

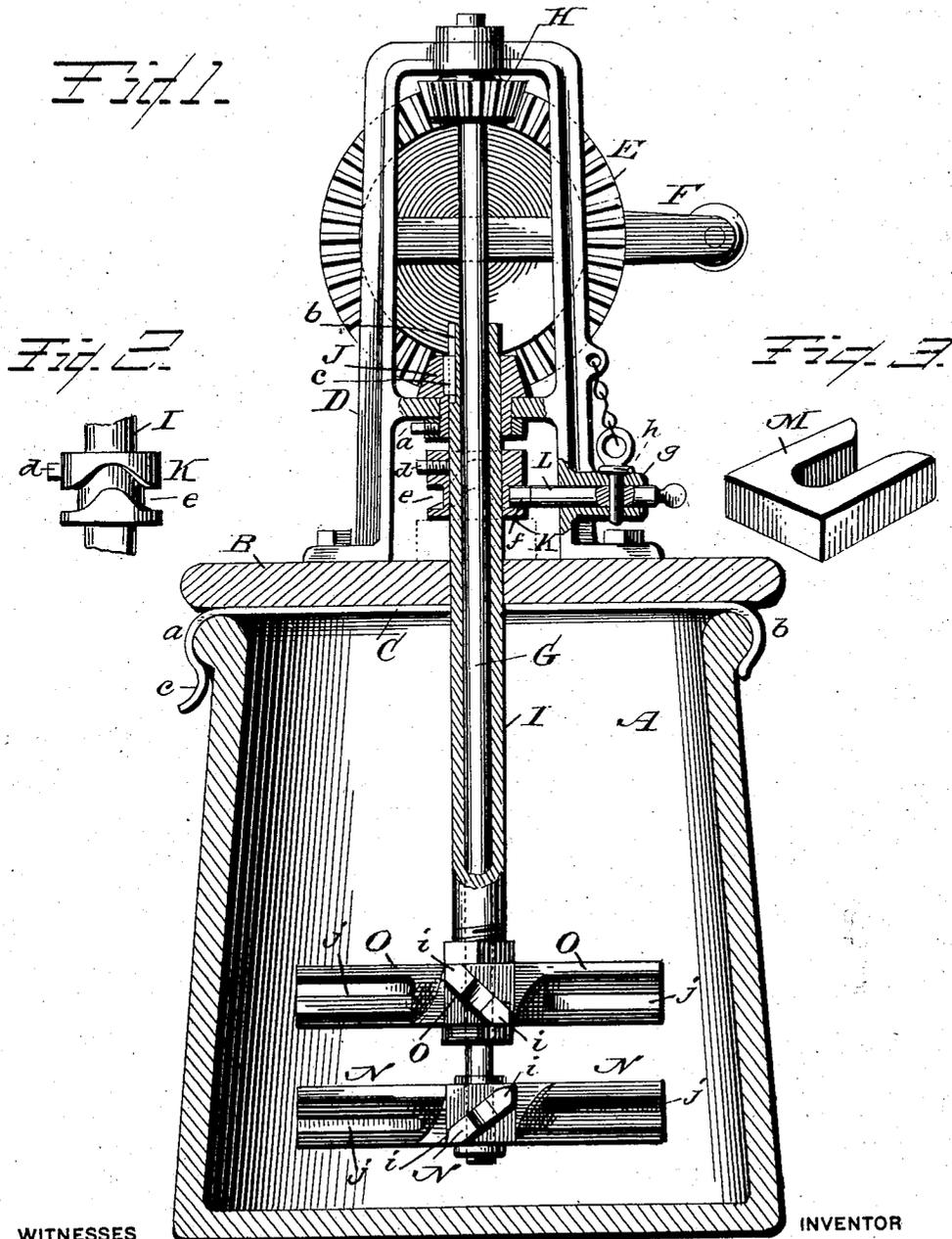
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H. E. BONNEY.
ROTARY CHURN.

APPLICATION FILED JUNE 11, 1903.

NO MODEL.



WITNESSES

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HENRY E. BONNEY, OF ABINGDON, ILLINOIS.

ROTARY CHURN.

SPECIFICATION forming part of Letters Patent No. 739,283, dated September 22, 1903.

Application filed June 11, 1903. Serial No. 161,011. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. BONNEY, a citizen of the United States, residing at Abingdon, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Rotary Churns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has for its object to provide a churn that will possess superior churning qualities and in which the power thereof is materially improved, the butter being produced much quicker and with less labor than the churns in ordinary use, the operating parts of the churn being so constructed that they will possess the required strength and durability and can be easily operated, the two rotatable dashers moving in opposite directions, one of which throws the cream into currents, while the other dasher intercepts the cream, breaking it up, and thereby materially enhancing the process of churning, and in this action of the dashers one of the same has imparted to it a vertically-reciprocating motion to still further add to the agitation of the cream when the churning is first commenced. Thus a churn is secured with all the desirable qualities that will operate successfully and effectively upon the cream to produce the butter in a comparatively short space of time.

The invention consists in a churn constructed substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings is a sectional elevation of a churn constructed in accordance with my invention; Fig. 2, a detail side elevation of the cam device; Fig. 3, a detail perspective view of the yoke for supporting the cam device when not in use.

