

3. In a teat cup, the combination with an outer casing and an inner flexible tube, of a rigid mouthpiece having an outwardly turned lower portion with which the upper end of the flexible tube is engaged and which is arranged within said outer casing, substantially as set forth.

4. In a teat cup, the combination with an outer casing having near its top an internal shoulder and an inner flexible tube, of a rigid mouthpiece having an outwardly turned lower portion with which the upper end of the flexible tube is engaged and which is seated on said shoulder together with said inner tube, substantially as set forth.

5. In a teat cup, the combination with an outer casing and an inner flexible tube, of a rigid mouthpiece having an upper outwardly bulging portion which is concave on its inner side and forms an annular air chamber, the latter provided with an air inlet and said mouthpiece having an outwardly turned lower portion with which the upper end of the flexible tube is engaged, substantially as set forth.

6. In a teat cup, the combination with an outer casing having in its bottom an opening provided with a seat, of an inner flexible tube arranged with its lower end in said opening, and means for pressing the lower end of said tube against its seat in said opening, substantially as set forth.

7. In a teat cup, the combination with an outer casing having in its bottom an opening provided with a seat and having a threaded collar surrounding said opening, of an inner flexible tube arranged with its lower end in said opening, a headed ferrule arranged within the lower end of said tube, and a threaded cap applied to said collar, engaging said ferrule, and pressing said flexible tube against its seat, substantially as set forth.

8. In a teat cup, the combination with an outer casing having in its bottom an opening surrounded by an inwardly projecting shoulder, of an inner flexible tube arranged with its lower end in said opening, and means for pressing the lower end of said tube against said shoulder, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALEXANDER GILLIES.

Witnesses:
EDWARD WATERS,
EDWARD N. WATERS.