No. 638,504

Patented Dec. 5, 1899.

T. A. GALT.

CHURN.

(Application filed July 17, 1897.)

(No Model.)

Fig. 1.

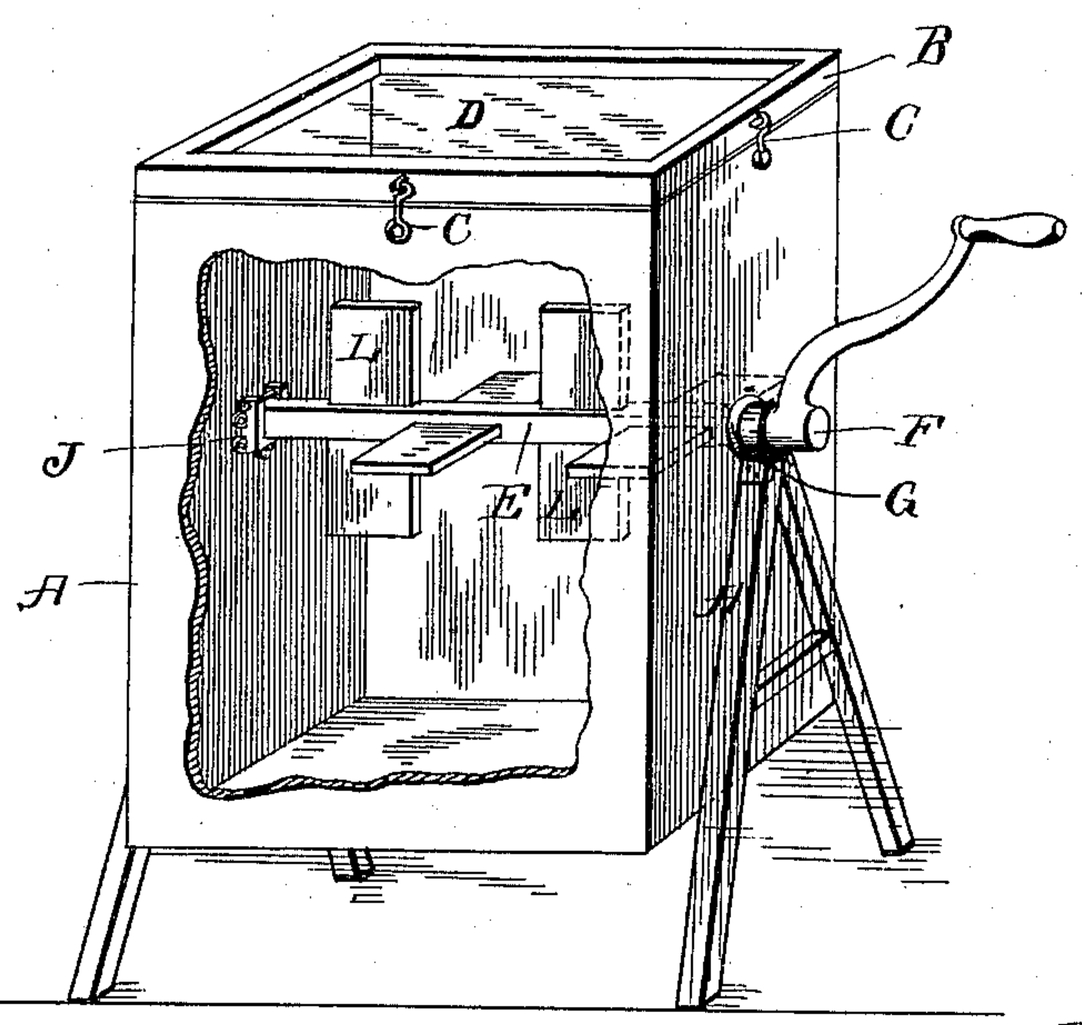

Fig. 2.

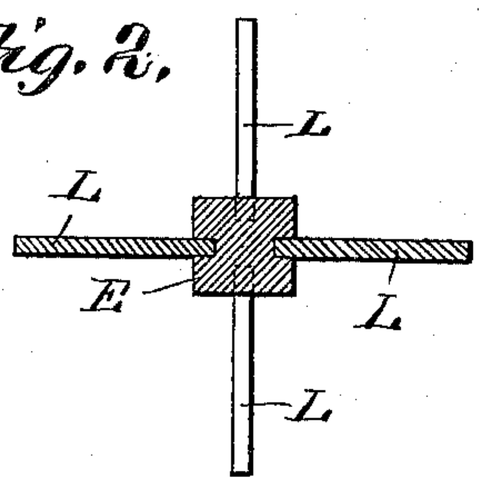

Fig. 3.

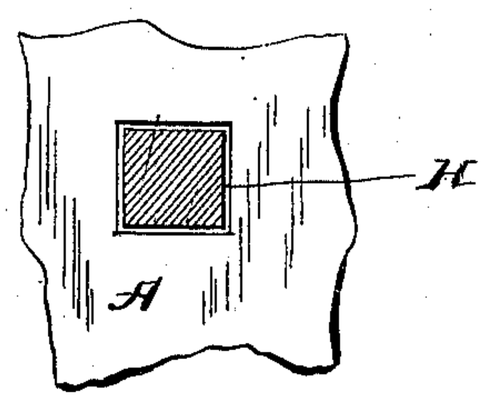

Fig. 4.

Fig. 5.

WITNESSES:

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THOMAS A. GALT, OF STERLING, ILLINOIS.

CHURN.

SPECIFICATION forming part of Letters Patent No. 638,504, dated December 5, 1899.

