

No. 827,159.

PATENTED JULY 31, 1906.

F. A. LANE.
TEAT CUP FOR MILKING MACHINES.

APPLICATION FILED NOV. 5, 1904.

Fig. 1.

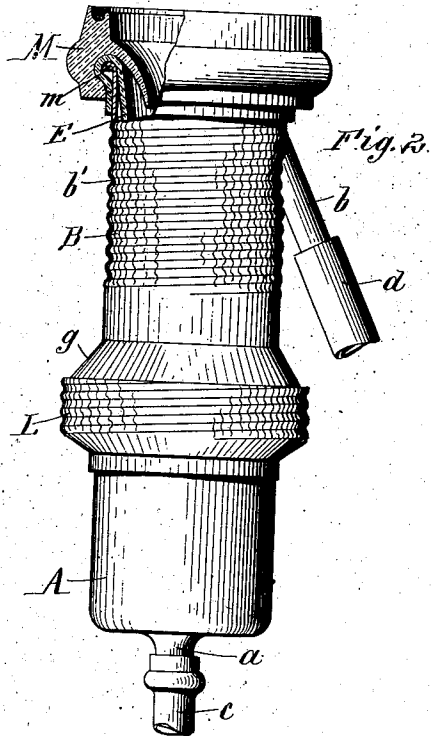
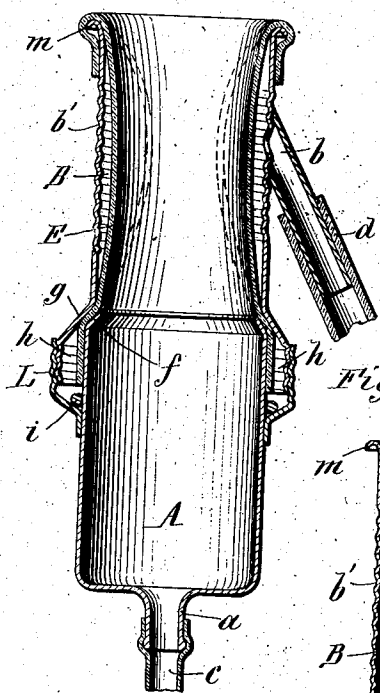


Fig. 3.

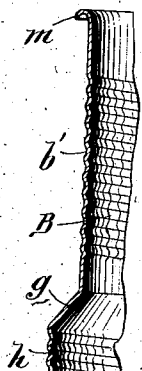


Fig. 4.

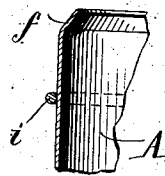


Fig. 5.

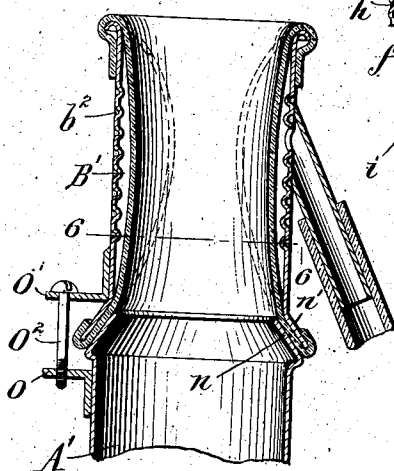
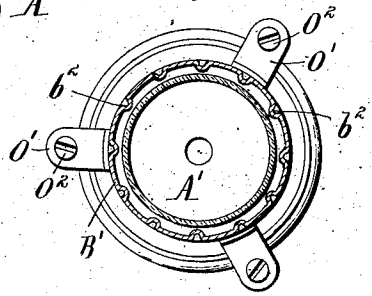


Fig. 6.



Witnesses:-
P. W. Rinear.
E. A. Volk.

F. A. Lane, Inventor.
By Wilhelm Parkhurst Hard,
Attorneys.

UNITED STATES PATENT OFFICE.

FREDERIC A. LANE, OF LITTLE FALLS, NEW YORK, ASSIGNOR TO D. H. BURRELL & COMPANY, OF LITTLE FALLS, NEW YORK.

TEAT-CUP FOR MILKING-MACHINES.

No. 827,159.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed November 5, 1904. Serial No. 231,486.

To all whom it may concern:

Be it known that I, FREDERIC A. LANE, a citizen of the United States, residing at Little Falls, in the county of Herkimer and State of New York, have invented a new and useful Improvement in Teat-Cups for Milking-Machines, of which the following is a specification.

This invention relates to that class of teat-cups for milking-machines in which the cup is provided with an inner flexible wall or lining, usually of soft rubber, which is attached at its upper and lower ends to the rigid wall of the cup and which is free between its attached end portions to move toward and from the axial line of the cup under the vacuum pulsations applied to the milk-tube.

The object of this invention is to produce a cup which is simple, strong, and durable in construction, efficient in operation, and capable of being readily assembled for use or taken apart for cleaning or repairing.

In the accompanying drawings, Figure 1 is a central vertical section of a teat-cup provided with my improvements in the preferred form. Fig. 2 is an elevation of the same, partly in section. Fig. 3 is a detached fragmentary sectional view of the upper section of the cup. Fig. 4 is a similar fragmentary view of the lower section of the cup. Fig. 5 is a fragmentary central vertical section of a modified construction of the cup. Fig. 6 is a horizontal section in line 6 6, Fig. 5.

Like letters of reference refer to like parts in the several figures.

