

(No Model.)

C. H. LEONARD.
MILK COOLER.

No. 436,364.

Patented Sept. 16, 1890.

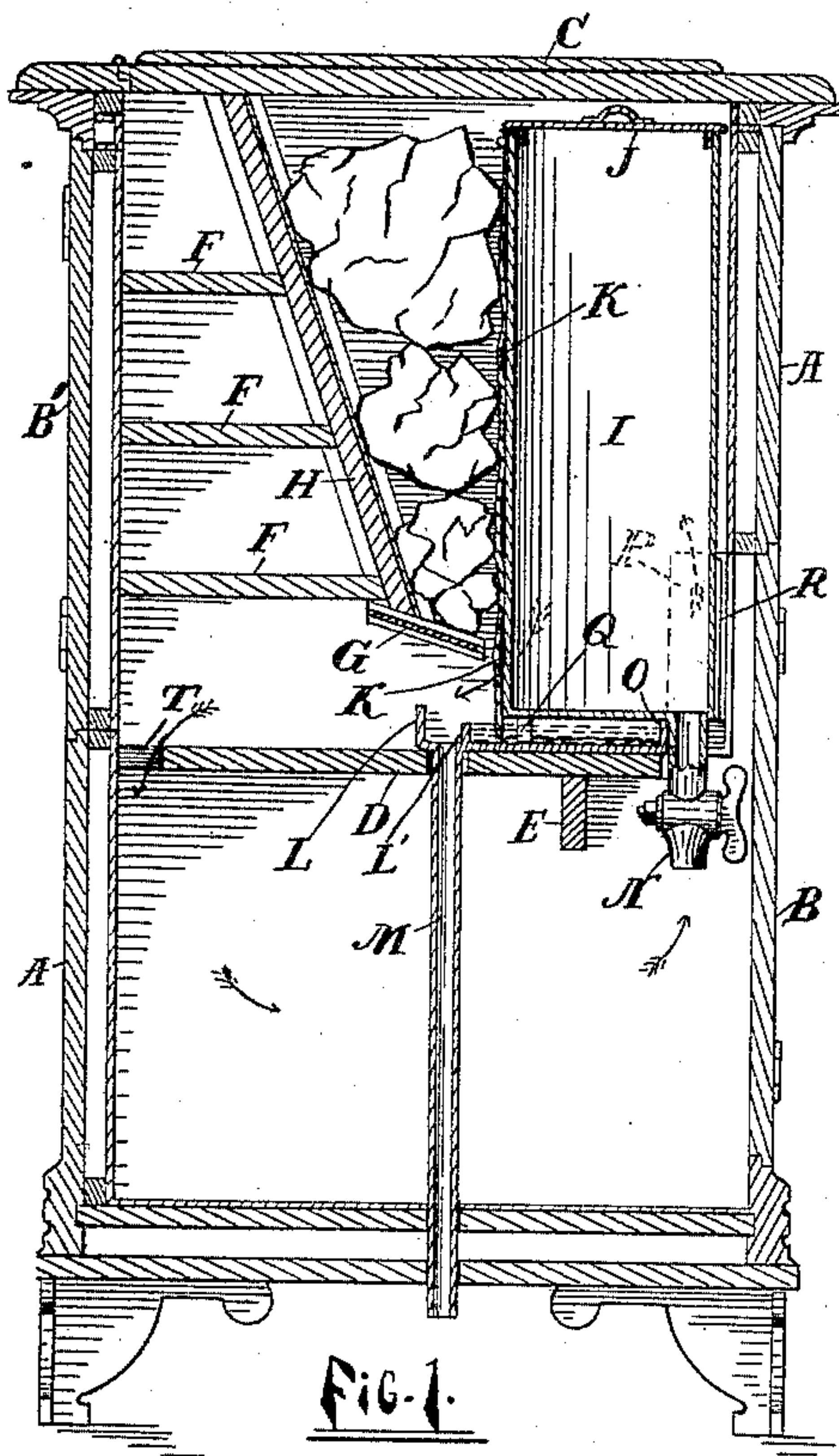


FIG. 1.

