No. 774,579. PATENTED NOV. 8, 1904.

A. GILLIES.

PNEUMATIC TEAT CUP.

APPLICATION FILED APR. 25, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

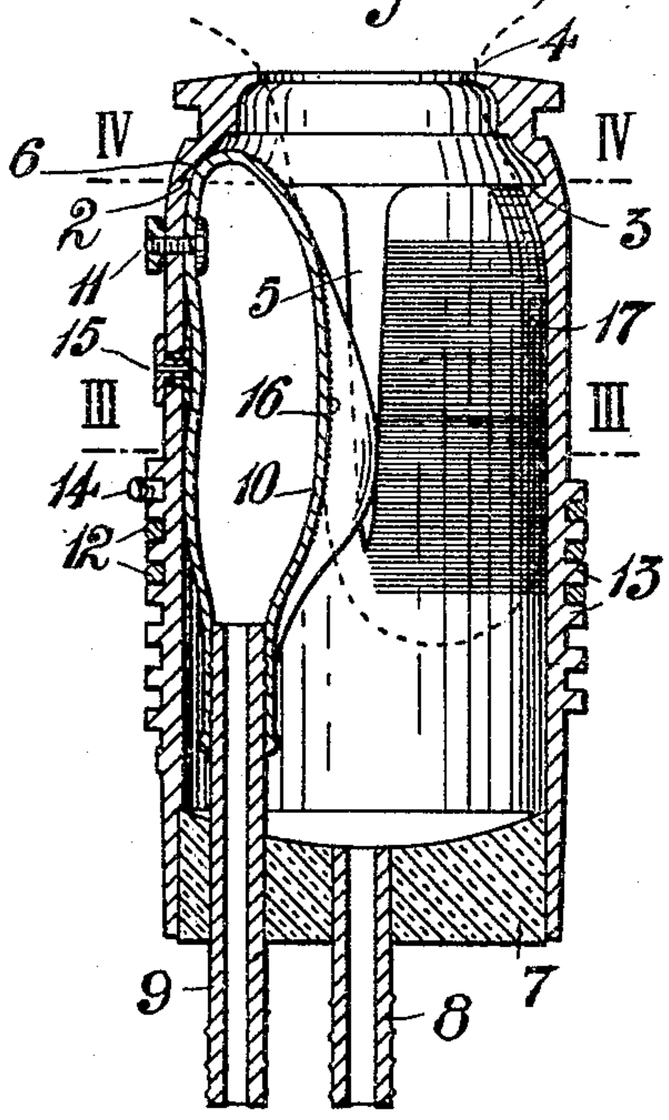


Fig. 2.

