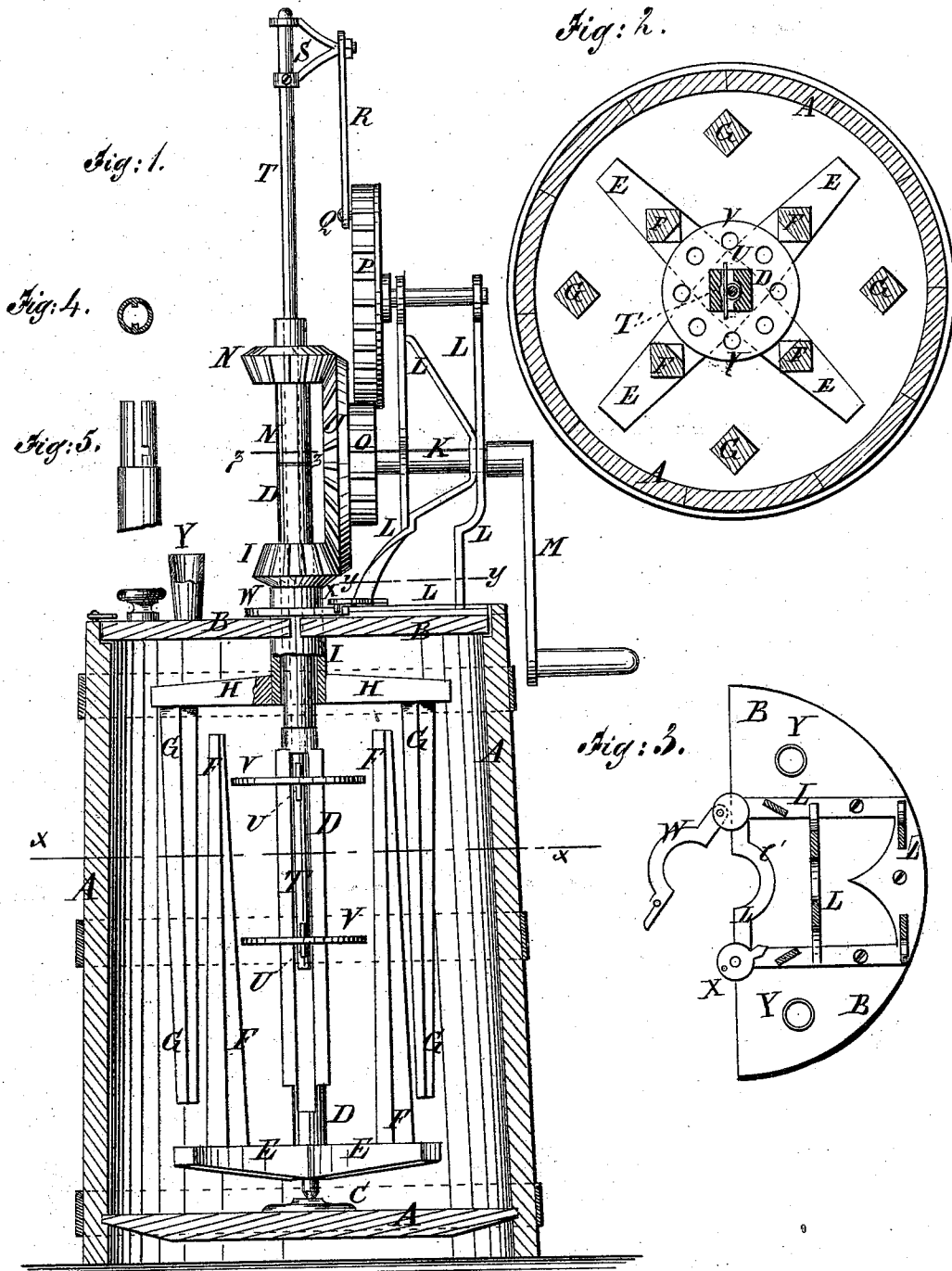


R. M. NEAL.

CHURN.

No. 173,555.

Patented Feb. 15, 1876.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT M. NEAL, OF BELLE PLAINE, KANSAS.

IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. **173,555**, dated February 15, 1876; application filed October 16, 1875.