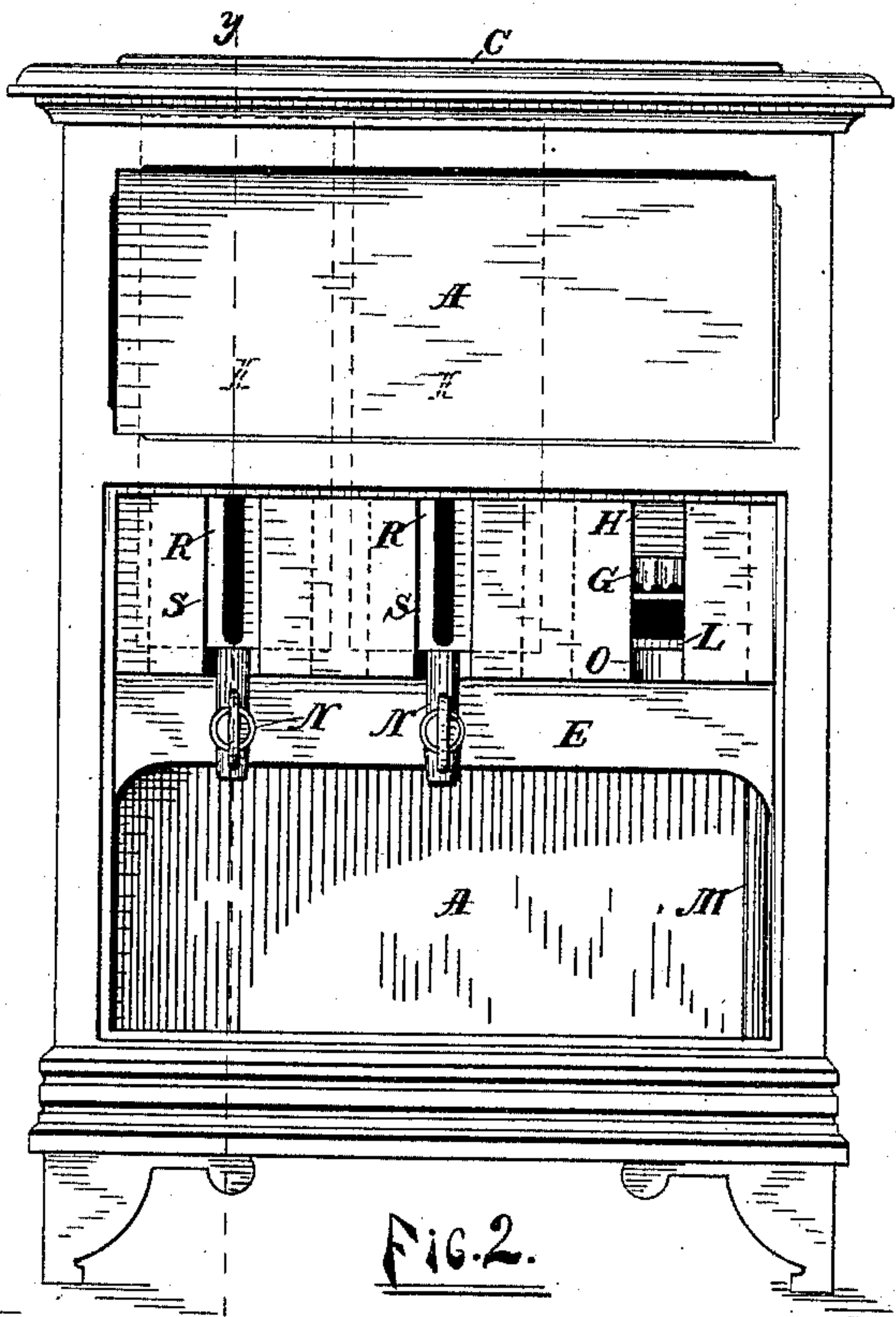


FIG. 2.