Application filed July 17, 1897. Serial No. 644,875. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. GALT, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Churns; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to improvements in churns and pertains more especially to that class of churns in which the operation of churning is accomplished by pivoting the churn about centrally at the opposite sides and suspending the churn in suitable journal-bearings in the line of the cross-axis of the churn. A suitable crank is affixed to one of the trunnions of the churn, and thereby the latter is rotated in a vertical plane perpendicular to its cross-axis. Usually in this type of churns the cream therein is thrown alternately from one end of the churn to the other in the rotation of such churn, and the alternating impact of the cream against the inner surface of the respective ends of the churn is relied upon to produce the butter.

In my invention it is the intention to not only increase the number of these impacts at the same or a slower rotation, but also to arrange the intermediate impacts to break up and spray the cream, so as to facilitate the production of the butter. I obtain this advantage by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a perspective of a churn embodying my invention with a portion of one side thereof removed, so as to exhibit the internal location of the cross-shaft intermediate the ends of said churn. Fig. 2 is a cross-section of said shaft. Fig. 3 is a detail of a portion of the inner wall of the churn, showing a square recess for the reception of one end of said cross-shaft. Fig. 4 is a section of the inner wall of the opposite side of the churn, exhibiting the casting attached to the churn adapted to receive the opposite end of said cross-shaft. Fig. 5 is an enlarged detail of the casting last referred to. Fig. 6 shows the churn supported in its frame.

Similar letters and figures refer to similar parts throughout the several views.

As the churn can be supported and rotated in a variety of forms and my invention has no reference to the mode of journaling or rotating the churn, I do not deem it necessary to show or describe anything more than the churn proper and the construction, location, and operation therein of my invention.

A is the body of the churn, which is oblong and may be of any desired form—rectangular, cylindrical, octagonal, or otherwise in cross-section.

The churn A is provided at one end with a lid B, which is adapted to be closely fastened to the churn A by means of short hooks C, seated on the upper end of the churn in position to be turned into staples in the margin of the lid B in such frequency as may be desired. I provide the lid B with a glass center D, extending as nearly as practicable over the area of said lid. The purpose of the glass center D is to enable the operator to view the contents of the inside of the churn and ascertain the condition of the cream at any time without the delay or inconvenience of removing the lid.

A transverse shaft E is seated about midway the length of the churn and about centrally in cross-section, as shown in Fig. 1. This shaft is also in line with the trunnions F, which latter are seated externally on the churn A by means of a flange-casting G. The shaft E is held in place within the churn by one end thereof being inserted in a recess H, formed in the inner side of the wall of the churn and the other end of said shaft being dropped down into a three-sided casting J, suitably bolted against the inner wall of the opposite side of the churn. The upper end of the casting J is open, and after the adjacent end of the shaft E is passed downward into the interior of the casting J a cotter K is passed through suitable openings formed transversely in the upper or free ends of the sides of the casting J and holds the shaft E within the latter. Thus the shaft E is made removable for convenience in emptying and cleaning the churn. The shaft E is seated

rigidly and has no movement other than being rotated with the churn. It is provided with cross-pieces L, inserted in said shaft in two series perpendicular to each other. The shaft E cross-braces the churn in the line of the trunnions F.

By providing one end of the churn-body with an annular recess and the opposite end with an open-sided casting the shaft or bar E can be formed from a straight piece of material of such angular cross-section as to fit within the recess of the casting and be prevented from longitudinal or rotary movement therein, and the cotter-pin at one end will securely lock it in place. This construction avoids the necessity of providing the ends of the body with a recess from the edge to the center, as the annular recess at one end is made deep enough to permit of one end of the bar being placed therein and the opposite end swung into the socket with the recess as a center. It also avoids the necessity of perforating either end of the body for the passage of the handle, which would cause leakage unless a stuffing-box or other means were employed to prevent it.

The operation of my invention is as follows: The cream having been placed in the churn, and the latter seated with its journals F in suitable boxes supported on the usual jack or frame, the churn A is slowly rotated on its journals F, and the contained cream is thereby dashed or thrown from one end of the churn A to the other alternately. In its passage through the interior of the churn, first the cream strikes the shaft E and its adjunctive wings L and is broken up and sprayed to a greater or less degree. The momentum of the cream, however, carries it onward against the then lower end of the churn where it experiences the second concussion. The further rotation of the churn repeats this operation twice at each full revolution. It will be seen that the presence of the shaft E substantially doubles the number of impacts of the moving cream. The period of churning therefore is greatly lessened, and the rotation of the churn may be much slower than in those churns in which the ends of the churn alone are relied upon to beat against the cream.

Referring to Fig. 5, O is a general supporting-frame of the churn, which consists of duplex horizontal plates 1, vertical standards 2, diagonal braces 3, cross-brace N attached to the standards 2, at its respective ends, and transverse bolts M M, uniting the standards 2 at the upper and lower edges of the board N, and thereby affording the necessary rigidity.

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

The herein-described churn, composed of the oblong body A, open at one end and closed at the other, the lid B detachably secured to the open end of the said body, the transverse shaft E rigidly but removably secured at its opposite ends to the side walls of the body A midway of its length and provided with two sets of blades L projecting therefrom at right angles to each other, one set projecting transversely of the body A and the other longitudinally thereof, journals projecting from the opposite sides of the body A for rotatably mounting said body in a suitable support, and a handle for rotating the body in said support, whereby the contents of the churn are thrown violently from one end of the churn to the other and dashed upon the blades L as the churn is rotated, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS A. GALT.

Witnesses:

JOHN G. MANAHAN,

ISABELLE MANAHAN.