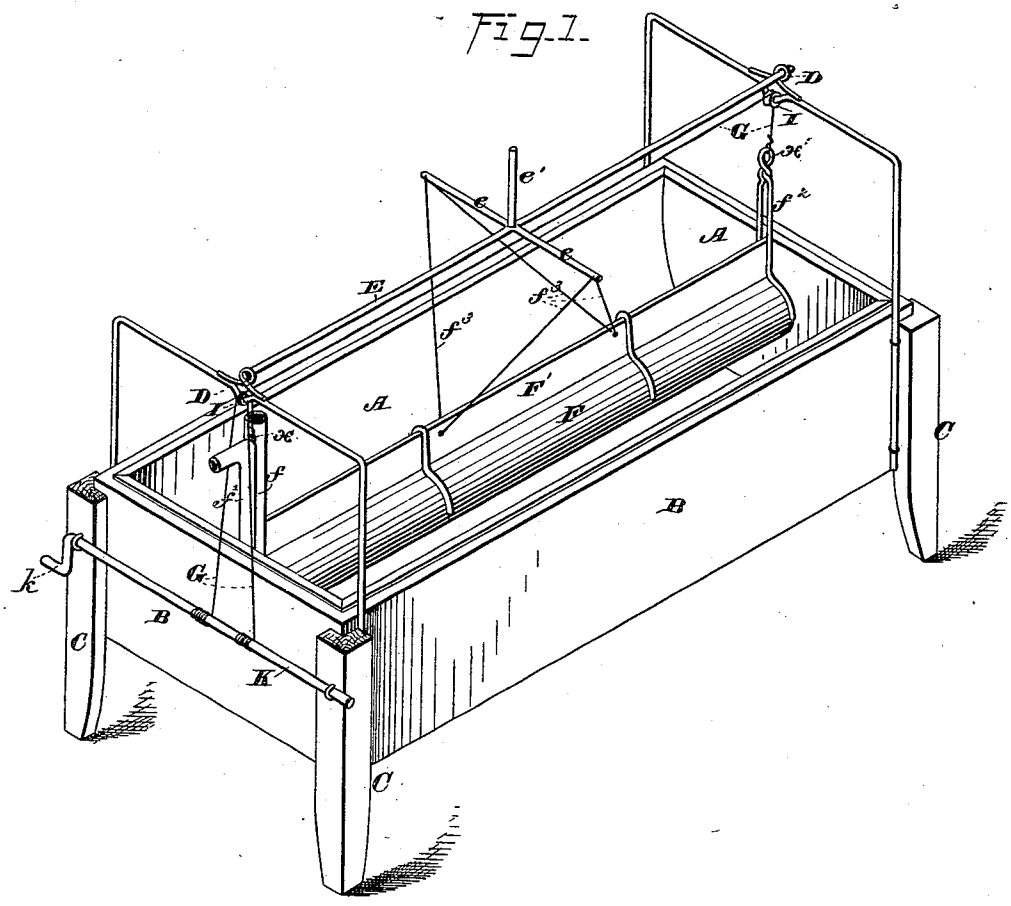
2 Sheets—Sheet 1.

J. B. MARQUIS.

Cheese-Vat.

No. 228,366. **Patented June 1, 1880.**

Fig. 1.



WITNESSES=

Jas. E. Hutchinson.

Henry C. Hazard.

INVENTOR.

J. B. Marquis, by

Geo. S. Prindle, his Atty

2 Sheets—Sheet 2.

J. B. MARQUIS.

Cheese-Vat.

No. 228,366. Patented June 1, 1880.

Fig. 2.

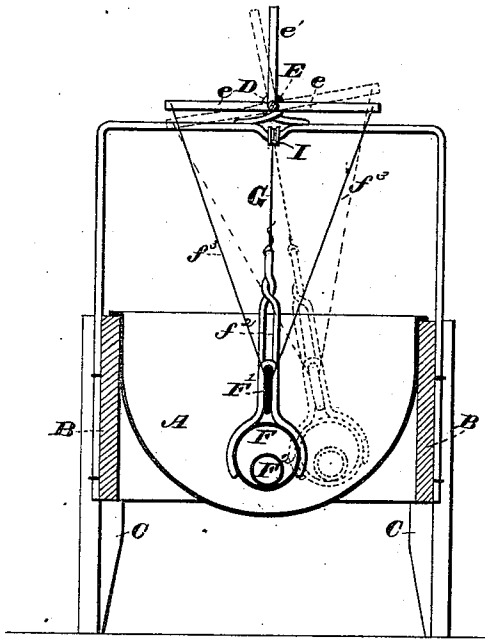


Fig. 3.

