No. 675,874. Patented June 4, 1901.

H. L. MINDS.

CREAM SEPARATOR.

(Application filed May 28, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

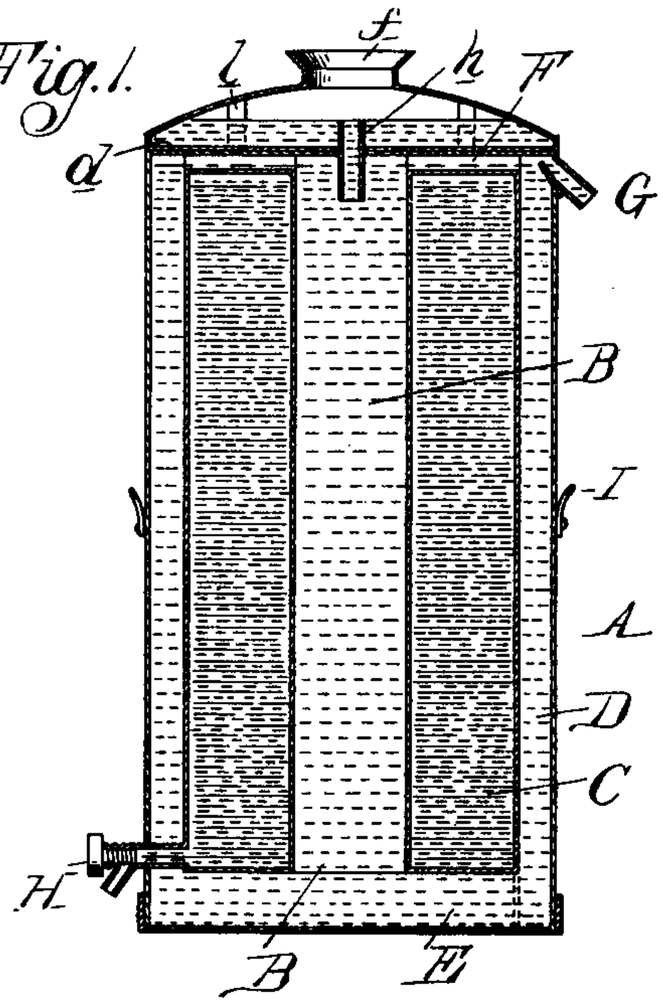


Fig. 2.

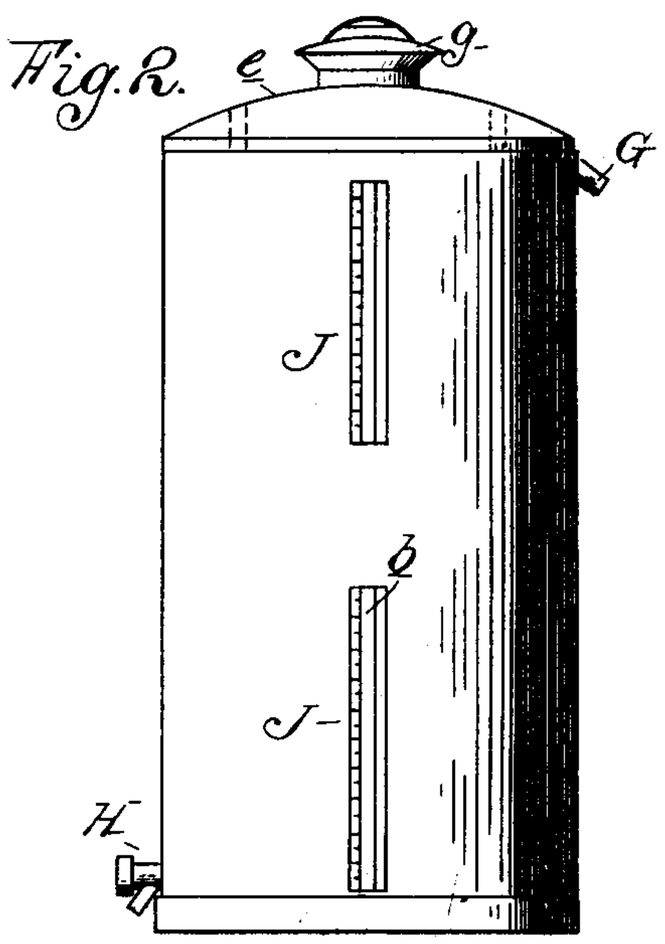


Fig. 3.