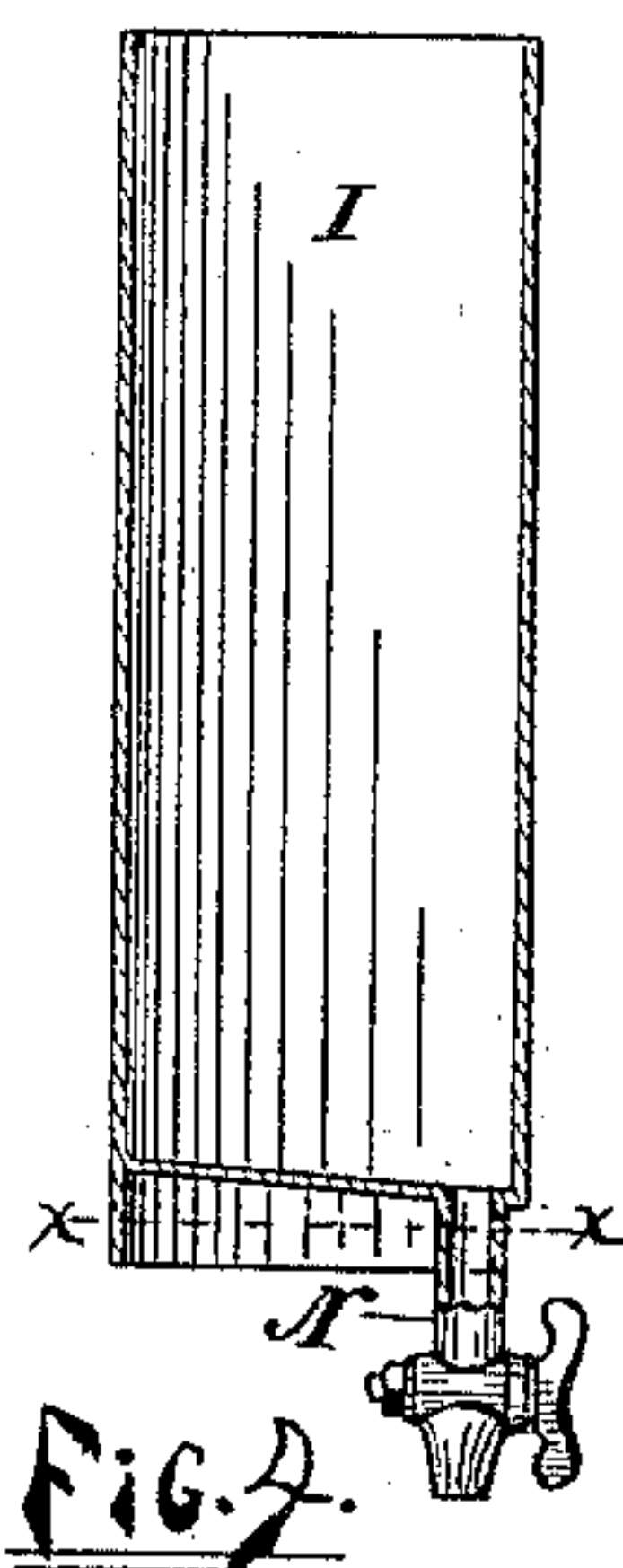


FIG. 4.

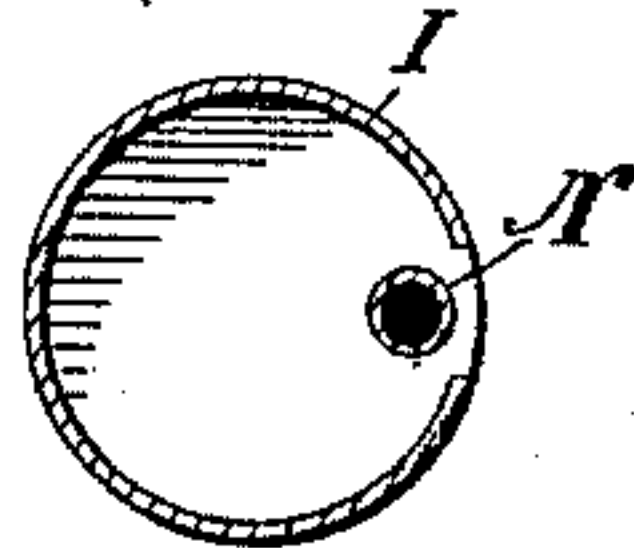


FIG. 5.

