3 Sheets--Sheet 1.

L. C. PALMER.

Milk-Cooler.

No. 168,104.

Patented Sept. 28, 1875.

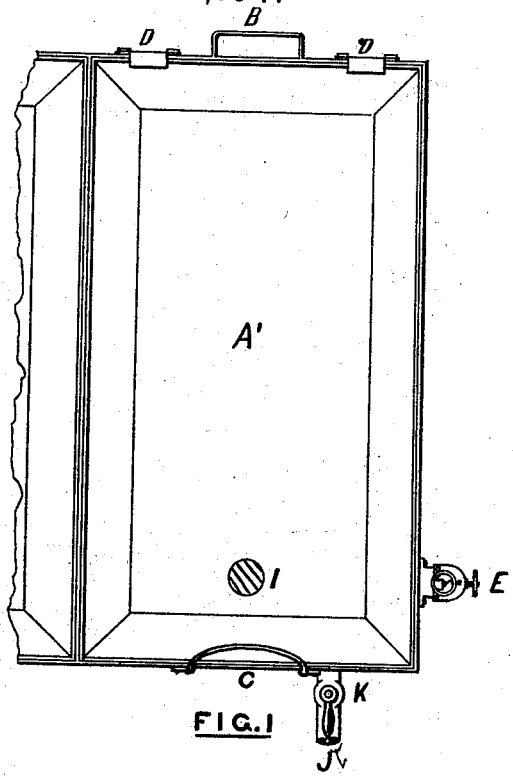

FIG. 1

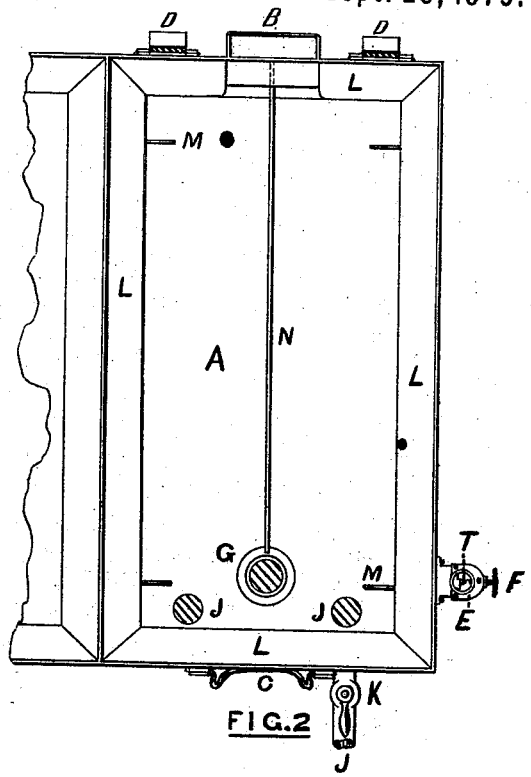

FIG. 2

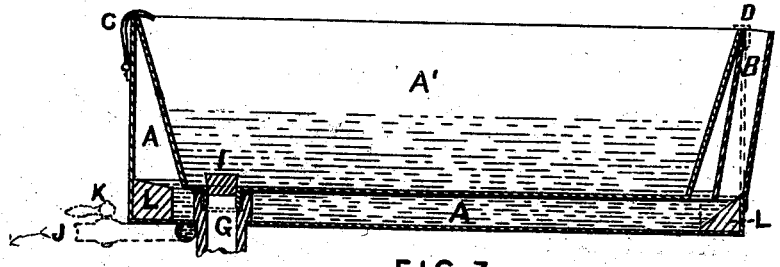

FIG. 3

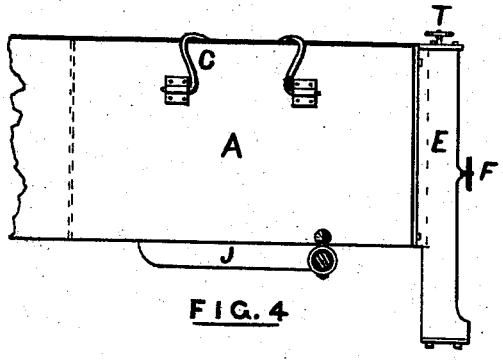

FIG. 4

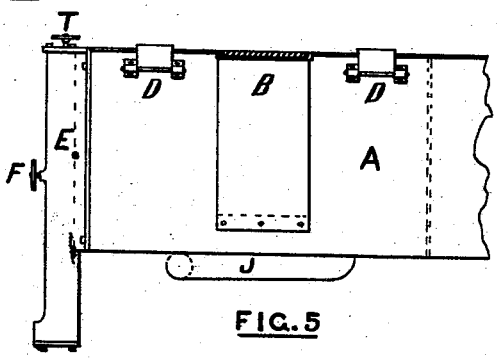