In the accompanying drawings, A represents the body of the churn, and B the cover thereof, said cover being of any suitable construction, with a spring-brace C secured to its under side with spring-catches *a b* to engage the rim of the churn-body, one of the catches having a thumb-piece *c* to facilitate disengaging the catch from engagement with the rim.

I do not desire to be limited to any particular construction of churn-body or to the cover

thereof or the means shown for securing the cover in place, as many modifications and changes may be resorted to without in any manner affecting the essential features of the invention.

Connected to the cover of the churn is a suitable bracket D, which may be of any desirable construction, and to this bracket is supported a rotatable driving-gear E, provided with a suitable handle F for turning it.

A vertical rotatable shaft G has its bearing in the bracket D, and to the upper end of said shaft is keyed a pinion H, which engages the driving-gear E and by which the shaft has imparted to it a rotatable motion. The shaft G, which is preferably solid, extends through a tubular shaft I, which latter shaft is supported in the bracket D and has connected to its upper end a pinion J to engage the driving-gear E, the pinion being held to the tubular shaft by a suitable key or set-screw *a*. The upper end of the tubular shaft I has a longitudinal groove *b*, with which engages a feather *c* upon the pinion, which admits of the shaft moving vertically and still being carried around by the pinion. The vertically-reciprocating motion is imparted to the tubular shaft I through the medium of the multiple cam device K, which is secured to the shaft by a key or set-screw *d* or by any other preferred means found best adapted to the purpose. This variable cam device K has a circumferential cam-groove *e*, with which engages a bolt L, provided with an antifriction-roller *f*, said bolt engaging a tubular support *g*, projecting from the bracket D. A pin *h* engages a perforation in the bolt L and perforations in the support *g* to hold the bolt in place, and when it is desired to simply rotate the tubular shaft I upon its axis without the vertical reciprocating motion the pin is withdrawn and the end of the bolt disengaged from the groove in the cam device by pulling the bolt outward, after which a supporting-yoke M is engaged with the tubular shaft under the cam device, as shown in dotted lines in Fig. 1 of the drawings, the supporting-yoke being shown in Fig. 3 of the drawings.

The supporting-yoke M will hold the shaft up, so as to retain the dasher-blades thereon the required distance above the dasher-blades of the shaft G when rotation is imparted to

the shafts. The radial dasher-blades N of the shaft G and the radial dasher-blades O of the tubular shaft I are of such construction as to give to the cream the maximum amount of agitation to facilitate the separation of the oily globules from the other portions of the cream. These dasher-blades are inclined from a perpendicular or disposed at an obtuse angle from a perpendicular, so that when the cream is brought in contact therewith it will glide off, and the edges of blades have a double incline, as shown at *i*, so that the blades will cut through the cream and produce less resistance from the ordinary flat edges, this being considered of material importance in the effectiveness of the dasher-blades when in motion against the cream when becoming thick after churning any length of time.

In addition to the above features of the dasher-blades each blade has a slot *j* extending out through the end of the blade in place of the ordinary perforations or slots closed at both ends. The two dashers when rotating in opposite directions through the medium of the gearing will produce upon the cream the desired agitation, the upper dasher throwing the cream downward and the bottom dasher throwing the cream upward, while the incline of the blades, together with the double incline on the edges thereof, in addition to the slots extending out through the ends of the blades, makes every provision for a successful operating dasher in producing the desired effect upon the cream without any splashing of the cream. The slots in the dasher-blades extending out through the end thereof prevent any accumulation of butter, as would be the case were the blades perforated, and materially facilitates the cleaning of the blades after completing the churning.

When commencing the churning when the cream is light, it is desirable to give not only an up-and-down motion to the cream by the peculiar construction of the dasher-blade, but a slight vertical reciprocating motion to the tubular shaft carrying the upper dasher-blades, although this vertical reciprocating motion may be dispensed with when the cream becomes thick and hard to agitate.

I do not wish to be understood as limiting myself to the several details of construction

shown, as various changes or modifications may be resorted to without departing from the principle of my invention, and any such changes as would come within ordinary mechanical judgment may be made without affecting the essential features of the churn or the operating parts thereof.

Any suitable form of gearing may be used for rotating the shaft, and the dasher-blades may be connected to the shaft in any preferred and well-known manner found best adapted to the purpose, as it is evident that it is not essential to confine the building of the churn to the exact details of construction as shown in the drawings, as it may be considered that certain changes should be made to render the operating mechanism more effective.

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

1. In a churn, a rotatable tubular shaft, a cam device connected to said shaft, a device connecting with said cam device to impart a vertically-reciprocating motion to said tubular shaft, and adapted to be withdrawn therefrom, a rotatable shaft extending through the tubular shaft, and radial dasher-blades upon the ends of the shafts constructed substantially as shown, said shafts adapted to have imparted thereto oppositely-rotatable motions, substantially as and for the purpose specified.

2. A churn consisting of a suitable churn-body, a tubular shaft, a device having a grooved cam thereon secured to the shaft, a releasing-bolt adapted to engage the grooved cam to impart to the tubular shaft a vertically-reciprocating motion, a shaft extending through the tubular shaft, both shafts having radial dasher-blades disposed on an incline and having double inclined edges and slots extending out through the ends thereof, and means for oppositely rotating the shafts, substantially as and for the purpose set forth.

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

HENRY E. BONNEY.

Witnesses:

A. E. ROLLER,
W. A. THOMAS.