(No Model.)

J. P. ROBERGE.

CURD MILL.

No. 369,555. Patented Sept. 6, 1887.

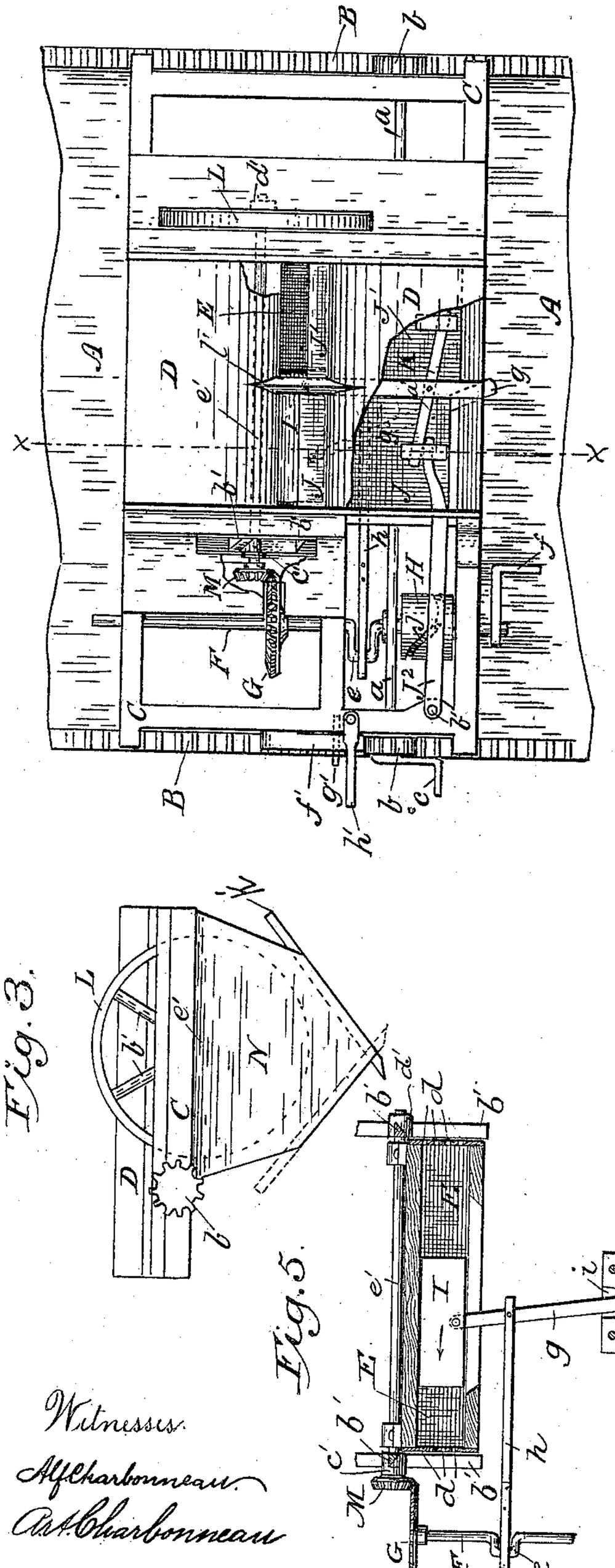

FIG. 1.

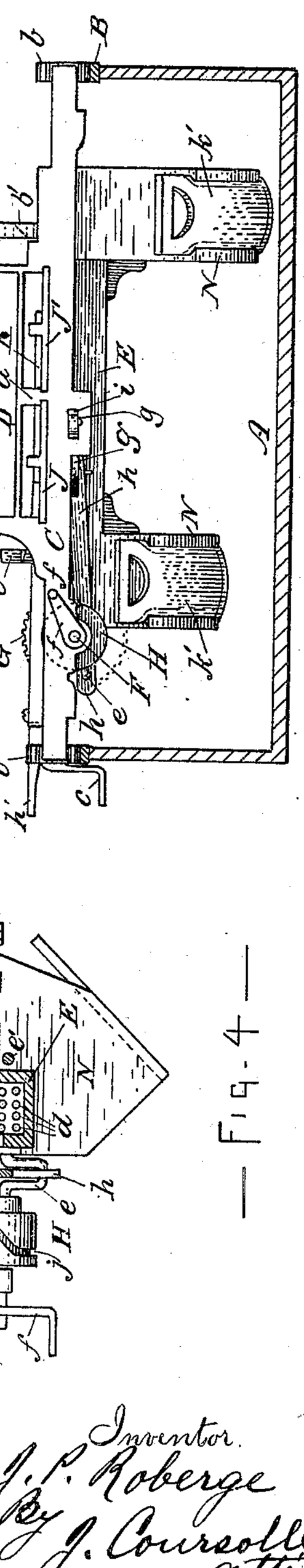

FIG. 2.

Fig. 3.

Fig. 5.

FIG. 4.

Witnesses.
Alf. Charbonneau
Art. Charbonneau

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UNITED STATES PATENT OFFICE.

JOSEPH PIERRE ROBERGE, OF WICKHAM, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO GEORGE ESDRAS ROBERGE, OF HOWARD, RHODE ISLAND.

CURD-MILL.

SPECIFICATION forming part of Letters Patent No. 369,555, dated September 6, 1887.

Application filed September 22, 1886. Serial No. 214,241. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH PIERRE ROBERGE, a citizen of Canada, residing at Wickham, in the county of Drummond, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Curd-Mills, of which the following is a specification.

My invention is embodied in the curd-mill herein shown and described, and which is designed to facilitate the operation of disintegrating the curd in the manufacture of cheese.