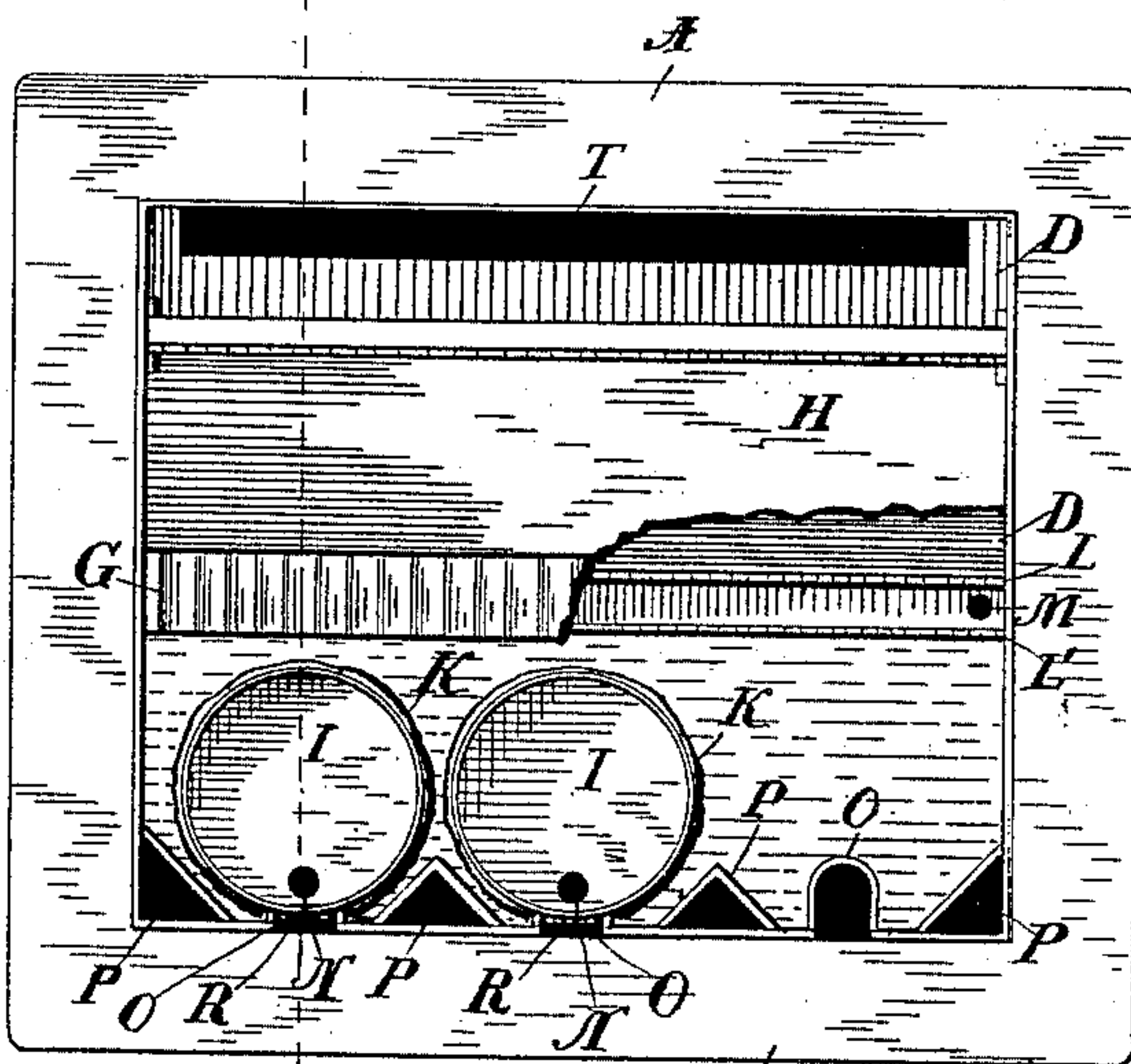


FIG. 3.

Witnesses

Hugh E. Wilson
Harry P. Van Wagner

Inventor
Charles H. Leonard

By His Attorney
Edward Jaggard

UNITED STATES PATENT OFFICE.

CHARLES H. LEONARD, OF GRAND RAPIDS, MICHIGAN.

MILK-COOLER.

SPECIFICATION forming part of Letters Patent No. 436,364, dated September 16, 1890.

Application filed April 13, 1889. Serial No. 307,088. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. LEONARD, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Milk-Coolers, of which the following is a specification.

My invention relates to that class of milk-coolers having an outer case provided with an inner chamber adapted to contain one or more milk-cans, and also to hold a quantity of ice for the purpose of lowering the temperature of the milk and raising cream in the cans.

