

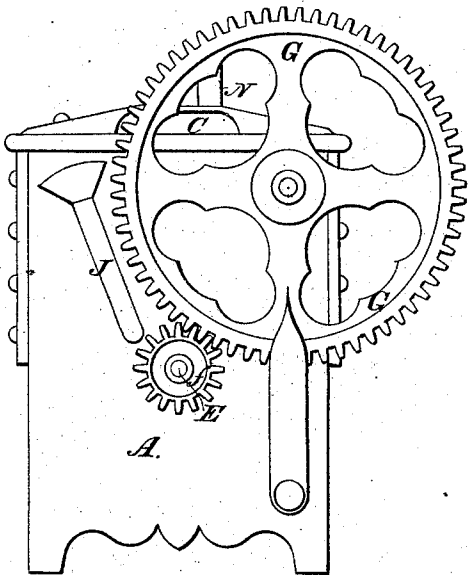
*H. Clift.*

*Rotary Churn.*

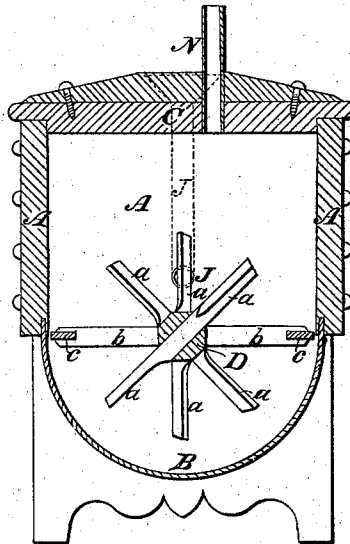
*N<sup>o</sup> 58,337.*

*Patented Sept. 25, 1866.*

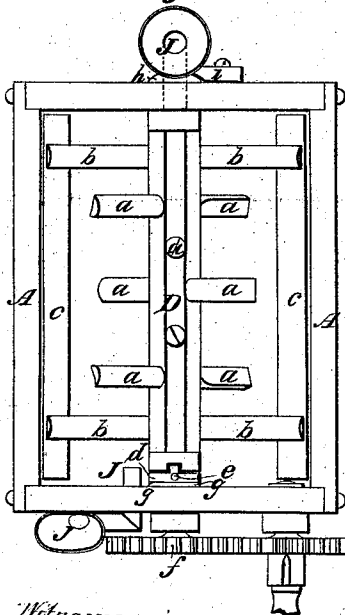
*Fig. 1.*



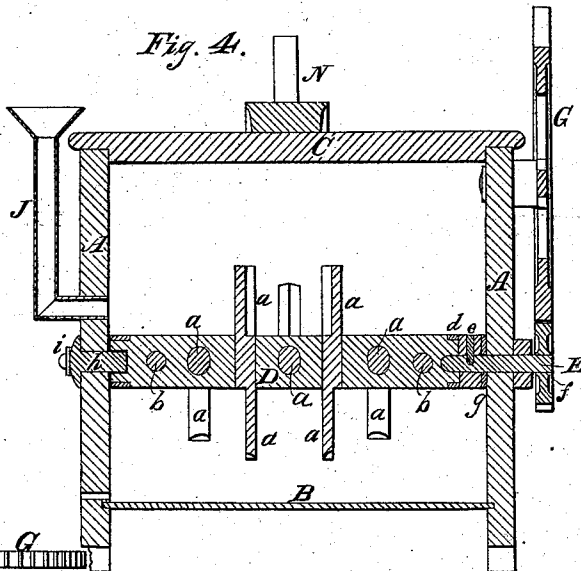
*Fig 2*



*Fig. 3.*



*Fig. 4.*



*Witnesses.*  
*Edw. H. Clift*  
*Henry H. Clift*

*Inventor.*  
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# UNITED STATES PATENT OFFICE.

HORACE CLIFT, OF MYSTIC RIVER, ASSIGNOR TO E. BURROWS BROWN, OF GROTON, CONNECTICUT.

## IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. 58,337, dated September 25, 1866.

*To all whom it may concern:*

Be it known that I, HORACE CLIFT, of Mystic River, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Churns; 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 an elevation of one end of my churn. Fig. 2 is a vertical cross-section through the same. Fig. 3 is a top view with the cover removed. Fig. 4 is a longitudinal section taken centrally through the churn in a vertical plane, showing the manner of applying the dash-shaft within the box.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to provide for creating a circulation of air through the body of the cream during the operation of churning.

