F. X. MANAHAN.
Milk-Coolers.

No. 206,340. Patented July 23, 1878.

Fig 1

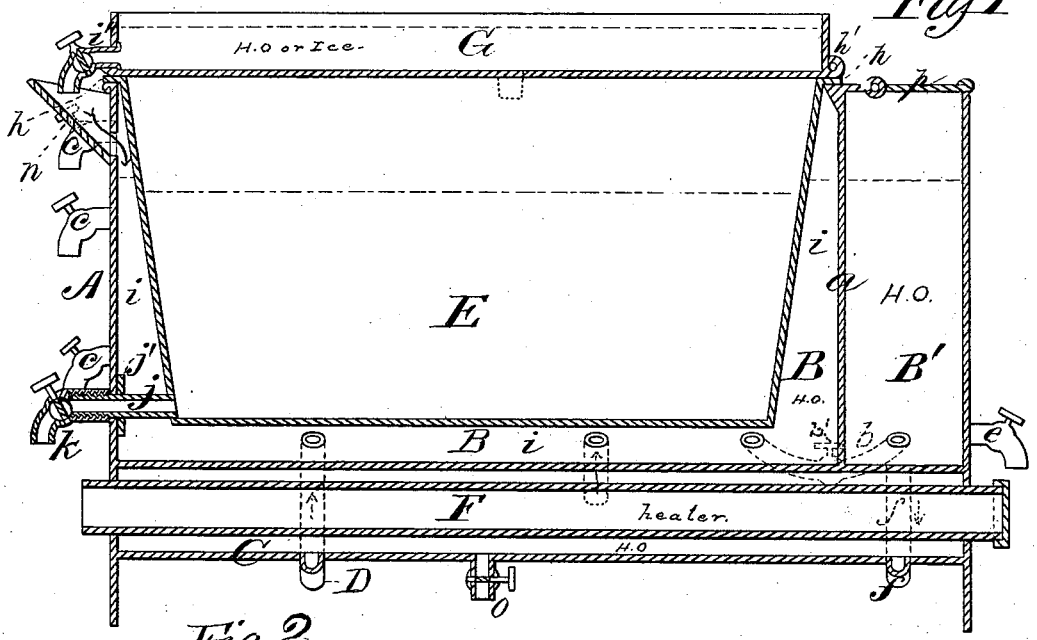
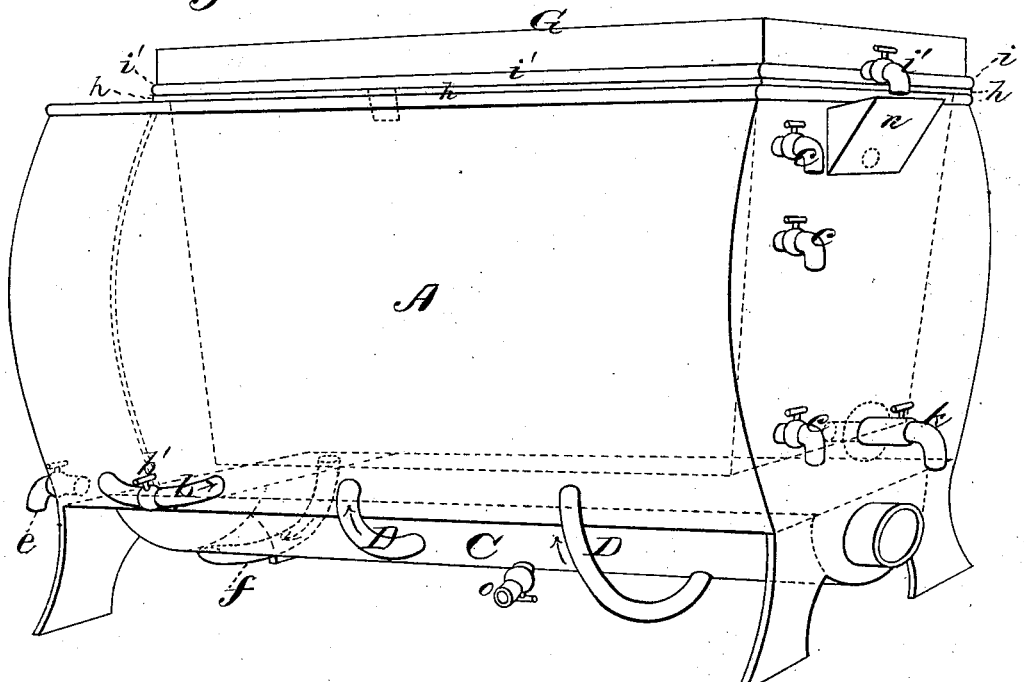


Fig 2



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FRANCIS X. MANAHAN, OF UTICA, NEW YORK.

IMPROVEMENT IN MILK-COOLERS.

Specification forming part of Letters Patent No. **206,340**, dated July 23, 1878; application filed July 6, 1878.

To all whom it may concern:

Be it known that I, FRANCIS X. MANAHAN, of Utica, in the State of New York, have invented a new and valuable Improvement in Milk-Cooling Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical section of my milk-cooling apparatus, and Fig. 2 is a perspective view of the same.

