Dec. 16, 1930. M. KEENER 1,785,313

VALVE FOR MILKING MACHINES

Filed Aug. 23, 1928

Fig. 1.

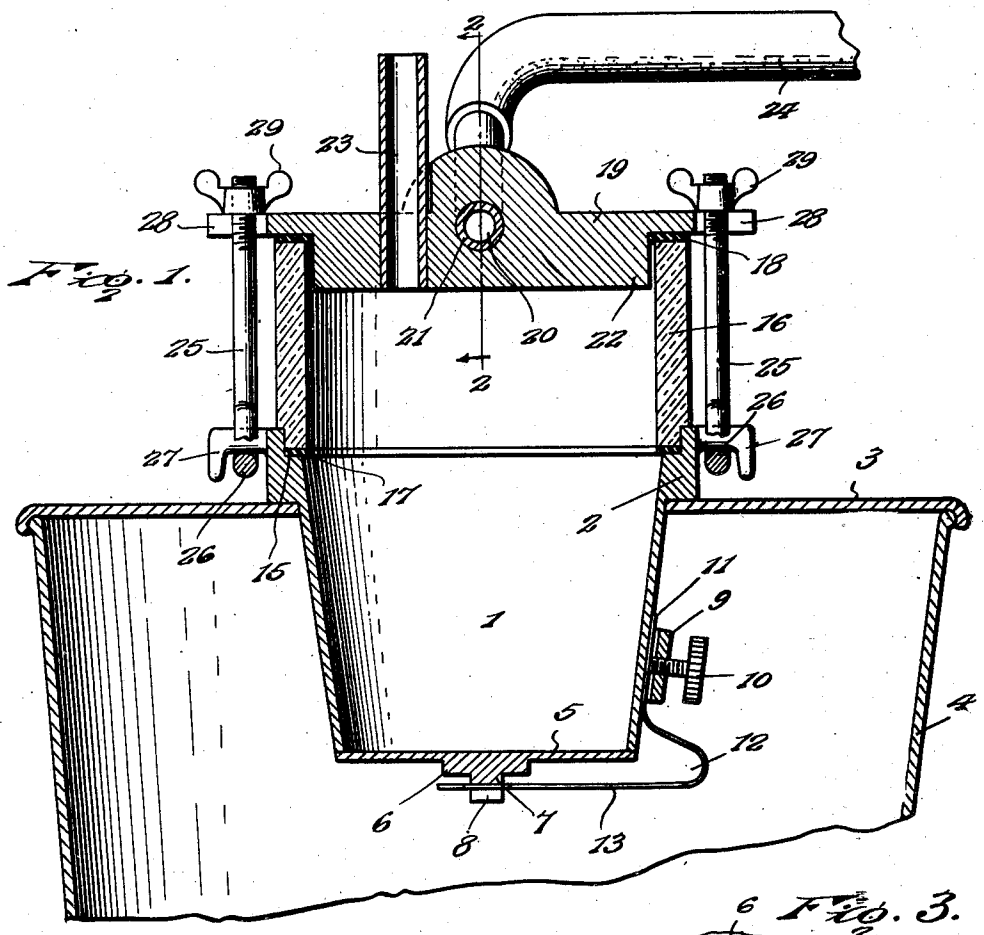


Fig. 3.

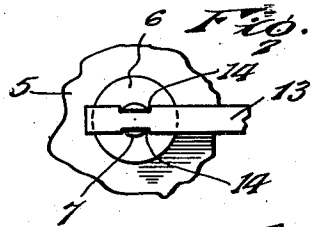
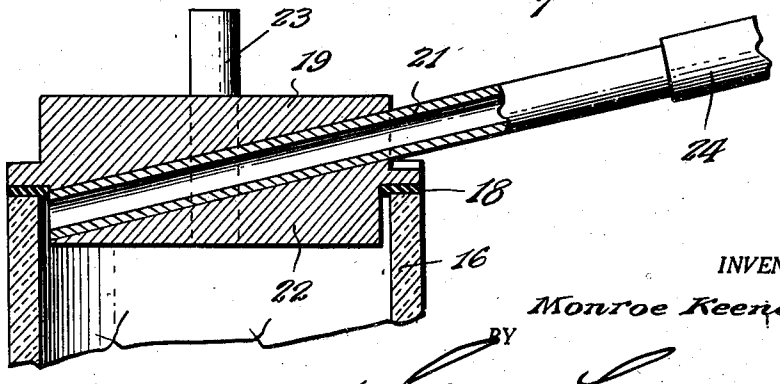


Fig. 2.



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VALVE FOR MILKING MACHINES

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This invention relates to valve cups for milking machines and its object is to provide a valve cup which will be free of moving parts and by the use of which the milk will be delivered into the receiving pail with its fatty elements unbroken and undisturbed by unnecessary agitation. The present invention provides a valve cup in which the inflowing milk will be carried through a path entirely free of the path followed by the air passing into or out of the cup and will be directed into the holding cup with minimum agitation so that the fatty particles will be unbroken. Another object of the invention is to provide a cup which may be easily cleaned so as to be maintained in a sanitary condition at all times and in which the several parts may be readily separated although they will be held firmly together and leakage prevented while in use. The several stated objects, and other objects which will hereinafter incidentally appear, are attained in such a device as is illustrated in the accompanying drawing, and the invention resides in certain novel features which will be particularly defined in the appended claims.