Referring to Figs. 1 to 4, the rigid wall of the cup is composed of a lower section A and an upper section B, both constructed, preferably, of metal. The lower section A is provided at its bottom with a nipple *a* for connection with the milk-pipe *c*, and the upper section is provided at its side with an oblique nipple *b* for connection with the air-pipe *d*. This side orifice or nipple and air-pipe are designed for use in connection with a milking-machine which produces air pulsations not only in the interior space of the cup, but also in the inclosed outer space between the rigid wall of the cup and the flexible lining by alternately exhausting the air from said outer space and admitting the air thereto. The construction of this orifice or nipple may, however, be modified as the particular style

of milking-machine with which the cup is used may require.

E represents the flexible lining or inner wall of the cup arranged within the upper section B thereof and secured to the upper end of the section in any suitable manner. The lower end of the lining is clamped between the two sections of the cup, for which purpose the lower section A is preferably provided at its upper end with a tapering seat *f* and the upper section B near its lower end with a downwardly-flaring seat *g*. The lower section is provided below its end or seat *f* with a shoulder or enlargement *i*, which may be formed by a wire arranged around the section and soldered thereto, as shown in Figs. 1 and 4, or which may be formed by bending the metal, as shown in Fig. 5. A screw-threaded nut or union L bears against this shoulder and engages the threaded collar *h* of the upper section, so as to draw the conical seats *f* and *g* toward each other, thereby clamping the lower portion of the flexible lining tightly between these parts. As shown in Fig. 1, the lower portion of the flexible lining is distended and drawn over the upper part of the lower section A.

The upper section B of the cup is provided on its inner side with projections and depressions of any suitable form or construction which prevent the flexible lining from being drawn so tightly against the inner surface of the cup when suction is applied to the nipple *b* that the passage of the air to the nipple from the inclosed space between the rigid wall and the flexible lining would be interfered with. The lining becomes considerably stretched by use, sometimes to such an extent that the lining hangs loosely in front of the mouth of the nipple *b* and is drawn tightly against the same by the suction, in which case the loose part of the lining acts somewhat like a valve, choking the nipple and preventing the suction to be fully applied to the inclosed space. Effective projections and depressions for this purpose are cheaply formed by providing the upper section B at the level of the nipple with circumferential corrugations *b'*, which may for convenience have the form of a spiral thread, as represented in Figs. 1, 2, and 3, or the projections may be radial projections or protuberances *b''*, as represented in Figs. 5 and 6,

or they may be otherwise constructed, as may be most convenient. The depressions or spaces between the projecting parts form air-channels, which lead to the nipple and maintain free communication between the latter and the inclosed space, so that the air in the outer chamber can flow freely through these depressions or channels to the nipple when suction is applied to the latter.

10 The upper portion of the lining E, which may be a straight cylindrical piece of rubber tubing, is sprung over an outwardly-projecting flange *m* at the upper end of the upper section.

15 M represents a mouthpiece of soft rubber which is applied to the upper end of the cup in a well-known manner after the lining has been secured to the cup.

Both ends of the lining are securely attached to the upper section of the cup, while the lining is free between the attached ends and can move inwardly, as indicated by dotted lines in Fig. 1, when suction is applied to the interior of the cup. By disconnecting the two sections of the cup the parts are readily separated for cleaning, renewing the lining, or other purposes.

As the flexible lining is arranged in the upper portion of the cup it squeezes the teat, whether the latter be long or short, not very far below the base of the teat, where the action upon the teat is most effective. Even if the teat is unusually short there is no danger that the lining will grasp the teat too near the point, where a squeezing action would impair or prevent the flow of the milk. As the lining does not extend into the lower portion of the cup, the lower portion of the teat hangs free in the cup, so that the milk can freely flow from the teat into the cup and the milk-pipe connected therewith.

The cup and lining are preferably of cylindrical form, but may be made polygonal in cross-section, if desired.

45 In the modified construction represented in Figs. 5 and 6 the lower section A' of the cup is provided at its upper end with a conical seat *n*, and the upper section B' is provided at its lower end with a corresponding conical seat *n'*, between which seats the lower end of the lining is clamped. The two sections of the cup are secured together by means of perforated lugs O O', formed on or secured to the sections, and screws or bolts

O', connecting these lugs. The lower end of the lining may be distended and drawn around the lower end of the upper section B' as represented in Fig. 5.

I claim as my invention—

1. A teat-cup comprising an upper section 60 having at its lower end a hollow, downwardly-flaring seat, a lower section having at its upper end a corresponding, upwardly-tapering seat which is adapted to be inserted into the upper seat from below, a flexible lining arranged in the upper section and having its lower portion arranged between said seats, and fastening devices whereby the sections are secured together and the lining is clamped between said seats, substantially as set forth. 70

2. A teat-cup comprising two sections, one having a screw-thread and the other a shoulder, a screw-nut surrounding the sections and engaging said screw-thread and shoulder, and a flexible lining clamped between the sections, substantially as set forth. 75

3. A teat-cup comprising an upper section having at its lower end a screw-thread, a lower section having near its upper end a shoulder, a screw-nut bearing against the shoulder of the lower section and engaging the thread of the upper section, and a flexible lining arranged in the upper section and having its lower portion clamped between the sections, substantially as set forth. 85

4. A teat-cup comprising an outer rigid shell, a flexible lining which is secured at its upper and lower ends to the shell, a suction-orifice in the shell between the secured ends of the lining, and air-channels which extend circumferentially from said orifice and prevent the lining from closing said orifice when drawn against the same by the suction, substantially as set forth. 90

5. A teat-cup comprising an outer rigid shell provided with circumferential corrugations forming air-channels, a suction-orifice arranged in the corrugated portion of said shell between the upper and lower ends thereof, and a flexible lining which is secured at its upper and lower ends to the shell, substantially as set forth. 100

Witness my hand this 22d day of October, 1904.

FREDERIC A. LANE.

Witnesses:

G. W. BELLINGER,
EDWARD WILHELM.