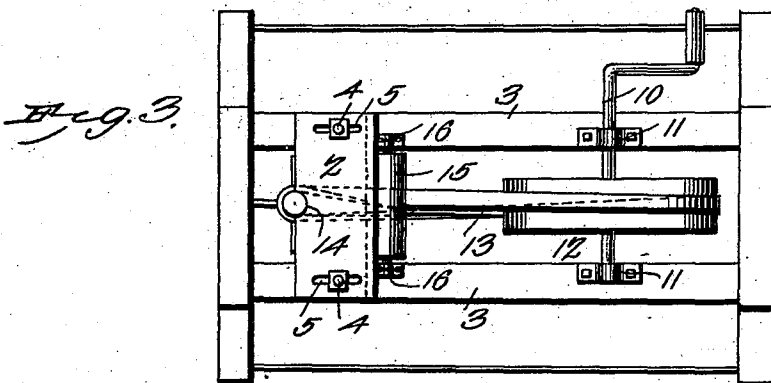
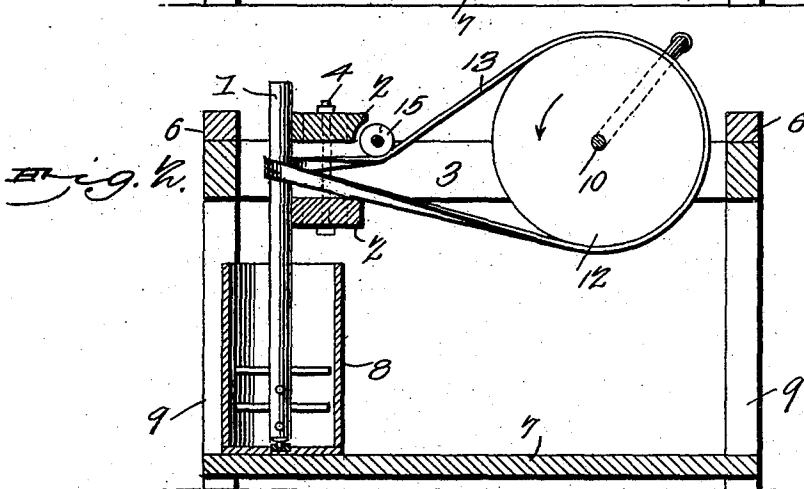
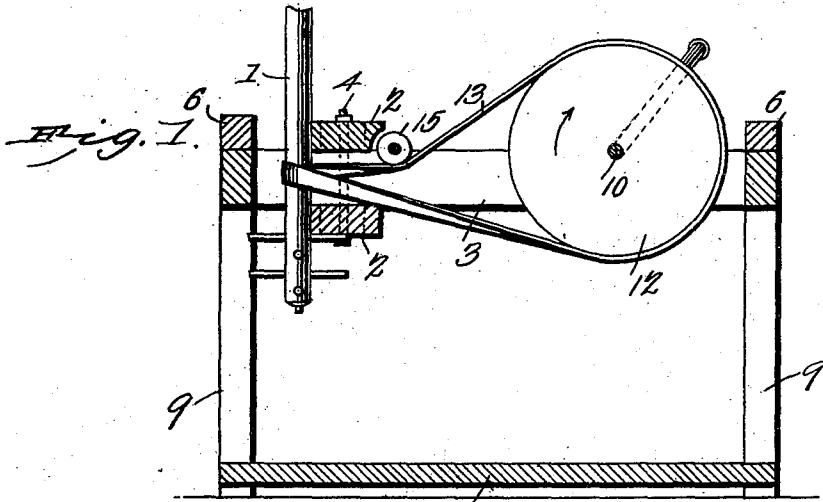


E. E. DAIL.
CHURN.

(Application filed June 26, 1902.)

(No Model.)



Witnesses
E. J. Stewart
J. W. Garner

Inventor
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UNITED STATES PATENT OFFICE.

ELIAS E. DAIL, OF AYDEN, NORTH CAROLINA.

CHURN.

SPECIFICATION forming part of Letters Patent No. 710,436, dated October 7, 1902.

Application filed June 26, 1902. Serial No. 113,346. (No model.)

To all whom it may concern:

Be it known that I, ELIAS E. DAIL, a citizen of the United States, residing at Ayden, in the county of Pitt and State of North Carolina, have invented a new and useful Churn, of which the following is a specification.

My invention is an improved churn; and it consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of a churn embodying my improvements, the dasher-shaft being shown in an elevated position. Fig. 2 is a similar view of the same, the dasher-shaft being shown lowered and in its operative position in the churn vessel. Fig. 3 is a top plan view of the same.