In the drawing:

Figure 1 is a vertical section through the valve cup showing the same in position upon a pail;

Fig. 2 is a section on the line 2—2 of Fig. 1, and

Fig. 3 is a detail bottom plan view of a portion of the discharge valve.

In carrying out the present invention, there is provided a cup 1 having an annular rim 2 at its upper end whereby it is adapted to pass through an opening in the cover 3 of the receiving pail 4 and be supported by the rim resting on said cover. The cup is tapered downwardly, as shown in Fig. 1, and at its lower end is closed by a disk valve 5 which seats against the lower edge of the cup and covers the entire bottom area of the same. On the under side of this valve disk 5 is a boss 6 having a central stud 7 depending therefrom and provided with a diametrical notch 8 therein. On the side of the cup is an offset lug 9 in which is seated a set screw 10 adapted to bear against the end 11 of a leaf spring inserted between the lug and the cap and secure said spring firmly to the side of the cup. The spring is bowed below the lug 9, as shown at 12, and then extends diametrically below the valve disk 5, as shown at 13, being provided with notches 14 in its opposite edges adjacent its end whereby it will fit within the slot or notch 8 of the stud 7. The valve will thus be firmly supported in its operative position but may be very easily removed when it is to be cleaned by merely slipping the end of the spring out of the notch 8 in an obvious manner. If the spring should be broken or its removal should be deemed desirable for any other reason, slightly loosening the set screw 10 will permit its detachment from the cup, as will be understood. It will be noted that the outlet valve is free of hinges and may be very easily withdrawn from the cup, although, when in use, it forms an effectual closure therefor.

The annular rim or flange 2 which circumscribes the upper end of the cup is provided with an annular internal shoulder 15 in which is seated a ring or cylinder 16 of glass or other suitable material, this ring being preferably transparent or translucent so that the flow of milk therethrough may be observed. It is also desirable that it be of some material which will present a perfectly smooth internal surface and which may be very easily cleaned so that it may be readily kept in a sanitary condition and will avoid agitation of the milk as will presently appear. A gasket 17 is provided between the shoulder 15 and the lower edge of the ring or cylinder 16 to prevent leakage and a similar gasket 18 is placed upon the upper edge of the ring or cylinder. Resting on the upper edge of the ring is a valve block 19 which constitutes a cover for the ring and the cup. This valve block is formed with a diametrical passage 20 therethrough and the end of the milk delivery tube 21 is fitted in said passage. This milk inlet passage, as shown clearly in Fig. 2, extends entirely through the block and is inclined downwardly from the outer side of the block to the inner side thereof so that the inflowing milk will be directed against the inner sur-

face of the ring 16, and it is to be particularly noted that the block has a depending portion 22 which fits within the ring and has its periphery, through which the pipe 21 opens close to the inner surface of the ring so that the inflowing milk will impinge against the inner concave surface of the ring and will flow down and around the same in a very thin stream. Inasmuch as the inlet tube is directed downwardly and discharges against the concave surface of the ring, the agitation of the milk and consequent disruption of the fatty globules therein will be minimized so that a very high grade of butter may be produced therefrom. Extending vertically through the valve block 19 at one side of the milk inlet passage is an air tube 23, the outer end of which is to be connected with a hose passing to the suction pump, it being understood that the inlet pipe 21 is also fitted in the end of a hose 24 leading from the teat cups. Upon the suction stroke of the pump, the valve disk 5 will be drawn tightly to the lower end of the cup and the air exhausted from the cup so that a vacuum will be produced within the cup and the ring 16 and milk will be, consequently, drawn through the inlet pipe. Upon the reverse stroke of the pump, air will enter the cup through the tube 23 and the valve 5 will then be opened and the milk collected thereon discharged into the receiving pail. It will be readily seen that the air tube is disposed entirely out of the path followed by the inflowing milk and, therefore, the milk will not enter the air tube, the necessity for moving parts to avoid the entrance of milk into the air tube being entirely overcome.

The valve block is removably but firmly held in position by eye-bolts 25 having their eyes 26 engaged over hook lugs 27 formed on and projecting laterally from the rim or flange 2 of the cup while their upper ends are passed through notches 28 formed in the projecting edge portion of the valve block. Wing nuts 29 are engaged on the upper threaded ends of the eye-bolts and are turned home against the projecting marginal portions of the block, as will be understood upon reference to Fig. 1, and it will be obvious that by slightly loosening the nuts the bolts may be readily detached from the lugs 27 so that the valve block and the ring 16 may be separated for cleaning.

Having thus described the invention, I claim:

1. A valve cup for milking machines comprising a cup, a ring resting on the upper edge of the cup, a valve block resting on the upper edge of the ring, a milk inlet passage extending across said block and downwardly therethrough from the upper edge portion thereof to the opposite lower edge portion thereof and terminating in proximity to the inner concave surface of the ring, and an air passage through the block eccentric to the milk inlet passage and remote from the outlet of the same.

2. A valve cup for milking machines comprising a cup, a ring resting on the cup, a valve block resting on the ring with its edge projecting beyond the ring and having diametrically opposite notches in its edge, a milk inlet passage extending diametrically through the block, an air tube extending vertically through the block eccentric to the milk inlet passage at a point between the inlet and the outlet of said passage, diametrically opposite lugs on the exterior of the cup at the top thereof, eye-bolts engaged over said lugs and having their shanks extending through the notches in the edge of the valve block, and securing nuts fitted on said shanks and turned home against the valve block.

In testimony whereof I affix my signature.

MONROE KEENER. [L. S.]