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MILKING MACHINE TEAT CUP

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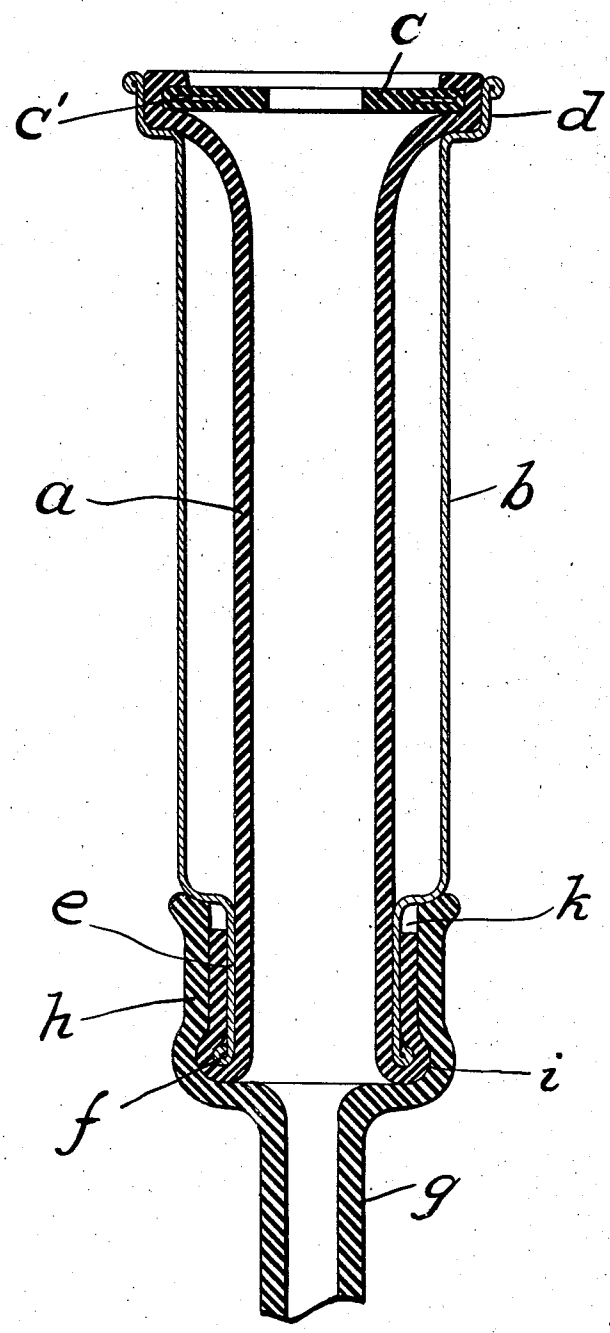

WITNESS:

Robt. R. Mitchell

INVENTOR

Walter A. Scott

BY

Bisser and Harding

ATTORNEYS.

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MILKING MACHINE TEAT CUP

Walter A. Scott, Poughkeepsie, N. Y., assignor to The De Laval Separator Company, New York, N. Y., a corporation of New Jersey

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1 Claim. (Cl. 31—85)

In teat cups comprising an outer rigid metal shell or cup proper, an inner rubber liner and a milk outflow tube, it is customary to expand the upper end of the shell and, in the circumferential seat thus formed, confine the corresponding end of the liner by means of a ring or disc, this end of the cup being slipped over the teat. It is also common to bend the lower end of the liner around and outside the corresponding end of the shell and to confine its extremity against the shell by means of a cap or head on the end of a milk outflow tube.

One of the serious objections to the described means engaging the lower end of the liner with the lower end of the shell and the cap of the milk outflow tube, and which renders such engaging means defective and indeed inoperative, is the creeping of the stretched lower end of the liner. Whether or not the annular chamber between the shell and liner is subject to pneumatic pulsations, the liner is under substantial longitudinal tension and this tension causes a creeping action that often results in the slippage of its extremity down around the lower edge of the shell, thus wholly destroying the holding action of the cap and freeing the liner from both cap and shell.

The object of my invention is to provide an improved means for securing the lower end of the liner between the shell and the cap or enlarged head of the milk outflow tube in such manner as to insure against slippage and thus maintain the liner in proper tension and avoid all risk of detachment.

The drawing is a vertical sectional view of a teat cup embodying my invention.