It consists in applying one or more pipes to a churn having a revolving dasher of the peculiar construction hereinafter described, so as to conduct air from the outside of the churn, and from a point which is above the level of the cream therein, into the churn-box below the level of the cream, and in combining with these induction-passages an eduction-passage arranged in the top of the churn, for the escape of air after it has passed through the cream, as will be hereinafter described.

It also consists in a dasher which is composed of radial beating-arms, and also of longitudinal blades which are parallel to the dash-shaft, one set of arms operating to throw the cream outwardly and to beat and agitate it, and the other set of blades serving to stir up the cream from the bottom of the churn-box, as will be hereinafter described.

It also consists in a mode of supporting the dash-shaft in position within the churn-box, whereby this shaft can be readily removed or replaced at pleasure, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the vertical sides and ends of the churn-box,

which latter are extended down, so as to form the legs or supports. B represents the semi-circular metallic bottom, which is fitted into grooves that are formed in the sides and ends A, so as to be perfectly tight. C is the cover, which should be made so that it will fit tight upon the churn-box, as shown in Fig. 2.

I have thus described a good mode of constructing the churn-box, but do not confine my invention to such construction.

D represents the horizontal dash-shaft, which is constructed with a number of radial arms or beaters, *a a*, which may present flat, or angular, or concave surfaces to the cream as they are revolved. Near the extremities of the shaft D are radial arms *b b*, which carry on their ends two blades or paddles, *c c*, which are parallel to the shaft D, and are intended for stirring up the cream from the bottom of the churn. The blades *c c* are what mainly do the work of churning, while the radial arms *a a* stir up the cream at and near the shaft D. I prefer to have the arms *a a* sufficiently long to extend out to the outer edges of the blades *c c*, so that they will serve, in conjunction with these blades, for gathering the butter.

The extremities of the shaft D are provided with ferrules, and are perforated for receiving the bearing-pins that sustain this shaft within the churn-box. One end of the shaft D is slotted diametrically, for receiving a tenon which is formed on a collar, *d*, which latter is keyed upon the inner end of the shaft E by means of a movable pin, *e*, shown in Figs. 3 and 4. The short shaft E passes through the end of the churn-box, and has a pinion spur-wheel, *f*, keyed upon it, which pinion engages with the teeth of the large driving-wheel G, as shown in Fig. 1.

To prevent leakage around the shaft E, a leather packing, *g*, is interposed between the collar *d* and the end of the churn-box inside, as shown in Fig. 4.

At the opposite end of the shaft D a button-head pin, *h*, forms the end bearing for this shaft, the head of which pin is made convex, so that, by means of a button, *i*, on the outside of the box, this pin can be firmly held in its place and leakage at this point prevented.

To remove the shaft D for cleaning it, or for any other purpose, the pin *e* is withdrawn from

its collar *d* and shaft *E*, and the button *i* turned to one side, so as to allow the pin *h* to be removed. The shaft *D* can now be taken out of the box.

The churn-box is supplied with air through the pipes *J J*, and the air allowed to escape from said box through the pipe *N*. The pipes *J J* are applied to the ends of the churn-box, and extend from a point which is above the level of the cream in the box, outside of the latter, and enter the box at points which are as near as possible to the ends of the dash-shaft *D*, so as to introduce the air into the body of the cream or below its level. These pipes *J* may be made movable, so that they can be detached from the churn-box for cleaning.

The air is drawn into the box through the pipes *J* by means of the dasher, which will operate upon the principle of a fan, and while the air is thus forcibly drawn into the churn-box it will be expelled through the exit-pipe *N*, which passes through the cover *C* and extends sufficiently high above this cover to prevent any escape of the cream during the operation of churning.

I am aware that air has been drawn into churns below the level of the cream, and also

that it has been allowed to circulate through the churn, for the purpose of keeping the milk at a proper temperature, or in a proper condition while subjected to friction, to insure the production of good butter; therefore I do not claim the principle of having air circulate through the cream.

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

1. The construction of the dasher of radial arms *a a* having independent blades *c*, arranged at right angles to them, substantially as described.

2. The combination of the button-head pin *h* and turn-button *i* with the tenon-collar *d*, shaft *E*, and key-pin *e*, in the manner and for the purpose described.

3. The arrangement of the rotary dasher, constructed as herein described, in combination with the air-ducts *J J* and exit air-pipe *N*, arranged as described, all for the purpose set forth.

HORACE CLIFT.

Witnesses:

BENJN. BURROWS, Jr.,  
RALPH WHEELER.