The objects of my invention are, first, to so construct the outer case and cans that the cans can be readily removed from the case and be replaced therein without removing any nuts or packing; second, to support the cans within the case above a shallow water-tank and to cool the contents of the cans by means of a casing of fine fibrous or porous fabric, which will receive the water from the ice and from the shallow pan and carry it up the sides by capillary attraction; third, to arrange an ice-chamber in contact with the cans, so that the dripping ice-water will be received by the fabric incasing the cans; fourth, to arrange a series of flues—one or more for each can—which will direct the upward currents of air against the outer or surrounding fabric of the cans; fifth, to combine in the upper part of the casing an ice-chamber, a provision-chamber in the rear of the ice-chamber, and a chamber for the milk-cans in front of the ice-chamber. These objects I accomplish by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of my invention on line *y y* of Figs. 2 and 3. Fig. 2 is a front elevation of my invention with the front door removed for the purpose of showing the position of the milk-cans within the case. Fig. 3 is a plan view of the same with the top of the case removed. Fig. 4 is a sectional side elevation of one of the milk-cans having a modified form of support, and Fig. 5 is a horizontal sectional view on line *x x* of Fig. 4.

Similar letters refer to similar parts throughout the several views.

The outer case is composed, preferably, of

wood and in any desired shape. It is shown in the drawings by A.

B represents the front door.

B' represents the door of the upper provision-chamber.

C is the lid or cover of the case.

D is a partition extending horizontally across the case and forming the bottom of the rear provision-chamber, and supporting the milk-cans and ice-rack.

E is a bar or support for the bottom piece D. This part E may be dispensed with, as it forms no part of my invention, and if used it is preferred to have it open-work, so as to not prevent the free movement of the air in the lower provision-chamber.

The rear provision-chamber is provided with shelves F F F. The ice-chamber is located between the provision-chamber and the cans.

H represents the rear wall of the ice-chamber, which is preferably inclined, as shown, and G represents the bottom of the ice-chamber, which is also preferably inclined. The outer casing and the milk-cans form the other three sides of the ice-chamber.

I I, &c., represent the cans. Each can is surrounded by a covering of porous or textile fabric adapted to receive and hold the ice-water in contact with the outer surface of the milk-cans. This fabric is shown in the drawings by K. It extends down into the shallow water tank or reservoir beneath the cans. This fabric, by its capillary attraction, conveys the ice-water from the shallow reservoir beneath the cans to the outer casing of the cans. The rear side of the shallow tank is formed by the ridge or projection L', and its front side is formed by a vertical rim having at intervals the depressions or indentations O, forming seats for the can-faucet N. The milk-cans rest upon and are supported at the front by the rim having the depressions or indentations O, and at the rear by a support Q. When a milk-can is placed within the case A the faucet N is passed down into and seats within one of the indentations O in the front of the water tank or tray, and as the rear ridge or projection L' of the latter is quite low the water passes over into the discharge-pipe M, while the rear wall L of the

tank or tray prevents the water passing into the provision-chamber.

By means of the construction above described the cans can be readily removed from the case and replaced therein, and no packing need be used to prevent escape of water.

Instead of resting the cans upon the supports O and Q, as above described, the can may have a projection below its bottom, forming a leg or legs, as shown in Fig. 4. This, however, would not dispense with the opening through the bottom of the tank already described. It will be observed that the shallow water-tray is bounded at the side having the depressions or indentations O by a vertical rim or flange, which in practice rises above the water-level in the tray in such manner that such rim or flange surrounds the depressions or indentations and forms a guard to prevent the water flowing through.

In the front of the case I provide air-flues, (shown by P P), which allow the air to pass upward from the lower provision-chamber and to come in contact with the upper portion of the cans. This has a tendency to evaporate the moisture held by the fabric near the upper portion of the cans, which moisture is replaced by the capillary attraction from the cooler water beneath. The air passes over and between the cans near the top, impinges upon the ice, where it is cooled, and descends, passing under the ice-rack, into the provision-chamber, and from thence through the opening T into the lower chamber. If found desirable, the partition H need not extend to the top of the case; but a space may be left which will allow the air to pass over it into the rear provision-chamber; or the top of the ice-partition may be perforated so as to allow a portion of the air to pass into the provision-chamber, where it is cooled by contact with the metallic wall of the ice-chamber and passes downward through the opening T. Each can is provided with a faucet N and a cream-gage R; also with a cover J. S S S represent the openings through the metallic casing, exhibiting the cream-gages R R.