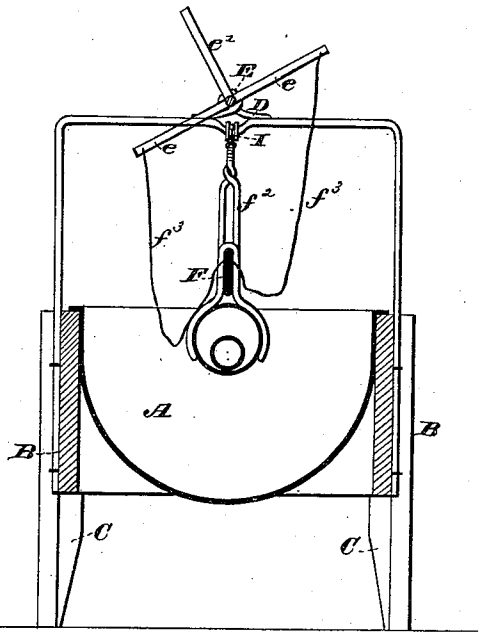
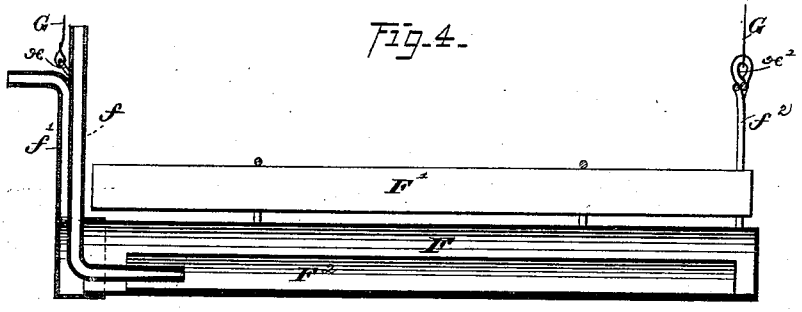


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES B. MARQUIS, OF NORWICH, NEW YORK.

CHEESE-VAT.

SPECIFICATION forming part of Letters Patent No. 228,366, dated June 1, 1880.

Application filed October 10, 1879.

To all whom it may concern:

Be it known that I, JAMES B. MARQUIS, of Norwich, in the county of Chenango, and in the State of New York, have invented certain new and useful Improvements in Cheese-Vats; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved device as arranged for use. Fig. 2 is a vertical cross-section of the same, the dotted lines showing the position of parts when the heater is swung to one side. Fig. 3 is a like view of said device, showing the position of parts when said heater is raised; and Fig. 4 is a central longitudinal section of said heater upon a vertical line.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to enable curd for cheese to be more easily and quickly prepared; and to this end it consists, principally, in a cheese-vat provided with a heater, which may be swung from side to side within its interior, substantially as and for the purpose hereinafter specified.

It consists, further, in a cheese-vat provided with a heater, which may be adjusted vertically and swung from side to side within its interior, substantially as and for the purpose hereinafter shown.

It consists, further, in combining with a vat for containing liquids a heater in which a circulation of water within its interior is produced by means of a current of steam admitted into a chamber located within said heater and open to the admission and exit of water, substantially as and for the purpose hereinafter set forth.

It consists, further, in the construction of the heater, by means of which a continuous circulation of water is effected around the interior of its exterior wall, substantially as and for the purpose hereinafter shown.

It consists, further, in the means employed for oscillating said heater within the vat, substantially as and for the purpose hereinafter set forth.

It consists, further, in the means employed for locking the heater in vertical position, substantially as and for the purpose hereinafter shown and described.

It consists, finally, in the device as a whole, its several parts being combined to operate in the manner and for the purpose substantially as hereinafter specified.

In the annexed drawings, A represents a vat, constructed from sheet metal, with a semi-circular bottom and vertical ends. Said vat is preferably inclosed in a wooden casing, B, and supported by means of four legs, C. Supported within suitable bearings D, arranged over each end of the vat A, is a shaft, E, which, at or near its center, has a cross-arm, *e*, that extends horizontally and transversely to equal distances, and at the same point is provided with a second arm, *e'*, that extends upward at a right angle to said arm *e*.

Within the vat A is placed a heater, F, which has a cylindrical form and extends lengthwise of said vat nearly to its ends. At one end said heater is provided with two pipes, *f* and *f'*, that at their lower ends communicate with its interior, and from thence extend upward to a point above the edge of said vat, and at such point are provided with an eye, *x*, while at its opposite end said heater has attached a bar, f^2, that extends upward to a point upon a line with the upper ends of said pipes, and terminates in an eye, *x'*, similar to the eye *x*, to each of which eyes a cord or chain is attached.

From the eyes *x* and *x'* two cords, G, pass upward over suitable pulleys, I, and thence downward at one end of the vat to and around a shaft, K, that is journaled within suitable bearings upon the casing B, and is provided at one end with a crank, *k*, by means of which it may be rotated.