To all whom it may concern:

Be it known that I, ROBERT M. NEAL, of Belle Plaine, in the county of Sumner and State of Kansas, have invented a new and useful Improvement in Churning Apparatus, of which the following is a specification:

Figure 1 is a side view of my improved apparatus, the churn body and lid being shown in vertical section. Fig. 2 is a horizontal section of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a detail horizontal section, taken through the line *y y*, Fig. 1. Fig. 4 is a detail section, taken through the line *z z*, Fig. 1. Fig. 5 is a detail side view of the upper part of the main shaft.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved churning apparatus, which shall be so constructed as to throw the milk into violent agitation, bringing the butter in a very short time.

A is the body of the churn, which may be made of any suitable material, and of any desired size. B is the lid or cover of the churn, which is made in two equal parts, and is secured in place by buttons pivoted to the upper edge of the churn-body A. To the center of the bottom of the churn-body A is attached a socket or step, C, to receive the pivot formed upon or attached to the lower end of the shaft D. To the lower part of the shaft D, close to its lower end, are rigidly attached the centers of two bars, E, which cross each other at right angles, and to which, about half-way from their centers to their outer ends, are attached the lower ends of four arms or beaters, F, which project upward nearly to the top of the churn-body A, and which are carried around by the revolution of the shaft D.

G are four arms or beaters, the lower ends of which extend downward nearly to the bars E, and the upper ends of which are attached to the outer ends of the bars H, in such positions as to sweep around the arms F. The bars H cross each other at right angles at their centers, and are attached to the lower end of the hub of the bevel-gear wheel I, which revolves upon the shaft D, rests upon a shoulder or collar formed upon or attached

to said shaft D, and passes up through a hole formed by notching the centers of the adjacent edges of the parts of the cover B, and upon its upper end is formed the said bevel-gear wheel I.

The teeth of the bevel-gear wheel I mesh into the teeth of the larger gear-wheel J, attached to the inner end of the shaft K, which revolves in a frame-work, L, attached to one half of the lid or cover B.

To the outer end of the shaft K is attached the crank M, by which the apparatus is operated.

Into the teeth of the gear-wheel J mesh the teeth of the small bevel-gear wheel N, the hub of which fits upon the upper end of the main shaft D. The upper end of the shaft D is slotted or grooved longitudinally, and in it, at the forward sides of said slots or grooves, are formed notches to receive projections formed upon the inner surface of the lower end of the hub of the gear-wheel N, and keep the said gear-wheel in place upon the said shaft when the machine is in use, and at the same time allow the said gear-wheel to be conveniently removed when desired.

The bevel-gear wheel N meshes into the upper part, and the bevel-gear wheel I into the lower part, of the large bevel-gear wheel J, so that the two sets of arms or beaters F G may be revolved in opposite directions at the same time, each set meeting and breaking up the currents formed in the milk by the other set.

To the outer side of the large bevel-gear wheel J is attached, or upon it is formed, a small gear-wheel, O, into the teeth of which mesh the teeth of a larger gear-wheel, P, which is pivoted to the upper part of the frame-work F, and to which is attached a crank-pin, Q. Several holes are formed in the gear-wheel P at different distances from its center, to receive the crank-pin Q, to enable the stroke to be lengthened, as may be required.

To the crank-pin Q is pivoted the end of the pitman R, the other end of which is pivoted to a bracket, S, which is placed upon the upper end of a rod or shaft, T, to which it is secured detachably by a set-screw.

The rod or shaft T passes down through a

longitudinal perforation in the main shaft D, through which it is moved up and down by the action of the pitman R.

The lower part of the main shaft D is slotted longitudinally to receive the couplings U, which enter ring-grooves in the rod or shaft T, and to which are attached disks or dashers V, through which the main shaft D passes, and which are moved up and down by the movement of the rod or shaft T. The dashers V moving up and down, and the arms or beaters F G moving around in opposite directions, throw all parts of the milk into violent agitation and bring the butter in a very short time.

In the inner base cross-bar *l'* of the frame L is formed a half-round notch to receive the hub of the wheel I, where it is secured by a similarly-notched bar, W, one end of which is hinged to one end of the bar *l'*, and its other end is secured by a catch, *x*, pivoted to the other end of the said bar *l'*. The clamp *l'* W

allows one-half of the cover or lid B to be detached to give access to the interior of the churn, without disturbing the other half of the said cover or lid and the operating mechanism. The cover or lid B has a number of holes formed through it, in which are inserted short funnel-shaped tubes Y, to allow air to enter and prevent the milk from spattering out.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, in a churning apparatus, of the hollow slotted shaft D, the two sets of revolving beaters E E and H G, the dashers V, and the reciprocating rod or shaft T, all constructed and relatively arranged substantially as herein set forth.

ROBERT M. NEAL.

Witnesses:

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