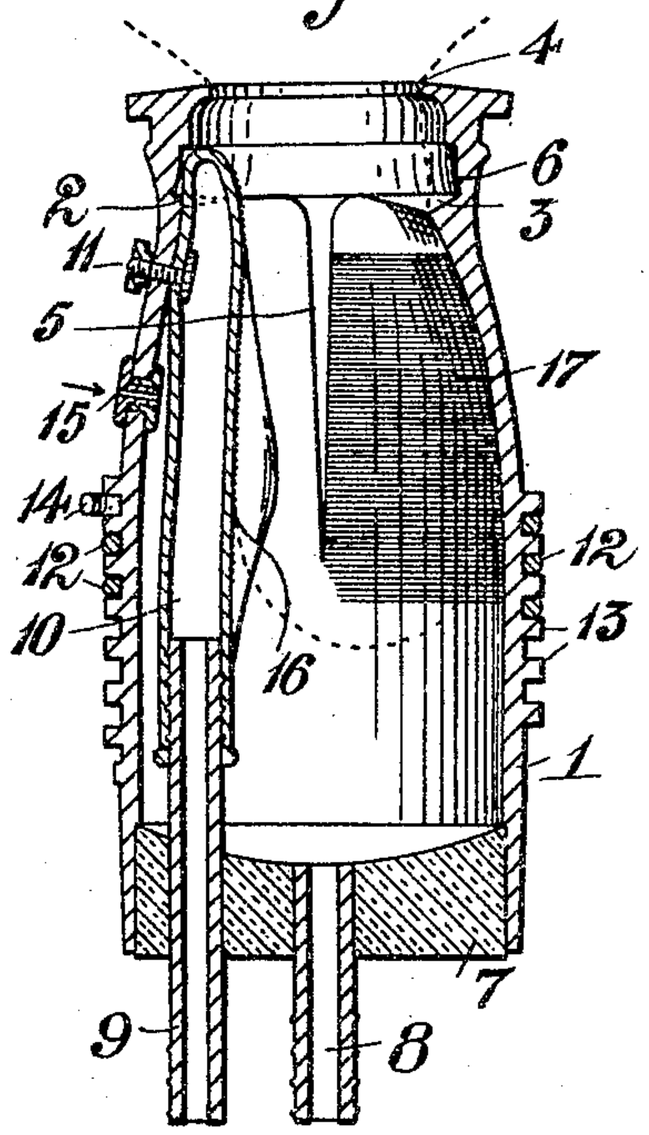


Fig. 3.

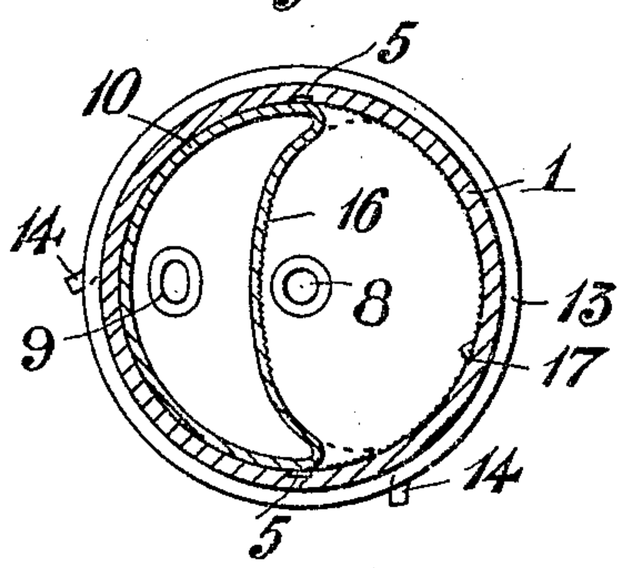
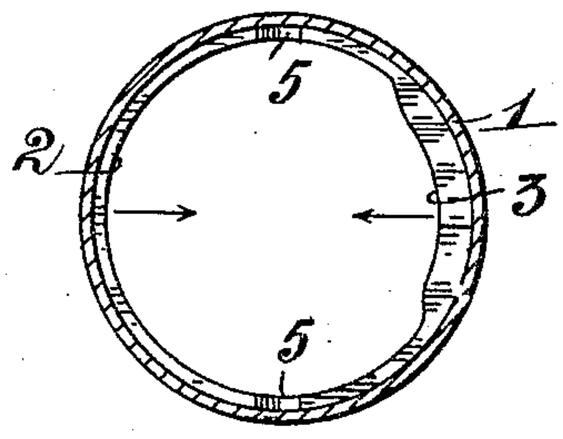


Fig. 4.



Witnesses

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PNEUMATIC TEAT CUP.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

