

(No Model.)

R. LARKEY.
APPARATUS FOR TREATING MILK.

No. 523,043.

Patented July 17, 1894.

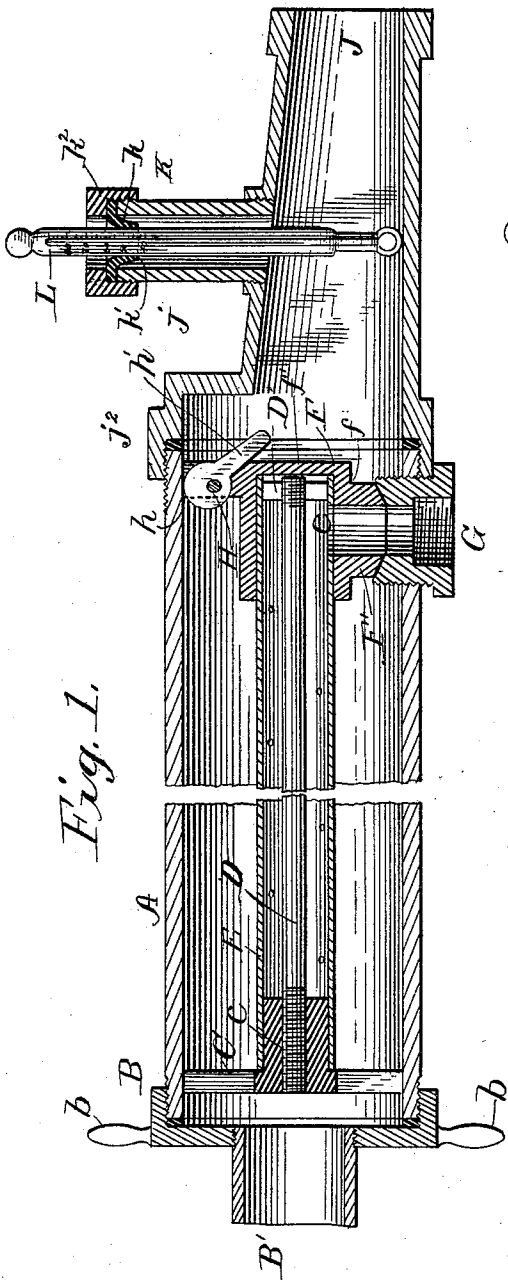


Fig. 1.

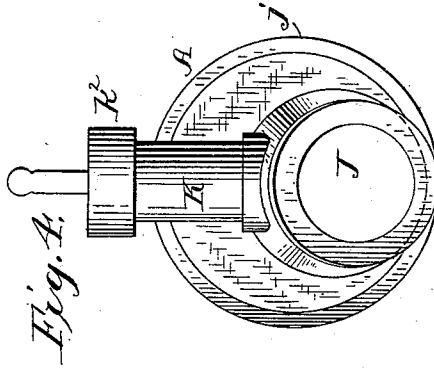


Fig. 2.

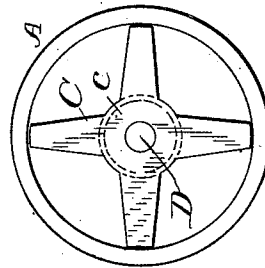


Fig. 3.

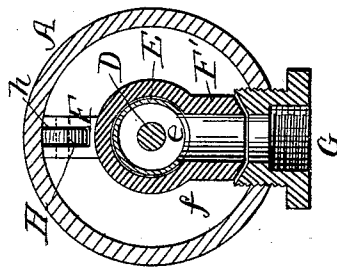


Fig. 4.

Witnesses
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APPARATUS FOR TREATING MILK.

SPECIFICATION forming part of Letters Patent No. 523,043, dated July 17, 1894.

Application filed February 21, 1894. Serial No. 500,992. (No model.)

To all whom it may concern:

Be it known that I, RASMUS LARKEY, a citizen of the United States, residing at Pewaukee, in the county of Waukesha and State of Wisconsin, have invented certain new and useful Improvements in Methods of and Apparatus for Treating Milk; 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.

This invention relates to an improvement in apparatus for treating milk, and it consists in the construction and arrangement of the parts of an apparatus hereinafter described and definitely pointed out in the claims.

The object of the invention is the provision of an improved apparatus for heating milk prior to its introduction into churning or treating devices, adapted more especially for use in creameries. This object is attained by the construction of the apparatus illustrated in the accompanying drawings wherein like letters of reference indicate corresponding parts in the several views, and in which—

Figure 1 is a longitudinal section of the apparatus. Fig. 2 is a cross-section on a line taken through the steam nipple, shown in Fig. 1. Fig. 3 is an elevation of the feeding end with cap removed, and Fig. 4 is an end elevation of the discharge end.

In the accompanying drawings A represents a cylindrical receptacle having coupling threads at opposite ends. B the coupling or head having a marginal flange threaded to engage the threads on the receptacle. Through the center of the head B passes the supply pipe B' which discharges into the receptacle. The head B has the hand holds or levers *b* on its periphery by which the same may be quickly removed or adjusted in place.