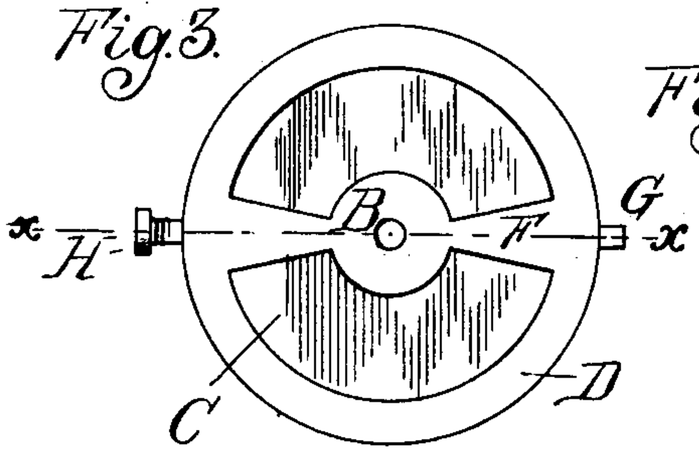


Fig. 5.

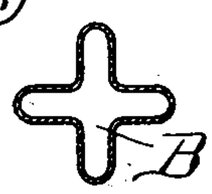


Fig. 4.

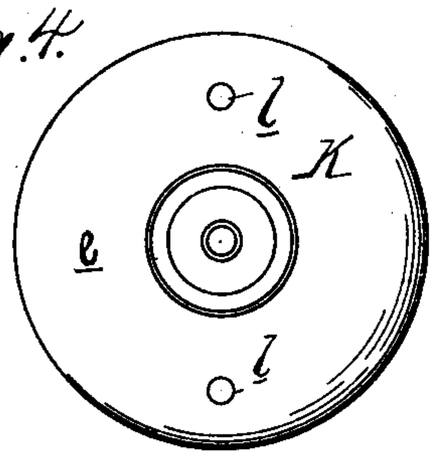
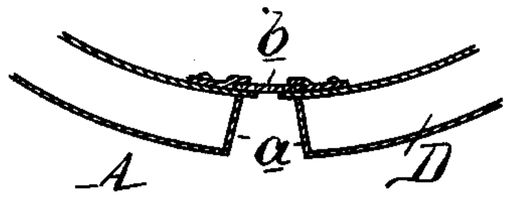


Fig. 6.



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No. 675,874. Patented June 4, 1901.

H. L. MINDS.

CREAM SEPARATOR.

(Application filed May 28, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 7.

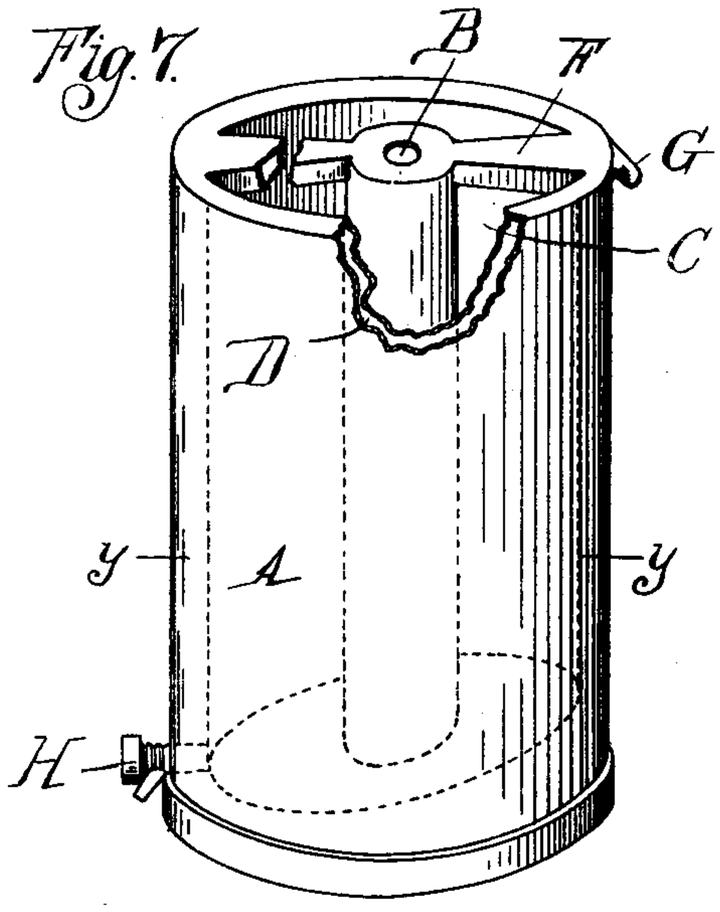
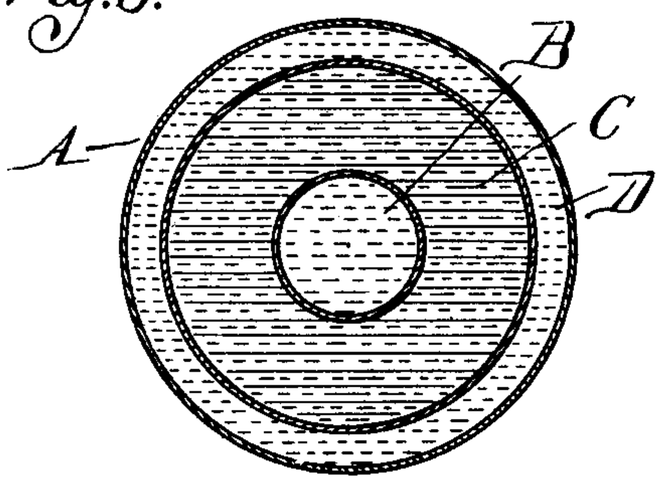