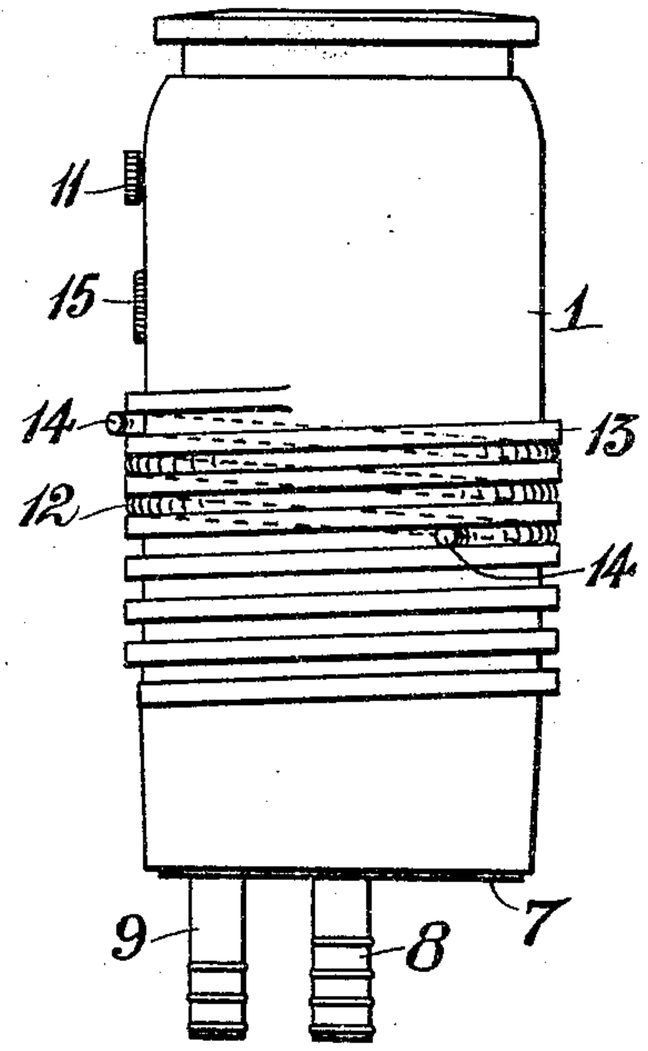

Fig. 6.

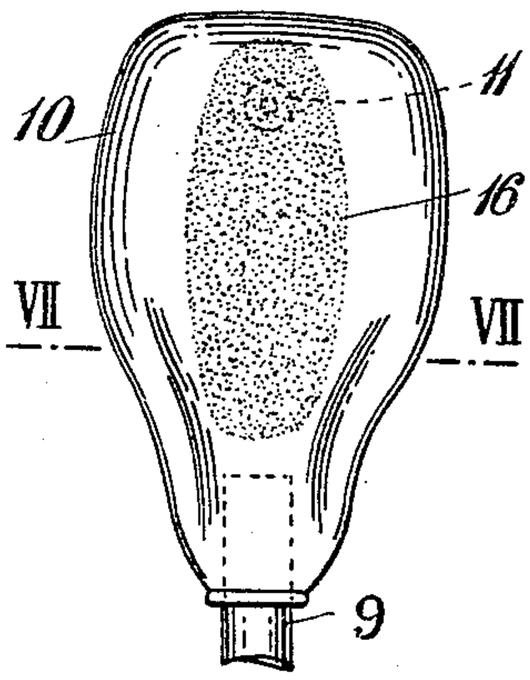

Fig. 7.

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No. 774,579. Patented November 8, 1904.

UNITED STATES PATENT OFFICE.

ALEXANDER GILLIES, OF TERANG, VICTORIA, AUSTRALIA.

PNEUMATIC TEAT-CUP.

SPECIFICATION forming part of Letters Patent No. 774,579, dated November 8, 1904.

Application filed April 25, 1904. Serial No. 204,904. (No model.)

To all whom it may concern:

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

The object of this invention is to provide a teat-cup for pneumatic milking-machines which will simulate as nearly as possible both in formation and action the mouth of a calf on the teat of a cow, and thus extract the milk therefrom in as nearly as possible a natural manner.

Teat-cups according to this invention are provided with an inflatable tongue within the cup conforming as nearly as possible to the shape of a calf's tongue and are formed with a pair of lips inside the mouth of said cup which correspond in their action to the gums of the calf, while around the body is fitted an adjustable collar to suit the cup to different-sized teats. The accompanying drawings clearly illustrate these improvements, and comprise, in—

Figure 1, a central vertical section of the teat-cup, showing the tongue in the act of squeezing the teat. Fig. 2 is a similar view, but showing the teat released from the pressure of the tongue and gripped by the lips; Fig. 3, a horizontal section on line III III of Fig. 1, while Fig. 4 is a similar section on line IV IV of Fig. 1. Fig. 5 is a side elevation of the cup; Fig. 6, an elevation of the inflatable tongue, and Fig. 7 a transverse section on line VII VII of Fig. 6.