FIG. 5

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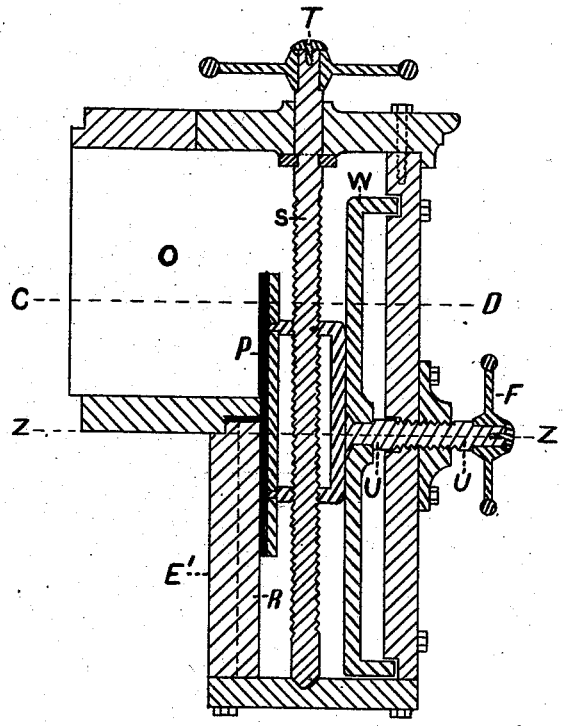

FIG. 6

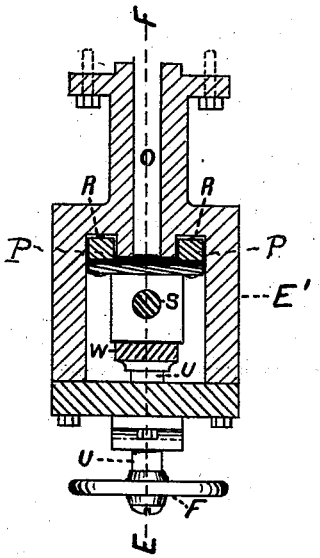

FIG. 7

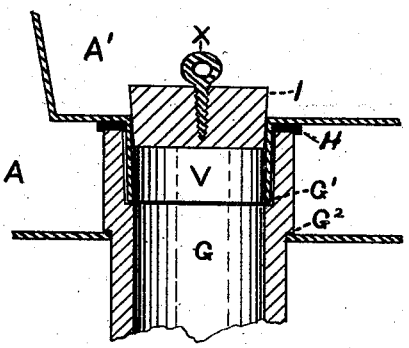

FIG. 8

WITNESSES.

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L. C. PALMER.

