L. DINESEN.

TEAT CUP FOR MILKING MACHINES.

APPLICATION FILED OCT. 16, 1915.

1,201,808. Patented Oct. 17, 1916.

Fig. 2

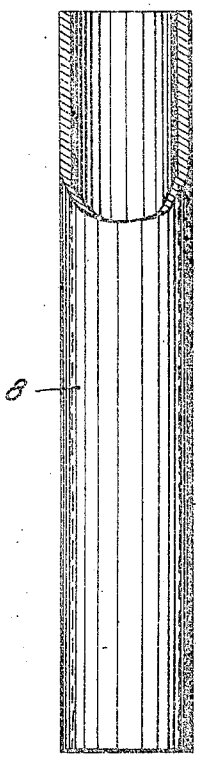
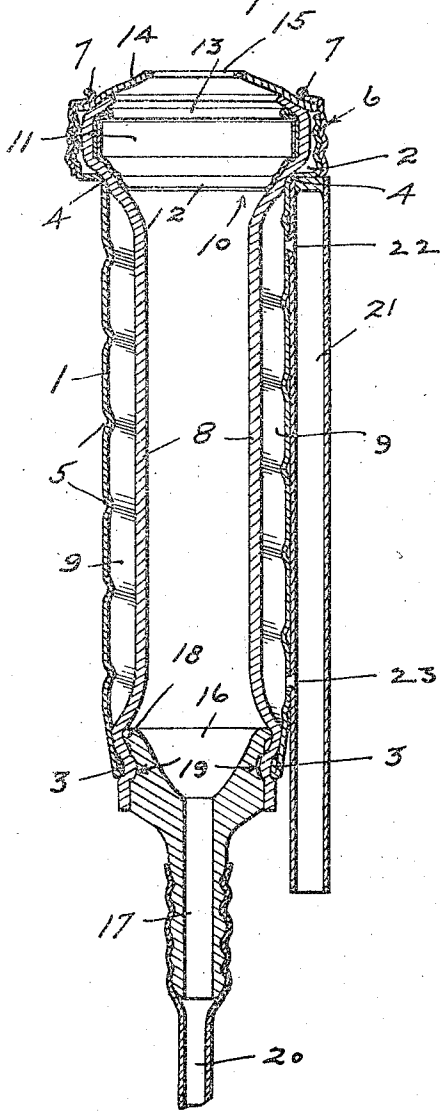


Fig. 1



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TEAT-CUP FOR MILKING-MACHINES.

1,201,808. Specification of Letters Patent. Patented Oct. 17, 1916.

Application filed October 16, 1915. Serial No. 56,215.

To all whom it may concern:

Be it known that I, LAURITS DINESEN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Teat-Cups for Milking-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an extremely simple and highly efficient teat-cup for milking machines; and, to this end, it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a longitudinal section, taken centrally through the improved teat-cup; and Fig. 2 is a view, partly in side elevation and partly in longitudinal section of the collapsible casing of the teat-cup.

The numeral 1 indicates a rigid non-collapsible casing, the upper end portion of which is expanded to afford an annular head 2, and the lower end portion of which is contracted with its edge rolled to formed an internal annular clamping bead 3. The junction of the body of the casing 1 with its head 2 affords an annular clamping shoulder 4. In the body of the casing 1, is a spiral corrugation 5, which extends from the head 2 into the contracted lower end portion of said casing and is formed by creasing the body of the casing. The purpose of this spiral corrugation 5 is fully set forth in my U. S. Letters Patent 1,072,584 of date September 9, 1913, entitled "milking apparatus." A collar 6 is screwed onto the head 2 and has integrally formed therewith an inwardly projecting clamping flange 7.

Within the casing 1 is a collapsible casing 8, preferably formed from a rubber tube of the same diameter throughout its entire length. The casings 1 and 8 are axially alined, one with the other, and the inner casing 8 is of a diameter considerably less than that of the outer casing 1 to afford between the two casings an annular air chamber 9. The upper end portion of the collapsible casing 8 is expanded into the head 2 by an expander 10, comprising a pair of flat annular rings 11 telescopically connected. The inner of these rings 11 has integrally formed therewith an inwardly and downwardly projecting annular clamping flange 12, which overlies the clamping shoulder 3. The collapsible casing 8 is clamped between the shoulder 3 and flange 12 to afford an air-tight joint between the casings 1 and 8, at their upper ends. The outer ring 11 has integrally formed therewith an upwardly and inwardly projecting annular flange 13, which underlies the clamping flange 7 of the collar 6. The collapsible casing 8 is also clamped between the flanges 7 and 12 to afford a second air-tight joint between the casings 1 and 8, at their upper ends.

A diaphragm 14, preferably of rubber, is seated on the flange 7 of the collar 6, with its outer edge portion clamped between the flange 7 and the underlying portion of the collapsible casing 8. This diaphragm 14 is provided with a central aperture 15, through which one of the cow's teats projects into the collapsible casing 8 of the teat-cup. Obviously, the screwing action of the collar 6 on the head 2 simultaneously clamps the collapsible casing 8 between the shoulder 2 and flange 12 and between the two flanges 7 and 13. The lower end portion of the collapsible casing 8 is expanded and clamped onto the outer casing 1 by an inverted bell-shaped head 16, which forms a part of a depending nipple 17, having communication with the interior of the teat-cup through said head. On the outer cylindrical surface of the head 16, is an annular bead 18 and an annular groove 19 axially spaced, the latter below the former. The bead 18 is arranged to clamp the collapsible casing 8 on the internal surface of the contracted end portion of the rigid casing 1 and the bead 3 is arranged to clamp said casing in the annular groove 19, thereby making two air-tight joints at the lower ends of the casings 1 and 8.