The mechanism described enables the heater F to be suspended within the vat A and to be raised or lowered to any desired point, after which vertical adjustment said heater is locked in place by moving the shaft K longitudinally until its crank *k* bears against the end of the casing B and prevents said shaft from rotating, as shown by the full lines of Fig. 1.

Extending lengthwise of the heater F, at a point slightly above its upper side, is a vertical flange, F', from which, at opposite sides

of its longitudinal center, cords f^3 extend upward to and are connected with the outer ends of the arms e of the shaft E, the arrangement being such as to enable said heater to be swung from side to side within the vat A by a partial rotation of said shaft in opposite directions when said heater is at the lower limit of its motion and said cords are taut.

It is intended that several vats shall be arranged side by side, and the arms e' of each shaft E connected to a bar that passes over the entire series, and is caused to reciprocate longitudinally, and so as to cause each of said shafts to oscillate within its bearings, such motion being continuous. In such event it will only be necessary to raise the heater F until the cords f^3 are slackened, as seen in Fig. 3, in order to arrest the motion of said heater, while by lowering the latter until said cords are taut again the motion of said shaft will be again communicated, and said heater caused to swing to and fro within its vat.

It is intended that the heater F shall be suspended at a point just below that to which the curd will extend when separated from the whey, the flange F′ being within the space to be occupied by the curd, and in operation it is found that the motion of said heater causes a movement of the whey from each side of the vat downward and toward the center as said heater moves toward the same, such movement being best adapted for the purpose of the separation of the whey from the curd.

The operation of the flange F′ is to thoroughly agitate the curd and break the same into small pieces, so as to facilitate the removal of the whey.

The heater F is intended for use with steam, which is admitted through a flexible pipe to the pipe f, which passes downward nearly to the bottom of said heater, and then turns horizontally inward, and terminates within the open end of a cylindrical tube, F^2, that is placed within the lower portion of the interior of said heater.

The end of the tube F^2 farthest from the pipe f is open, and terminates a short distance from the contiguous end of the heater F, so that if a current of steam is admitted through said pipe f it will pass to and out of the farther end of said tube F^2 and carry with it such water caused by condensation as is contained within the latter.

When, as soon occurs, the heater F becomes filled with water, the operation of the inflowing current of steam is to cause the water within the tube F^2 to move to and escape from its opposite end into the space between said tube and the heater F, from whence said water moves backward to and again enters the induction end of said tube, the movement described being continuous, and its rapidity governed by the volume and velocity of the current of steam.

The heat of the steam is imparted to the water within the tube F^2, and as said water is caused to circulate rapidly through the heater F every portion of the latter is heated, and its temperature is practically uniform over its entire surface.

My method of imparting heat to the contents of the vat renders impossible the burning of the milk, (a result which always follows the contact of milk with pipes or heaters containing live steam,) and enables the temperature of said milk to be easily and with certainty regulated, so as to cause the cooking and separation of the curd from the whey to be effected in the most perfect and expeditious manner.

The pipe f' being connected by a flexible tube with a waste-pipe or reservoir, the surplus water caused by the introduction of steam to the heater is permitted to escape by overflow.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. A cheese-vat provided with a heater which may be swung from side to side within its interior, substantially as and for the purpose specified.

2. A cheese-vat provided with a heater which may be adjusted vertically and swung from side to side within its interior, substantially as and for the purpose shown.

3. The cylindrical heater F, provided with an open interior tube, F^2, located at or near the bottom and extending nearly to each end of the same, an inlet-pipe, f, that extends into one end of said tube, and an overflow-pipe f', that extends upward from the upper portion of said heater, said parts being combined to operate in the manner and for the purpose substantially as set forth.

4. The hereinbefore-described heater, consisting of the cylindrical shell F, having closed ends, the tube F^2, located at or near the bottom of said shell and having its open ends extended nearly to the ends of the latter, the inlet-pipe f, passing into one end of said shell, and having its inner end contained within the contiguous end of said tube F^2, and an overflow-pipe, f', arranged to communicate with the upper portion of said shell, said parts being combined to operate in the manner and for the purpose substantially as shown.

5. As a means for oscillating the suspended heater F, and in combination therewith, the shaft E, having the arms e and e', and the cords f^3, connecting said arms to or with said heater, substantially as and for the purpose set forth.

6. In combination with the suspending-cords G, the shaft K, journaled upon the end of the casing B, provided with the crank k, and made longitudinally movable within its bearings, so as to bring said crank into engagement with said casing, substantially as and for the purpose shown and described.

7. The hereinbefore-described cheese-vat,

consisting of the vat A, shaft E, having the arms *e* and *e'*, the heater F, provided with the flange F', tube F^2, pipes *f* and *f'*, and connecting-cords f^3, the suspending-cords G, and the shaft K, having the crank *k*, said parts being combined to operate in the manner and for the purpose substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of September, 1879.

J. B. MARQUIS.

Witnesses:
GEO. S. PRINDLE,
WILLIAM FITCH.