My curd-mill consists, mainly, of a frame traveling in the edges of the curd-vat and carrying a hopper, into which the curd is thrown and from which it falls into a trough, whence it is pressed by a reciprocating head through perforated plates and afterward cut transversely by revolving cutters, and the gates, gears, and other mechanism, which are hereinafter described, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the mill as mounted upon the curd-vat. Portions of the hopper-slope and the gear-cover are broken away to show the gates and operating-levers located thereunder. Fig. 2 is a front view of the mill and section through the vat. Fig. 3 is an end view of the mill alone. Fig. 4 is a section of the mill on line *x x*, Fig. 1. Fig. 5 is a plan view of the trough and the reciprocating head or plunger therein.

The part lettered A is the curd-vat. It is an oblong rectangular pan having on the edges of its two longer sides the toothed racks B, facing upward. The frame C of the curd-mill slides over the faces of the racks B, and has journaled in it the shaft *a*, on which are fixed the gear-pinions *b*, which engage in the racks B, and may be turned by the hand-crank *c* in order to move the mill over the vat.

D is a hopper carried on the frame C and opening into the trough E, which is immediately under the hopper. The ends of the trough are made, preferably, of metal, and have the perforations *d*, the purpose of which will be explained further on. A shaft, F, in which a crank, *e*, is formed, and on which the gear-wheel G and the cylinder H are keyed, is journaled in the frame C and is turned by the hand-crank *f*.

I is a reciprocating-head lying in the trough E. It is pivoted to one end of and moved endwise through the trough by the lever *g*, which is worked by the connecting-rod *h* from the crank *e*, its outer end being held in a slot, *i*, in the frame of the mill.

J J′ are two gates, which are moved alternately under the openings of the hopper D and over the top of trough E.

J² is a lever pivoted at *b′* to the frame C. It passes over the cylinder H and is provided at that point with a pin which projects downward into a cam-groove, *j*, formed in the cylinder, and by which means a motion is given to the lever, which is communicated to the gate J, causing it to slide alternately over and off from the trough E. The gate J is coupled to the gate J′ by the lever K, which is pivoted centrally to the guide-bar *a′*, which lies between the two gates, so that when one gate is advancing the other is receding. When the head I is withdrawn from either end of the trough, the gate over that part is also drawn back and the curd is thereby allowed to fall from the hopper and fill that end of the trough. The gate then slides over that part of the trough, preventing the return of the curd up into the hopper, and at the same time the head I is moved under the gate toward that end of the trough and forces the curd out through the perforations *d*. As the jets of the curd issue from these perforations they are met by the revolving cutters or sharp-edged spokes *b′*, which radiate from hubs *c′* and *d′*, keyed on the shaft *e′* and are thereby divided into small fragments, as desired. One of these sets of cutters is provided with a heavy rim, L, which, by its momentum, serves as a fly-wheel to the mill. The cutters *b′* may either have one of their angles brought to a cutting-edge, or sharp-edged blades may be attached to them for cutting off the curd-jets, as above mentioned. Motion is given to these cutters by the gear-wheel G, which engages with the gear-pinion M on the shaft *e′*.

From the above it will be seen that the turning of the hand-crank *f* gives motion to the reciprocating head I, the gates J J′, and the cutters *b′* simultaneously.

When the mill is brought to the place on the curd-vat where it is desired to work it, it is kept at that place by the pawl *f′* locking the pinion *b*, which is engaged with the rack B. The pawl is prevented from dropping too

low by the stop-pin *g'*, which is fixed in the mill-frame. It is held down when desired by the handle-button *h'*, which may be turned over it, and by these means the mill may be held steadily in its place while working.

N N are spouts placed under the cutters to catch the disintegrated curd. They are provided with the slide-boards *k'*, which may be placed in the front or rear sides of the spouts, according as it may be desired to gather the curd from the rear or front of the mill A. Dividing-ridge *l'* covers the space between the two gates J and J'.

The machine above described is double-ended—that is to say, the head I works both ways and supplies two sets of cutters; but it is evident that machines may be made on the same principles as this one having only one set of cutters and working in only one direction.

What I claim as my invention is—

1. In a curd-mill, the combination of a feed trough or box, rotary cutters at its two ends, an intermediate pressure-head, and mechanism for automatically reciprocating said head, whereby the curd is delivered to the two cutters alternately.

2. In a curd-mill, the combination of a trough or receptacle, a cutter at its end, a reciprocating head within the trough to deliver the curd to the cutter, a movable gate or cover, and connections for automatically moving said gate, whereby the curd may be confined within the trough subject to the pressure of the head and the gate automatically removed for the admission of another charge of curd.

3. In a curd-mill, the combination of the two rotary cutters, the intermediate trough, the reciprocating pressure-head in said trough, the two gates or covers arranged to close opposite ends of the trough, and mechanism, substantially as described, for operating said gates alternately and in relation to the movements of the head, as described.

4. The combination, in a curd-mill, of a hopper, a trough into which said hopper delivers, said trough having a perforated end, a reciprocating head within the trough, a movable gate to open and close the communication between the hopper and trough, and a cutter movable past the ends of the trough, with suitable mechanism for operating said parts, substantially as described, whereby the curd contained in quantity in the hopper may be delivered in successive charges into the trough confined therein and forcibly delivered through its perforations and subdivided in the course of its delivery by the cutters.

5. In a curd-mill, the combination of the frame C, hopper D, trough E, having in its ends the perforations *d*, the reciprocating head I, gates J and J', and the cutters *b'*, with the mechanism above described for operating the same, substantially as shown, and for the purpose set forth.

Signed at Wickham, this 20th day of August, A. D. 1886.

JOSEPH PIERRE ROBERGE.

In presence of—
M. LEONARD,
J. F. TOOMEY.