Milk-Cooler

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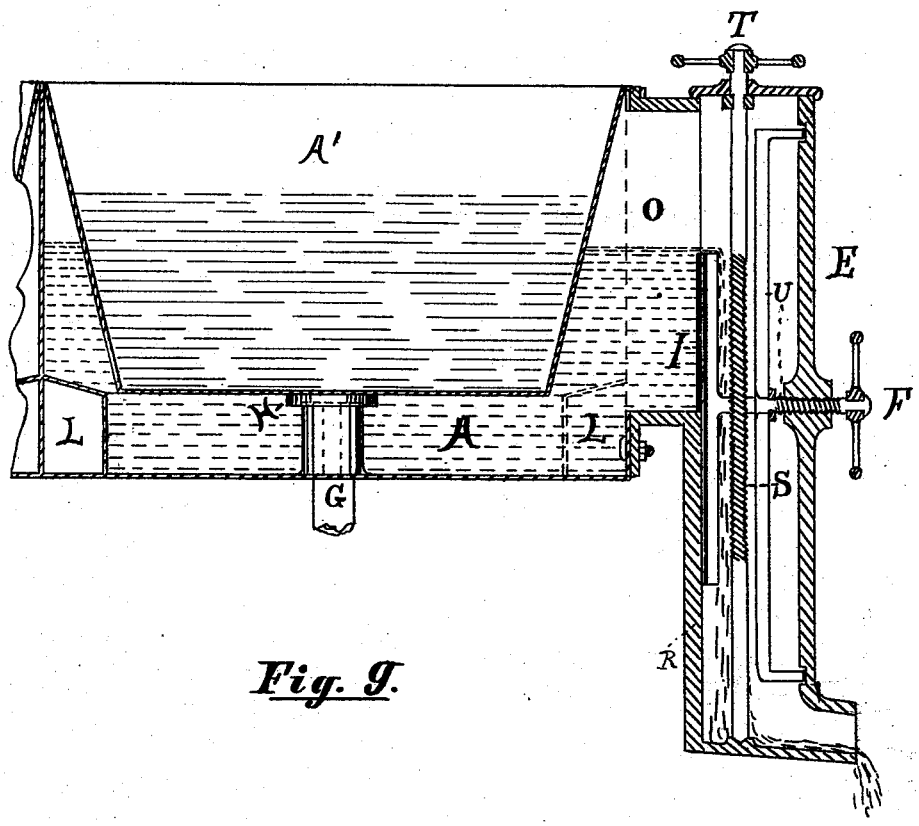

Fig. 9.

Witnesses:
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UNITED STATES PATENT OFFICE.

LEROY C. PALMER, OF CHARLOTTE, VERMONT.

IMPROVEMENT IN MILK-COOLERS.

Specification forming part of Letters Patent No. **168,104**, dated September 28, 1875; application filed March 18, 1875.

To all whom it may concern:

Be it known that I, LEROY C. PALMER, of Charlotte, county of Chittenden and State of Vermont, have invented an Improvement in Milk-Cooling Apparatus, of which the following is a specification:

This invention relates to that class of milk-coolers wherein a number of milk-pans are set into water-tanks, and in such manner as to leave a space between the pans and tanks for the circulation of water.

The principal objects sought in this improvement are, first, the complete control of the quantity of water in the tanks, according as the temperature of the same may be, and the quantity of the milk in the pans may be more or less; second, the concentrating the water directly beneath the bottom of the milk-pans when desirable; third, obviating the necessity of drawing off the water to a point lower than the top of the milk-outlet pipe if the removal of the milk-pan is requisite.

Figure 1 is a top view, showing a portion of the apparatus with the milk-pan in position. Fig. 2 is a top view, showing a portion of the apparatus with the milk-pan out. Fig. 3 is a section through the apparatus on lines A B, Figs. 1 and 2, (milk-pan in position.) Fig. 4 is a back view of the apparatus. Fig. 5 is a front view of the apparatus. Fig. 6 is a section through water-regulator on line E F, Fig. 7. Fig. 7 is a section through water-regulator on line C D, Fig. 6. Fig. 8 is an enlarged section through center of connection between the milk-pan and the outlet-pipe beneath the water-tank. Fig. 9 is a transverse vertical section through milk-pan, water-tank, and regulator.

In Figs. 1, 2, 3, 4, and 5, A is a water-tank, having on its outside the bevel-inlet B, clamping-iron C, and smaller clamps D D, to hold pan in position. E is a water-regulator having an adjustable gate therein, said gate being made water-tight by packing, and the pressure-bar operated by the wheel F. G is the milk-outlet pipe having a rubber-packed joint, H, and plug I. (See Fig. 8.) J, J, and K are water-outlet pipes. The inside of tank A is fitted with a continuous bolster, L L, and supports for the milk-pan M M.