Fig. 8.



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UNITED STATES PATENT OFFICE.

HUGH L. MINDS, OF DETROIT, MICHIGAN, ASSIGNOR TO SUPERIOR FENCE MACHINE COMPANY, OF SAME PLACE.

CREAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 675,874, dated June 4, 1901.

Application filed May 28, 1900. Serial No. 18,188. (No model.)

To all whom it may concern:

Be it known that I, HUGH L. MINDS, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Cream-Separators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to cream-separators, and has for its object to provide a simple and effective means of introducing a cooling agent down through the center of a body of milk and causing it to circulate up around the outside of said body and over the top thereof to the overflow, thus causing a rapid separation of the cream and milk and effectually counteracting the detrimental action of the animal heat.

The invention consists in the peculiar construction of a can provided with a concentric milk-chamber suspended therein and forming a central water-tube and an annular water-jacket entirely surrounding said milk-chamber and communicating with said tube at both its upper and lower ends to produce a complete circulation of the cooling agent around said milk-chamber.

The invention further consists in the peculiar construction of the cover, comprising a closed water-receptacle adapted to set on top of the can and provided with means for receiving and discharging the water into the can.

The invention further consists in the peculiar construction, arrangement, and combination of parts, all as more fully described and claimed in the accompanying specification.

As shown in the drawings, Figure 1 is a vertical central section through my improved milk-can on line *x x*, Fig. 3. Fig. 2 is a side elevation thereof. Fig. 3 is a plan view thereof with the cover removed. Fig. 4 is a plan view thereof with the cover in place. Fig. 5 shows a different construction of central water-tube. Fig. 6 is a horizontal section through the gage. Fig. 7 is a perspective view of the can with the cover removed, parts being broken away to show the connecting-passages. Fig. 8 is a horizontal section on line *y y*, Fig. 7.

In the drawings, A is the can, provided with central water-tube B, the concentric milk-chamber C, and the annular water space or jacket D, formed between the outer wall of the milk-chamber and the can.

E is a water-space in the bottom of the can, connecting the lower end of the water-tube and the annular water-jacket, and F represents tubes or passages connecting them at their upper ends, respectively.

G is a suitable overflow-spout near the top of the can for discharging the warm water after it has circulated around the milk-chamber, and H is a suitable faucet in the bottom of the milk-chamber, extending out through the water-jacket and can, for drawing off the milk or cream. I may and preferably do make the bottom of the milk-chamber inclined, so as to drain said chamber toward the faucet, as shown in dotted lines in Figs. 1 and 7.

I represents suitable handles attached to the side of the can, and J represents gage-glasses sunk into the side of the can, so that the separation of the milk can be readily seen, the construction of said glasses being plainly shown in Figs. 2 and 6, in which *a* represents inclined walls connecting the inner and outer walls of the water-jacket, and *b* represents glass or mica strips secured in the sides of the milk-chamber between said inclined walls, suitable slots having first been cut in the sides of the chamber. It will be seen that the top of this can is entirely closed, except the milk-chamber and a small opening for the water-inlet in the central tube, as shown in Fig. 3, thus preventing the slopping over of the milk into the water-chamber, or vice versa.