In the embodiment of my invention I provide a longitudinally-movable revoluble dasher-shaft 1. The same is here shown disposed in a vertical position and engages the outer sides of a pair of horizontally-disposed bearings 2, which connect the longitudinal bars 3 of a supporting-frame that are respectively disposed above and below the said bars 3. The said bearings are shown as secured to the bars 3 by bolts 4 and as having adjusting-slots 5, in which the said bolts operate, so that the said bearings may be adjusted longitudinally on the bars 3. The latter are shown as having their ends connected by cross-bars 6. A base 7, which forms the support for the churn vessel 8, is secured between the lower portions of legs 9, which support the frame composed of the bars 3 6.

I do not desire to limit myself to the construction of the frame hereinbefore described, as the same may be modified without departing from the spirit of my invention.

A crank-shaft 10 is shown as horizontally disposed and supported transversely on the bars 3 by bearings 11. On the said crank-shaft is a pulley 12, which is here shown as disposed between the bars 3. An endless belt 13 passes around the outer sides of the pulley 12 and shaft 1, and the leads of the said belt are oblique to the said dasher-shaft, as shown in Figs. 1 and 2. The recesses 14 in the bearings 2, engaged by the dasher-shaft, are in the outer sides of the said bearings and the said recesses are semicircular in form. The belt 13

keeps the dasher-shaft in engagement with the said bearings and recesses. By shifting the bearings the belt may be maintained at the requisite tension. By moving the bearings 2 toward the pulley 12 the belt 13 may be so slackened as to enable the dasher-shaft to be readily removed from the bearings. A direction-roller 15 is journaled in bearings 16 on the bars 3 and bears on the upper lead of the said belt.

It will be understood that by turning the pulley 12 by means of its crank-shaft power is communicated to the dasher-shaft through the belt 13 and the dasher-shaft is rotated in the bearings 2. When the pulley 12 is turned in the direction indicated in the arrow in Fig. 2, the oblique disposition of the leads of the belt with reference to the dasher-shaft and the movement of the belt cause the dasher-shaft to move downwardly until it reaches the bottom of the churn vessel 8, after which it continues to revolve in a lowered position in the churn vessel as long as the pulley 12 is rotated in the same direction. When the butter has been churned or formed by the action of the revoluble dasher-shaft, the operator turns the pulley 12 in the reverse direction, as indicated by the arrow in Fig. 1, thus causing the belt, owing to the oblique disposition of its leads with reference to the dasher-shaft, to reverse the rotation of the dasher-shaft and move the same upwardly out of the churn vessel. Hence by my peculiar construction and arrangement of devices the pulley and belt which rotate the dasher-shaft also move the latter longitudinally in either direction, as may be required to place it in the churn vessel or remove it therefrom. The bottom of the churn vessel forms a stop to limit the downward movement of the dasher-shaft, and while the same is being revolved in the direction which causes it to move downwardly the said dasher-shaft presses downwardly on the bottom of the churn vessel and holds the same appropriately on the base. Thus the downward axial thrust of the dasher-shaft is utilized to keep the churn vessel from being displaced by the jar incident to the operation of the machine. Moreover, by alternately reversing the direction of movement of the driving-wheel the dasher may be given a combined axial or longitudinal and rotary move-

ment in opposite directions, which will assist in causing a thorough agitation of the contents of the churn vessel and will expedite the gathering of the butter. Furthermore, 5 it will be understood that while the illustrated embodiment of my invention is preferable as a means for carrying out my invention, because of the simplicity thereof, I do not desire to be limited thereto, as equivalent means 10 may be employed for accomplishing the described operation of the dasher in which it performs the dual function indicated.

Having thus described my invention, I claim—

15 1. In a churn, the combination of a longitudinally-movable, revoluble dasher-shaft, bearings therefor, a pulley having its axis at right angles to the dasher-shaft, and a belt 20 connecting the pulley and dasher-shaft, having its leads oblique to the latter and thereby adapted to rotate and also move said shaft longitudinally, substantially as described.

2. In a churn, the combination of a longitudinally-movable revoluble dasher-shaft,

adjustable bearings therefor open on one side, 25 to adapt the shaft to be removed therefrom, a pulley having its axis at right angles to the dasher-shaft and a belt connecting the pulley and dasher-shaft and having its leads oblique 30 to the latter, substantially as described.

3. In a churn, the combination of a revoluble vertically-disposed dasher-shaft movable longitudinally in its bearings, a pulley having its axis at right angles to the dasher-shaft, a belt connecting the pulley and dasher-shaft having its leads oblique to the latter 35 and thereby adapted to rotate and also move the shaft longitudinally in a vertical direction, and a churn vessel, the latter and the dasher-shaft having coacting stops. 40

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ELIAS E. DAIL.

Witnesses:

H. A. BLOW,
A. T. MOORE.