Referring now to the drawings, it will be seen that the cup comprises a comparatively thick rubber tubular casing 1, having a pair of interior circumferential lips 2 3 near its mouth 4, the lip 3 being larger and extending farther inward than the other. The lips are divided on opposite sides by longitudinal grooves 5 5, extending to about the middle of the cup and decreasing in depth and width as they descend. The object of the grooves 5 5 is to weaken the casing and insure its bending at these points when the partial collapse takes place, thus allowing the lips to approach each other in the direction indicated by arrows in Fig. 4, and so grip the teat. A horizontal circumferential groove 6 is formed in the casing just above the lips for the purpose of reducing the rigidity of said casing at this point. The bottom of the cup is formed with a thick rubber or other plug 7, dished, as shown, on its upper face and provided with a short constant-suction tube 8 in the center for the purpose of conveying the milk to the receiver. Another tube, 9, extends up through this plug and is inserted into the root of the hollow tongue 10, said tube being connected to the pulsator and alternately admitting and exhausting air from said tongue, so as to inflate and expand same, as in Fig. 1, and then collapse, as in Fig. 2. The tongue 10 is formed of comparatively thin rubber and is shaped similar to the tongue of a calf and dished near the root, as shown in Figs. 6 and 7, the end being secured by a screw and nut 11 to the side of the cup. The end of the tongue extends upward between the lips similar to the manner in which a calf places the tongue between its gums when sucking the teat of a cow.

Around the casing is an external adjustable collar 12, preferably formed of a coil of wire, which engages threads 13, formed on the surface of said casing. The ends 14 of the collar are bent outwardly, so that said collar may be gripped and screwed round in the threads 13 and the cup thus made comparatively rigid at any point, so that it may be adjusted according to the length of the cow's teat. The collapse of the cup (due to the atmospheric pressure when the air in the tongue is partially exhausted) takes place between the collar and the mouth of said cup, so that the extent of the collapse is determined by the position of the collar, cows with long teats requiring a larger collapse than those having small teats. This adjustable collar is also of use for stiffening the casing, which may have become too supple through wear.

A small inlet 15 is formed in the side of and in the upper end of the casing to admit air behind the milk, and so assist the flow of same to the receiver. When the milk is being squeezed from the teat, as in Fig. 1, the air-inlet is closed by the tongue; but when

said tongue collapses the pressure of the atmosphere forces air through said inlet, as in Fig. 2.

The surface 16 of the tongue 10 and the internal surface 17 of the casing are roughened, as shown, so as to resemble the calf's mouth and palate.

The effect of these improvements is that by the inflation of the tongue the teat (shown by dotted lines in Figs. 1, 2, and 3) is squeezed against the side of the casing, as in Fig. 1, and the milk drawn away by suction through the tube 3 to the receiver, after which the air is partially exhausted from the tongue, causing the casing to partially collapse, as in Fig. 2, between the collar and the mouth, but principally at the thinnest part of the casing—that is, the part formed by the horizontal groove 6—thus bringing the lips together and gripping the teat near the root as a calf would do with its gums. Thus it will be seen that the cup always grips the teat in the same place at each pulsation, and the tendency for said cup to slip down or for the cow's udder to be drawn into the cup is obviated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. An improved pneumatic teat-cup comprising a comparatively thick rubber casing having a pair of circumferential lips near its mouth divided by longitudinal grooves on opposite sides, said casing being provided with an external adjustable collar and having an internally-arranged inflatable tongue conforming with the shape of a calf's tongue, and means for alternately admitting and exhausting air therefrom, and for withdrawing the milk from said casing, and said casing further provided with an air-inlet in the upper part thereof at one side of the tongue, substantially as set forth.

2. In a pneumatic teat-cup a comparatively thick rubber tubular casing having a pair of interior circumferential lips near the mouth, divided on opposite sides by longitudinal grooves extending to about the middle of the cup and decreasing in depth and width as they descend, an inflatable tongue extending upwardly in said casing between the circumferential lips thereof so that the natural action of the calf's mouth may be simulated, and a tube communicating with the lower end of said tongue and adapted to lead to a pulsator, substantially as set forth.

3. In a pneumatic teat-cup a comparatively thick rubber tubular casing provided with external grooves, and an adjustable collar adapted to engage in said grooves, substantially as and for the purpose set forth.

4. In a pneumatic teat-cup, a comparatively thick rubber tubular casing having external threads thereon and an adjustable collar consisting of a coil of wire in engagement with said threads and the ends of said coil being bent outwardly substantially as and for the purpose set forth.

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

ALEXANDER GILLIES.

Witnesses:
EDWARD WATERS,
EDWARD WATERS, Junr.