Located within the receptacle a short distance from the head B is a spider or star plug C having a central hub *c* through which passes a threaded bore, arranged to receive the threaded end of a cleaner rod D, which latter extends centrally through the receptacle to the far end thereof. On the end of the rod D is a cleaning or scraping disk D'. The hub *c* is cylindrical and has the end of a perforated pipe E fitted closely therein forming a tight joint. The pipe E extends longitudi-

nally across the receptacle and incloses the rod D and its cleaning disk, and its opposite end is seated in a cylindrical seat formed in a cross head F located at the discharge end of the receptacle. As shown in Figs. 1 and 2 the cross head consists of a tubular central section *f*, the outer wall *f'* closing the rear end of the tube and against which the tube E abuts. From the under side of section *f* extends a nipple F' having a central passage which communicates with the interior of the tube E through an aperture *e* formed therein. The lower end of the nipple is fusto-conical in shape and is normally seated in a socket formed on the upper end of the steam coupling G which latter passes through the wall of the casing the upper inner end of the coupling being beveled to form the socket. To the outer end of the coupling G the steam pipe is secured for the purpose of conducting steam into the tube E.

To firmly seat the nipple in the socket when the apparatus is working I employ a cam H journaled in ears *h* formed on the top of the cross head F. This cam has a hand lever thereon and is so arranged that as the lever is lowered the cam is brought into contact with the upper wall of the receptacle and the continued downward movement of the lever forces the nipple snugly into the socket of coupling G.

On the rear end of the receptacle is secured the reduction discharge spout J consisting of a head *j* formed with the marginal flange *j*² having threads with which the threads on the receptacle engage. The discharge spout proper is located eccentrically on the head, its lower wall on a line with the lowermost portion of the receptacle while its top and side walls converge to the coupling or discharge end.

On the discharge spout is secured a vertical hollow casing K extending above the plane of the receptacle and communicating with the spout through a suitable opening; the same being extended up to prevent the milk from flowing out of the top. In the upper end of the casing is secured a rubber diaphragm *k* having a small central opening *k'*. The diaphragm is secured in place by a cap nut *k*² having a central aperture.

L is a thermometer having a knob on its

upper end and a cylindrical stem, which passes through the aperture and is closely held by a sealed joint in the casing, its lower end or bulb occupying a position near the base of the spout. By this means the thermometer can be quickly removed and replaced.

In constructing the apparatus the parts are preferably formed of polished metal and the joints are packed. I have, however, found that packing may be dispensed with.

The operation is as follows: The milk is introduced into the receptacle through the pipe B' from the vat or tank; the receptacle allowed to fill and the milk is then allowed to issue into the churning apparatus or agitator, and thereafter a constant flow carried on through the receptacle. While the milk is passing through the receptacle I introduce steam under pressure into pipe E the same issuing through the aperture and mixing with the milk, heating and treating the same. When the temperature is too high the steam supply is cut off thereby preventing waste by over-heating as is often the case in other apparatus now used. When the supply of milk is cut off the receptacle is quickly drained through the spout owing to its position.

When it becomes necessary to clean the apparatus it is only necessary to remove the ends or heads, loosen the cam from its contact with the casing, lift the nipple from its seat and withdraw the cross head pipe E, spider C and the same being unseated. The interior of the receptacle may then be cleaned. To clean the interior of the pipe E, the same is removed from the hub *d* and the rod D is drawn back and forth, the disk on its end scraping up any deposits in the pipe. It will thus be seen that the interior of the apparatus can be quickly removed and cleaned and it will be further seen that by having the steam jets arranged throughout the pipe that a uniform heating of the milk is obtained and further that the same is quickly heated while passing directly from the vat to the other depository, thus rapidly and effectually accomplishing the result desired.

I am aware that the apparatus can be modified without departing from the nature and principle of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for heating milk, the combination with a receptacle having removable heads at opposite ends, and supply and discharge openings, of a removable steam heating pipe located in the receptacle, removable supports for the pipe located in the receptacle, a steam supply pipe, and means for detachably connecting the supply and heating pipes, substantially as described.

2. In an apparatus for heating milk, the combination with a receptacle having a removable head and supply and discharge openings, of a removable steam heating pipe within the receptacle, a removable support for the pipe located in the receptacle, a steam supply pipe, and means in the receptacle for detachably connecting the supply and heating pipes, substantially as described.

3. In a milk heating apparatus, the combination with a milk containing receptacle having a supply and discharge pipe at opposite ends, a central perforated pipe, a movable support for the rear end of the pipe, a steam coupling for the pipe having a detached section, and means for removably holding the sections of the couplings in place, substantially as described.

4. In a milk heating apparatus, the combination with a receptacle, of removable heads on the ends thereof, inlet and outlet openings for the receptacle, a removable pipe located within the receptacle, a steam coupling for the pipe leading to the outside of the receptacle, a nipple on the pipe loosely engaging the coupling and means for forcing the coupling and nipple into close contact, substantially as described.

5. In a milk heating apparatus, the combination with a receptacle, of a perforated steam pipe therein, a removable support for one end of the steam pipe, a cleaner in the pipe, a rod on the cleaner having one end secured to the support a support for the opposite end of the steam pipe and a removable head for the receptacle, substantially as described.

6. In a milk heating apparatus the combination with a receptacle having removable ends and having inlet and outlet openings therein of a steam pipe in the receptacle, a nipple on the pipe, a coupling passing through the receptacle and loosely engaging the nipple, and a cam engaging the receptacle for forcing the nipple and coupling into close contact, substantially as described.

7. In a steam milk heating apparatus the combination with a receptacle having inlet and outlet openings, of a perforated steam pipe in the receptacle, a removable support for one end of the pipe, a removable support for the opposite end, a nipple for the pipe, a coupling in the side of the receptacle, a socketed loose connection between the coupling and nipple, and a cam on the support adjacent to the nipple arranged to engage with the wall of the receptacle to form a tight joint between the nipple and coupling, substantially as described.

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

RASMUS LARKEY.

Witnesses:

E. R. HAWLEY,
ALX. CALDWELL.