The above described teat-cup is especially adapted for use in connection with my pulsating device for "milking apparatus," disclosed and claimed in Patent 1,117,169, issued of date November 17, 1914. In this construction, when the apparatus is in op-

eration, there will be a constant suction or partial vacuum in the milk pail; and hence, in the teat receiving chamber formed in the collapsible casing 8. There will be, in this construction, two groups of teat-cups of four teat-cups in each group. The teat-cups of each group are independently connected by a flexible branch suction tube 20 to the outer end of a main section tube, not shown, which leads from the milk pail. The outer end of the branch suction tube 20, shown in the drawing, is telescoped onto the nipple 17 and which nipple is provided with a plurality of longitudinally spaced corrugations into which the tube 20 is drawn to increase the holding action between the tube and nipple.

To the outer face of the rigid casing 1, is rigidly secured a depending air tube 21, the upper end of which has communication with the upper extremity of the air chamber 9, through a port 22. This air tube 21 also has communication with the lower extremity of the air chamber 9, through a port 23. The purpose of the port 23 is to prevent water, used in washing out the apparatus, from pocketing in the air chamber 9, and does not, in any way, affect the action of the apparatus. As a convenient means of forming the ports 22 and 23 and rigidly securing the air tube 21 to the casing 1, it will be noted that pairs of coincident holes are formed in the casing 1 and air tube 21. The holes in the air tubes 21 are punched from the inside out, leaving burs, which are fitted into the holes of the casing 1 and secured in position by solder.

The air tube 21 is connected to the above identified pulsating apparatus, or other suitable means for producing pulsations, by a flexible tube, not shown, attached to the lower open end of said air tube. As previously stated, there will be a constant suction or partial vacuum in the teat chamber of the collapsible casing 8, so that there is a constant tendency to draw the milk from the teat into the milk pail. The pulsations produced in the air chamber 9 through the air tube 21, by the pulsating device, cause the collapsible casing 8 to intermittently contract and compress the teat and then expand and release the squeezing pressure on the teat. Obviously, the constant pressure within the teat chamber will contract the collapsible casing 8 against the teat, when air pressure is permitted within the air chamber 9, and, on the other hand, whenever partial vacuum is produced within the said chamber 9, the collapsible casing 8 will be expanded or drawn outward, thereby relieving the pressure on the teat.

By reference to the drawing, it will be noted that the diameter of the aperture 15, in the diaphragm, is somewhat less than the diameter of the collapsible casing 8, thereby forming an air-tight joint around the teat and also assisting in holding the teat cup in position.

What I claim is:

1. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, a diaphragm having its outer edge portion insertible between the collapsible casing and the rigid casing, and an expander in one end of the collapsible casing for clamping the collapsible casing and the diaphragm onto the rigid casing.

2. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, said rigid casing having a contracted end portion with an annular bead, and a nipple having an annular groove and an annular bead, said nipple being inserted in one end of the collapsible casing, with its bead clamping the collapsible casing on the contracted end portion of the rigid casing and the bead of the rigid casing clamping the collapsible casing in the groove of the nipple.

3. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, and an expander in one end of the collapsible casing, said expander having inwardly projecting annular flanges, between which expander and the rigid casing the collapsible casing is clamped.

4. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, and an expander in one end of the collapsible casing, said expander comprising a pair of telescopically connected rings, each having at its outer edge an annular flange, between which flanges and the rigid casing the collapsible casing is clamped.

5. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, one end of said rigid casing being expanded to afford an annular shoulder, a collar on the expanded end of the rigid casing and having an annular flange, and an expander in one end of the collapsible casing, said expander having a pair of inwardly projecting flanges, between which flanges and the shoulder of the rigid casing and the flange of the collar the collapsible casing is clamped.

6. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, one end of said rigid casing being expanded to afford an annular shoulder, a collar on the expanded end of the rigid casing and having an annular flange, and an expander in one end of the collapsible casing, said expander comprising a pair of telescopically connected rings, each having at its outer edge an annular flange, between which

flange and the shoulder of the rigid casing and the flange of the collar the collapsible casing is clamped.

7. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, and an air tube secured to the rigid casing and having two ports leading, one to the upper extremity of the air chamber and the other according a drain passage at the lower extremity thereof.

8. A teat-cup including a rigid casing and a collapsible casing located, the latter in the former, with an air chamber therebetween, one end of said rigid casing being expanded to afford an annular shoulder, a collar screwed onto the expanded end of the rigid casing and having an annular flange, a diaphragm removably seated on the flange of the collar, and an expander in one end of the collapsible casing, said expander comprising a pair of telescopically connected rings, each having at its outer edge an annular flange, said collar adapted to be screwed into a position to clamp the collapsible casing between the shoulder of the rigid casing and one of the flanges of the expander and, also, to clamp said collapsible casing and the diaphragm between the other shoulder of the expander and the flange of the collar.

In testimony whereof I affix my signature in presence of two witnesses.

LAURITS DINESEN.

Witnesses:
CLARA DEMAREST,
HARRY D. KILGORE.