The operation of my invention is as follows: The cans are first surrounded by the fabric and then placed in the case. The ice is placed preferably in contact with the fabric on the cans. The melting of the ice deposits the water on the fabric which surrounds the cans, and also melts and runs down, filling the shallow tank beneath the cans. The porous fabric takes up the water, and by capillary attraction raises it from the shallow tank up the outer walls of the cans. The cold air descends from the ice, passes into the lower chamber, from thence upward through the flues P P, is brought in contact with the fabric around the cans, evaporates the water near the top of the cans, and deposits the same upon the ice, the evaporated water being replaced from the ice and from the shallow tank beneath the cans by the capillary attraction of the fabric.

The passing of the cold air into the rear of the provision-chamber will subserve the purpose of cooling such chamber. The milk is placed in the cans in the ordinary manner, and is cooled as quickly as if the cans were set in ice-water. In removing the milk and cream from the cans it is not necessary to remove the cans from the case, as both may be drawn off through the faucets N N in the ordinary manner.

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

1. In a milk-cooler, the combination, with a case adapted to receive milk-cans, of a water tank or tray supported in the case and having one side provided with a series of indentations, means for supporting the milk-cans and water-tank, an ice-chamber, and a series of removable milk-cans, each provided with a pendent faucet seated in one of the indentations, whereby the cans, with their attached faucets, can be removed and replaced without the detachment of nuts and packings, substantially as described.

2. In a milk-cooler, the combination of a case adapted to receive milk-cans and having front openings for viewing the cream-openings, a shallow water-tank supported in the case below the cream-gage openings and having a series of indentations in its front edge, means for supporting the milk-cans and water-tank, an ice-chamber, and a series of cans supported above the water-tank and each having a cream-gage and provided with a faucet arranged in one of the indentations and adapted to be removed therefrom with the can, whereby the cans, with their attached faucets, can be removed and replaced without detachment of packings, nuts, or screws, substantially as described.

3. In a milk-cooler, the combination of a case having a shallow water-tank provided in its front edge with indentations, an ice-chamber, a series of milk-cans arranged above the water-tank and each having a faucet extending down through one of the indentations and connecting with the can at a point above the water-line in the tank, said cans with the faucets attached being removable without detaching packings, nuts, or screws, and means for supporting the milk-cans and water-tank, substantially as described.

4. In a milk-cooler, the combination of a case, a shallow tray having a vertical rim or flange provided with depressions or indentations, milk-cans arranged within the case above the tray and each having a faucet extending down through one of the depressions or indentations of the rim or flange, means for supporting said cans and tray, textile or porous fabric surrounding and in superficial contact with the side wall of each can, and an ice-chamber beside the cans, which holds the ice in contact with the fabric on all the cans, substantially as described.

5. In a milk-cooler, the combination, with a

case, of a shallow water-tank supported within the case, milk-cans supported above the water-tank, an ice-chamber, and a textile or porous fabric surrounding each can and extending along its vertical wall to a point beneath the bottom of the can, where such fabric dips into the water in the tank below the cans, for conveying water by capillary attraction upward along the side walls of the cans, substantially as described.

6. In a milk-cooler, the combination, with a case adapted to receive milk-cans, of a shallow water-tank supported in an elevated position within the case and provided at one side with a series of indentations, an ice-chamber, a series of milk-cans supported above the water-tank and each having a faucet extending through one of the indentations, a textile or porous fabric surrounding each can in superficial contact therewith and extending down below the bottom of the can into the water-tank beneath the latter, and ventilating-flues located in the case to carry air to said fabric and evaporate the water therefrom, substantially as described.

7. In a milk-cooler, the combination, with a case adapted to receive milk-cans and provided at its front with openings for viewing the cream-gages, of a shallow water-tank supported in an elevated position within the

case and provided at its front side with a series of indentations, an ice-chamber, a series of milk-cans supported above the water-tank and each provided with a cream-gage exposed through a cream-gage opening and with a faucet extending through one of the indentations, and a textile or porous fabric in superficial contact with each can and extending down below the bottom of the latter into the water-tank, substantially as described.

8. In a milk-cooler, the combination of a case, a series of milk-cans supported in said case, a shallow water-tank supported beneath the milk-cans, an ice-chamber, a textile or porous fabric surrounding each milk-can and extended down beneath the can and into the water-tank, and a series of ventilating-tubes located vertically in the case and adjacent to the milk-cans to carry air to the textile or porous fabric for the purpose of promoting the evaporation of water from such fabric, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

CHARLES H. LEONARD. [L. S.]

Witnesses:

HUGH E. WILSON,

HARRY P. VAN WAGNER.