C. G. BISHOP.

Churn.

No. 48,786. Patented July 18, 1865.

Fig. 1

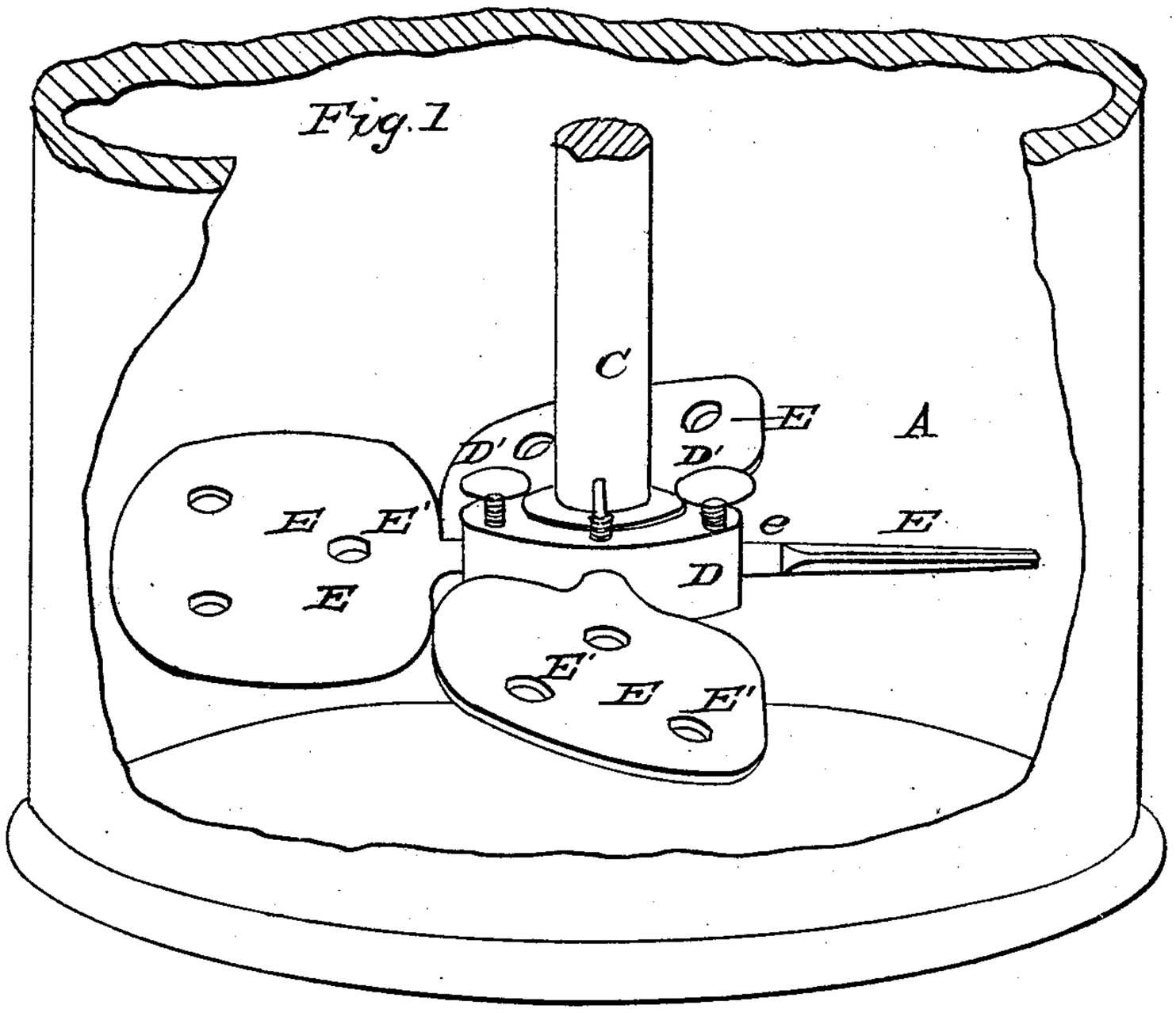


Fig. 6

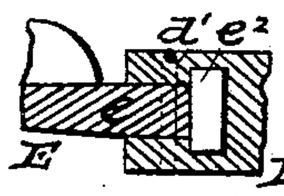


Fig. 3

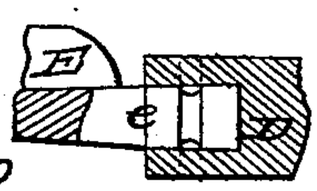


Fig. 2.

Fig. 5

Fig. 7

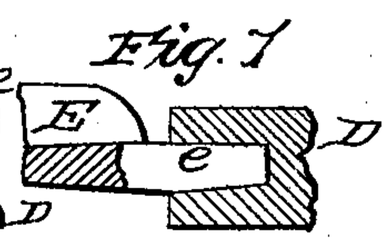
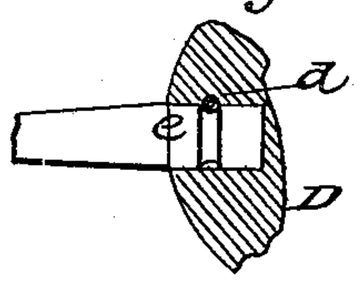


Fig. 4.