The teat cup is of the double-chamber type in which an inner chamber, enclosed in a flexible and elastic liner, is under a constant low pneumatic pressure (partial vacuum) while an outer annular chamber, enclosed between said liner and a rigid shell, is subject to alternating high and low pneumatic pulsations (atmospheric and partial vacuum).

The upper end of the flexible and elastic rubber liner *a* may be secured to the upper end of the rigid shell *b* in any effective known way, such as by distending the upper end of the liner by means of a teat-engaging disc *c*, which disc, with the upper end of the liner bent around it, is seated in the enlarged upper end *d* of the shell. The disc *c* is usually made of rubber reinforced by a metal ring *c'* embedded therein.

The bottom of the shell is provided with a contracted neck *e* having at its lower extremity an outwardly extending circumferential bead *f*. The walls of the body and neck of the shell extend parallel to the axis of the shell. The lower end of the liner is pulled down within and against the shell neck and then outward and around the bead *f* about 225° and then up in a reverse direction about 45° so as to extend parallel to and against the outer wall of the shell neck. The body of the liner, when thus stretched, has within the shell a cylindrical contour of an external diameter equal to the internal diameter of the shell neck, leaving an annular air space between it and the body of the shell.

The cap or enlarged head of the milk outflow tube *g* is so shaped that its internal contour, when applied to the shell with the liner bent around it as described, conforms to the contour of the lower end of the shelf and the bent-around end of the liner; that is, its inner wall, at or about the junction of its shouldered portion with its enlarged diameter portion *h*, is provided with an internal circumferential recess *i* opposite and complementary to the outwardly extending bead *f* at the lower extremity of the shell and the part of the liner bent around the bead, while the part of the head above the recess *i* extends parallel with the axis of the shell and surrounds and contacts with the turned-over extremity of the liner.

While the head *h* of the milk outlet tube *g* is, preferably, of less flexibility and elasticity than the liner, it must have sufficient flexibility to enable it to be expanded diametrically to the extent necessary to allow it to be forced over that part of the liner which is bent around the bead *f*, and sufficient elasticity to allow it to contract and hug the extremity of the liner above the bead *f*. In the best embodiment the arrangement is such that the lower end of the liner is bent outward and upward about 225° around the head and then about 45° in a reverse direction to lie along and in contact with the neck of the shell, while the head *h* of the milk tube *g* has a normal shape such that, after being forcibly slipped into holding position, it will closely hug the liner as above described. Thus the head *h*, shell neck *e*, and the lower end of the liner inside and outside the shell neck all extend in parallel relationship with each other and with the axis of the teat cup except at the locus of the bead *f* and the complementary recess *i*.

The head *h* is of such length that its upper edge abuts against the shoulder joining the body *b* and neck *e* of the shell, thereby preventing dirt and moisture from entering the recess *k* between

the upper end of the head and the adjacent part of the shell.

It is found that, in actual use, the liner is held securely in position and is absolutely prevented from creeping or slippage, so that the liner maintains its originally stretched condition with no danger of displacement or detachment.

What I claim and desire to protect by Letters Patent is:

A teat cup comprising an outer shell, an inner flexible and elastic liner the upper teat-engaging end of which is secured to the corresponding end of the shell, the shell comprising a body of a comparatively large uniform diameter from its upper end to near its lower end and sharply contracted at its lower end to form a neck of a substantially uniform and comparatively small diameter connected with the body by an annular shoulder, the neck having an outwardly projecting circumferential bead at its extremity, the lower end of the liner extending within and in contact with said neck and around said bead and upwardly outside and in contact with said neck, and a milk flow tube having an expanded head provided in its inner wall with a recess complementary to said bead and contracted above said recess to extend in parallel relationship with said neck and of such internal diameter, substantially less than the external diameter of said shoulder, as to contact with and confine the upwardly extending extremity of the liner against said neck, said expanded head having sufficient flexibility and elasticity to allow it to be slipped into position over the part of the liner extending around said bead until the bead engages the recess and to then grip the extremity of the liner above the bead and of such length that its upper end abuts against the lower side of said shoulder, whereby the lower end of the liner is prevented from creeping or slipping and the entrance of dirt or moisture into the space between said bead and shell is effectually excluded.

WALTER A. SCOTT.