In Figs. 6 and 7, (details of water-regulator,) O is the outlet from water-tank, I being the adjustable gate, properly packed, and working vertically in guides R R, controlled in height by the screw S and wheel T, and being made water-tight by the screw-pressure bar U and wheel F. This regulator is used to control the height of water in tank A when it rises above the bottom of the milk-pan A′.

In Fig. 8, (detail of connection between milk-pan and outlet to same,) G is the outlet-pipe, having its upper end formed with shoulders G^1 and G^2, inside and out, former to allow the tube V on its inside to be in line with the inside of the outlet-pipe G. Shoulder G^2 is to form bearing on the bottom of the tank A, and to which it is firmly secured. The pipe G runs above bottom of pan A for purpose of preventing water getting into it when not fully drawn off, and obviates the necessity of fully drawing off the water, thereby saving both water and labor. V is a truncated tube connected to the milk-pan A′, and having around it, at a line at the bottom of the milk-pan, a packing, H, of rubber or other suitable material, said packing forming a water-tight joint between the pipe G and the bottom of the milk-pan A′, and prevents the water in the tank A passing into the pipe G and mixing with the milk. I is a plug of any suitable form and material, and having connected to it a ring, X, to which is attached a chain or wire for drawing it out of the tube V. This tube V is truncated to facilitate the removal of the pan A′ when it is necessary to cant the pan.

In Fig. 6, (water-regulator,) Z Z indicate a line at which the shell of the regulator comes apart, it being necessary to make the same in two parts, that the internal pieces may be more readily handled and adjusted. This joint to be suitably packed. The bolsters L L are, practically, for the purpose of concentrating the water in the pan A directly beneath the bottom of the milk-pan A′ when but little milk is in the latter, making a saving of water and insuring less rapid cooling of same, as the depth of the water is greater in proportion to its surface than it would be were the bolsters omitted.

The entire apparatus is to be supported on any suitable foundation, and to be constructed of any suitable materials in any of the known

modes and forms, except when otherwise specified and claimed.

To use my improvement the milk-pan A′ is placed in position in the tank A, the height or quantity of water then determined by the temperature of the same and the quantity of the milk, and the gate P of the water-regulator E set at the determined height, (the pressure on the gate P being first removed from the guides by turning out the screw-pressure bar U, to allow the gate to move freely up or down by means of the screw S and wheel T.) Water is then supplied to the tank A through the bevel-inlet B, the water passing under the pan A′ and rising up and around it till it reaches the top of the gate in the regulator E, over which it flows, passing down and out at the bottom of the regulator. Should it be found that the gate P be set too high or too low the same is regulated by the wheel T at the top of the regulator. The water flows through an aperture in the side of the tank A into the regulator E, said aperture being in length, vertically, from bottom of pan A′ to a line near its top. When the milk is sufficiently cooled the water is drawn from the tank A through the pipes J J and faucet K, or by lowering the gate in the regulator E, the milk passing out of the pan A′ through the pipe G by drawing the plug I.

What I claim as my invention is—

1. In combination with the pan A′ and tank A, the double-shouldered pipe G, being a fixture in the bottom of water-tank A, reaching close to bottom of milk-pan A′, and having a rubber packing or gasket at its upper end, all being arranged and to operate substantially in the manner set forth.

2. In combination with the milk-pan A′ and the double-shouldered fixed pipe G, the short tube V, being a fixture in the bottom of the milk-pan A′, having one side of its lower end truncated, substantially as and for the purpose set forth.

3. In combination with the water-pan A and the milk-pan A′ the water-regulator E, composed of a suitable shell of one or more pieces, having at its upper part the inlet O, over which inlet slides an adjustable gate, P, properly packed, kept in position laterally by means of guides R R, controlled in height by screw S and wheel T, and made water-tight by screw-pressure bar U and wheel F, the lower part of the regulator having an outlet to which may be connected a pipe or drain, operating in the manner and for the purposes as set forth.

LEROY C. PALMER.

Witnesses:

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ANDREW J. HOWARD.