This invention has relation to means for facilitating the regulation of the temperature of milk by the application of heat or cold, as may be required, and thereby facilitating the formation of cream; and it consists in the construction and novel arrangement of a water-reservoir surrounding the milk-pan; a hinged pan-lid having a cock to communicate with a spout of the reservoir; a vertical compartment at one end of the reservoir connected thereto by a pipe having a stop-cock, and at the other end a vertical series of stop-cocks adapted to let off the water of the reservoir at different levels; also, of the heater-compartment, extending the length of the bottom of the reservoir, and having its top formed by said bottom, as hereinafter shown and described.

In the accompanying drawings, the letter A designates the exterior casing or reservoir of the cooler, which is divided by a vertical wall, *a*, into two compartments, B B′, whereof the former is larger than the latter and designed to receive the milk-pan, the compartment B′ being at one end thereof. C designates a hot-water receptacle, of semi-cylindrical form, which extends along the bottom of the casing A and forms a part thereof, its top wall being formed by the bottom of the reservoir-compartments B B′, as shown in the drawings. In this manner the hot-water receptacle is brought into direct contact with the reservoirs. This hot-water receptacle communicates with chamber B through one or more tubes, D, which may be provided with stop-cocks.

The compartments B B′ communicate, one with the other, through a horizontal pipe, *b*, connecting their lower portions. This pipe is arranged externally, and is provided with a stop-cock, *b′*, whereby the water of one compartment may be let into or cut off from the other when necessary.

At the other end of chamber B it is provided with a vertical series of let-off stop-cocks, *c*, which are arranged at different levels to determine the height of water in the chamber and to let off water at any level, according to the temperature required, without removing the milk-pan E.

The end chamber B′ is provided with a draw-off cock, *e*, whereby its contents, or that of both compartments when the pipe *b* is open, may be emptied. This chamber B′ is also provided with a conduit, *f*, opening into the bottom of the hot-water chamber C, which has a draw-off cock, *o*, whereby all three chambers may be emptied, if necessary.

The milk-pan E is seated in the reservoir B, and is provided with strong edge flanges *h*, whereby it is supported on the margin of the opening at the top of this reservoir. This edge flange serves as a convenient handle for transporting the pan when necessary.

The milk-pan is usually made with walls inclining from each other or flaring, so that the space around the pan will increase in the chamber B with its depth therein. This circumscribing space is lettered *i* in the drawings, and is designed to be filled, or nearly filled, with water, which is the medium whereby the temperature of the milk in the pan is affected, as it is in immediate contact with all of the faces of said pan.

In practice, when the pan E is of large size an eduction-pipe, *j*, communicating therewith, will extend through the end wall of the chamber B, for the purpose of drawing off the milk after the formation of the cream; but in smaller pans this pipe may be dispensed with. When used, the pipe *j* will be provided with a collar, *j′*, which, being jammed or clamped against the wall of the reservoir by the application of a cock, K, upon its screw-threaded end, will form therewith a water-tight joint.

G designates a shallow pan-lid, which is hinged at *h′* either to the margin of the pan or to that of the reservoir, and is provided with a guide lip or flange, *i′*, extending all around its lower edge, and designed to fit

snugly against the margin of the pan and form a close joint therewith. This pan is designed to receive hot or cold water, and in very warm weather it may contain ice. At the opposite end of this pan-lid from its hinges is placed a stop-cock, *i''*, whereby its contents may be allowed to flow into the reservoir-compartment B when required, whence it may be distributed or drawn off into the compartments B′ and C, as may be required in regulating the temperature of the milk in the pan and keeping it uniform.

In order to receive the water from the stop-cock of the pan-lid a funnel or spout, *n*, is arranged near the top of one end of chamber B, being secured to its external wall.

F designates a heating-pipe, extending through chamber C and designed to heat the water therein when required. In practice, in warm seasons or climates, this pipe and its reservoir may be dispensed with, as the abstraction of heat from the milk can be effected and a uniform temperature reached without it through the use of the pan-lid, end reservoir, and the vertical series of gage-cocks.

The water in the reservoir B about the pan cannot be constantly stirred to mix its warm and cold layers. Hence the cold water is preferably let in from the pan-lid, and, as it becomes heated, the water is withdrawn from the top through the upper gage-cocks. Cold water may be also let in at the bottom from the end reservoir B′ through the pipe *b*. Should it be found that the temperature is too low, the bottom water of the reservoir B may be let into the end compartment B′ or allowed to flow off through the lower gage-cock.

The natural tendency of the water in the reservoir and of the milk to rise in temperature on top is in a great measure counteracted by the influence of the cold contents in the pan-lid.

Warm water may be placed in the chamber B′ and cold in the pan-lid, and the contents of these chambers may be respectively communicated to the reservoir B as heat or cold is required, the superabundance in said reservoir being let off through a gage-cock at the proper elevation required in preserving the uniformity of temperature.

What I claim as my invention, and desire to secure by Letters Patent, is—

The milk-tempering apparatus consisting of the pan E, its hinged pan-lid G, having stop-cock *i*, the reservoir-compartment B about the pan, having at one end the vertical series of cocks *c* and the spout *n*, and at the other end the chamber B′, separated therefrom by a vertical wall, *a*, and connected thereto by the external horizontal bent tube *b* opening into the lower portions of said reservoir and chamber, and having a stop-cock, *b′*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANCIS X. MANAHAN.

Witnesses:

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ALFRED H. COLLING.