Witnesses

Thomas D. Stetson

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Inventor

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UNITED STATES PATENT OFFICE.

CALEB G. BISHOP, OF POUGHKEEPSIE, NEW YORK.

IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. **48,786**, dated July 18, 1865.

To all whom it may concern:

Be it known that I, CALEB G. BISHOP, of Poughkeepsie, county of Dutchess, and State of New York, have invented a certain new and useful improvement in churn-dashes for ordinary upright churns operating with a reciprocating dash; and I do hereby declare that the following is a full and exact description thereof.

The accompanying drawings form a part of this specification.

Figure 1 is a view of my churn-dash, showing a portion of the churn with the front removed. Fig. 2 is a central vertical section of my churn-dash. Figs. 3, 5, 6, and 7 show corresponding sections of a part, with several modifications in the means of retaining the screw-blades in the hub. Fig. 4 is a horizontal section corresponding to Fig. 3.

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

The nature of my invention consists in mounting the dash so that it is free to rotate around the handle or reciprocating rod, and mounting on such rotating dash screw-blades, or corresponding inclined wings, the inclination of which may be varied at pleasure, as will be fully shown below.

To enable others skilled in the art to make and use my invention, I will proceed to describe it by the aid of the drawings and of the letters of reference marked thereon.

A is the body of the churn, and C the vertically-reciprocating rod. These parts are constructed in the usual manner, except that the lower end of the rod C is made small and provided with a head, *c*, or a corresponding pin and washer, or other analogous device.

D is the hub of my rotating dash. It is fitted so as to revolve easily on the small part of the rod C, and is kept in place by the head *c*.

E E are screw-blades, and *e e* are bearings which fit into corresponding holes in the hub D. The bearings *e* fit with considerable tightness in the said holes, but not so tight as to prevent the adjustment or change of obliquity of the screw-blades E, by simply applying a reasonable force with the hand. In operating my churn the screw-blades E strike the cream at such an angle as to revolve the screw-dash D E in one direction as the dash descends and in the opposite direction as it rises through the fluid. The part of a revolution or the number of complete revolutions thus performed by the dash in moving a given distance vertically through the cream will depend much on the pitch of the screw-blades E or the obliquity in which they are set. If the screw-blades E are turned around by turning them on their bearing *e* in the hub D, so as to nearly coincide with the planes in which the axis of the handle C lies, there will be little or no rotary motion of the dash; but if they are turned very much out of such planes, so as to set very oblique, the rotary motion of the dash will be very rapid.

The adjustment of the blades E by turning them at different angles or with different degrees of obliquity, as described, makes it easy to adapt the dash to different degrees of strength of the operator. Thus when a child or weak person is to churn the blades should be set so as to compel but a partial revolution of the dash in a complete stroke of the handle C. When, on the other hand, a strong person is to operate, and it is desired to produce butter with the loss of but little time, the blade should be set very oblique, so that the resistance of the vertical motion of the handle C will be considerable, and the screw will rotate rapidly, forming several revolutions at each stroke.

It is found that the rotating motion due to the screw principle involved in this mode of operation is good. My churn is easy to operate relatively to the time in which the butter is produced. The butter "comes" with rapidity, and is gathered more conveniently (by continuing the motion in the ordinary way) than with almost any other style of churn.

The bearings *e* may be retained in the holes in the hub B by simple friction if they are made perfectly cylindrical. I propose, however, to adapt any of the ordinary means of retaining such blades, so as to prevent their becoming detached, and yet allow their being rotated with sufficient ease for my purpose. Several such devices are represented in the drawings. Figs. 3 and 4 show a groove turned in the bearing *e* and the pin *d* driven into the hub D in such manner as to lock into the groove. Fig. 5 represents a conical form of the bearing, the smaller end of the frustum of the cone being toward the screw-blade E. The bearing *e*

is inserted in this hole when very dry or when mechanically compressed, and is allowed to expand in the hole, or it is driven in upon a wedge, e', as indicated. Fig. 6 shows a fillet, e^2, on the inner end of the bearing e, which turns in a corresponding groove produced in the hub. To employ this form the hub may be made in two parts and fitted upon the bearing e with any degree of tightness by means of brass screws d', as indicated in red.

The screw-blades may be held in position by set-screws D′ placed in the hub D, as shown in the drawings, Figs. 1 and 2. Holes E′ are made through the screw-blades E, as represented. I consider these holes E′ desirable; but the screw-blades will operate very effectively without them.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

The adjustable screw-blades E, bearings e, arranged relatively to the hub D and handle C of a reciprocating churn-dash, substantially in the manner and for the purposes herein set forth.

CALEB G. BISHOP.

Witnesses:
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