K is the cover, provided with the horizontal bottom *d*, adapted to set on top of the can, and the curved top *e*, forming between them a water-receptacle.

f is the inlet-opening, provided with the usual milk-can cover *g*, and *h* is the outlet-pipe, of smaller diameter, projecting a short distance above and below the bottom of the cover, so that a certain amount of water will always be contained in the cover and in overflowing into the tube B will acquire a certain velocity, which causes the cold water to be forced toward the bottom of the central water-tube. This pipe also forms a convenient means for centering the cover on top of the can.

l represents ventilating-tubes extending through the cover, adapted to communicate with the milk-space of the can and with the atmosphere to carry off the animal heat of the milk, which helps to greatly aid the separation.

While this milk-separator is ordinarily used with running water, it will be seen that I have made the opening in the cover large enough so that ice may be used, thus adapting my can to be used in the delivery-wagon, as well as in the creamery or on the farm.

In Fig. 5 I have shown a different form of central tube, so that a greater cooling area may be obtained with a given amount of water.

While my can is constructed of such a form as to be easily handled and cleaned, it will be seen that the water or other cooling agent entirely surrounds the milk-chamber on all sides and by means of the upper connecting-tubes causes a free and rapid circulation of the cooling agent. Another feature is that while the cold water is forced down the central tube the warm water contained within this tube has ample opportunity to rise within this tube and escape to the overflow by means of the upper connecting-tubes, which omission has always been a bad feature of other machines in which the upper portion of the central tube was made a dead end, with no escape for the warm water contained therein.

What I claim as my invention is—

1. A separator, composed of a can divided by vertical partitions, extending from near the top to near the bottom of the can, into a central, an intermediate and an outer compartment, the central and outer compartments communicating with each other at the bottom, the intermediate compartment being closed at the bottom and open on top, an overflow at the top of the outer compartment, a discharge-pipe at the bottom of the intermediate compartment and a passage extending across the milk-chamber to connect the inner and outer compartments at their upper ends.

2. A separator, composed of a can divided by vertical partitions, extending from the top to near the bottom of the can, into a central, an intermediate and an outer compartment, the central and outer compartments being closed on top and communicating with each other at the bottom, the intermediate compartment being closed at the bottom and open on top, an overflow at the top of the outer compartment, a discharge-pipe at the bottom of the intermediate compartment, and a closed passage extending across the milk-chamber to connect the inner and outer compartments at their upper ends.

3. A separator, composed of a can divided by concentric vertical partitions, extending from the top to near the bottom thereof, into a central, an intermediate and an outer compartment, the central and outer compartments being closed on top and communicating with each other at the bottom, closed passages connecting the same at or near the top thereof, the intermediate compartment being closed at the bottom and open on top, an overflow at or near the top of the outer compartment, a valve-controlled discharge-pipe at the bottom of the intermediate compartment, and a hollow cover forming a water-receptacle adapted to set on top of the can, having an inlet-opening, and a discharge-pipe projecting above and below the bottom of the cover, adapted to discharge into the top of the inner compartment.

4. A separator, composed of a can divided by concentric vertical partitions, extending from the top to near the bottom thereof, into a central, an intermediate and outer compartments, the central and outer compartments being closed on top and communicating with each other at the bottom, and the intermediate compartment being closed at the bottom and open on top, an overflow at the top of the outer compartment, a discharge-pipe at the bottom of the intermediate compartment, and a closed cover forming a water-receptacle adapted to set on top of the can, and provided with a water inlet and discharge, said discharge projecting into the inner compartment and forming a centering device for the cover, and vent-tubes projecting through said cover to carry off the animal heat from the middle compartment.

5. A separator, composed of a can, divided by vertical partitions, extending from the top to near the bottom of the can, into a central, an intermediate and an outer compartment, the central and outer compartments being closed on top and communicating with each other at the bottom the intermediate compartment being closed at the bottom and open on top, an overflow at the top of the outer compartment, a discharge-pipe at the bottom of the intermediate compartment, a passage connecting the inner and outer compartments at their upper ends, a hole in the top of the inner compartment, and a hollow cover forming a water-receptacle and having a discharge-spout adapted to project through said hole in said inner compartment.

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

HUGH L. MINDS.

Witnesses:

OTTO F. BARTHEL,

JOS. A. NOELKE.