

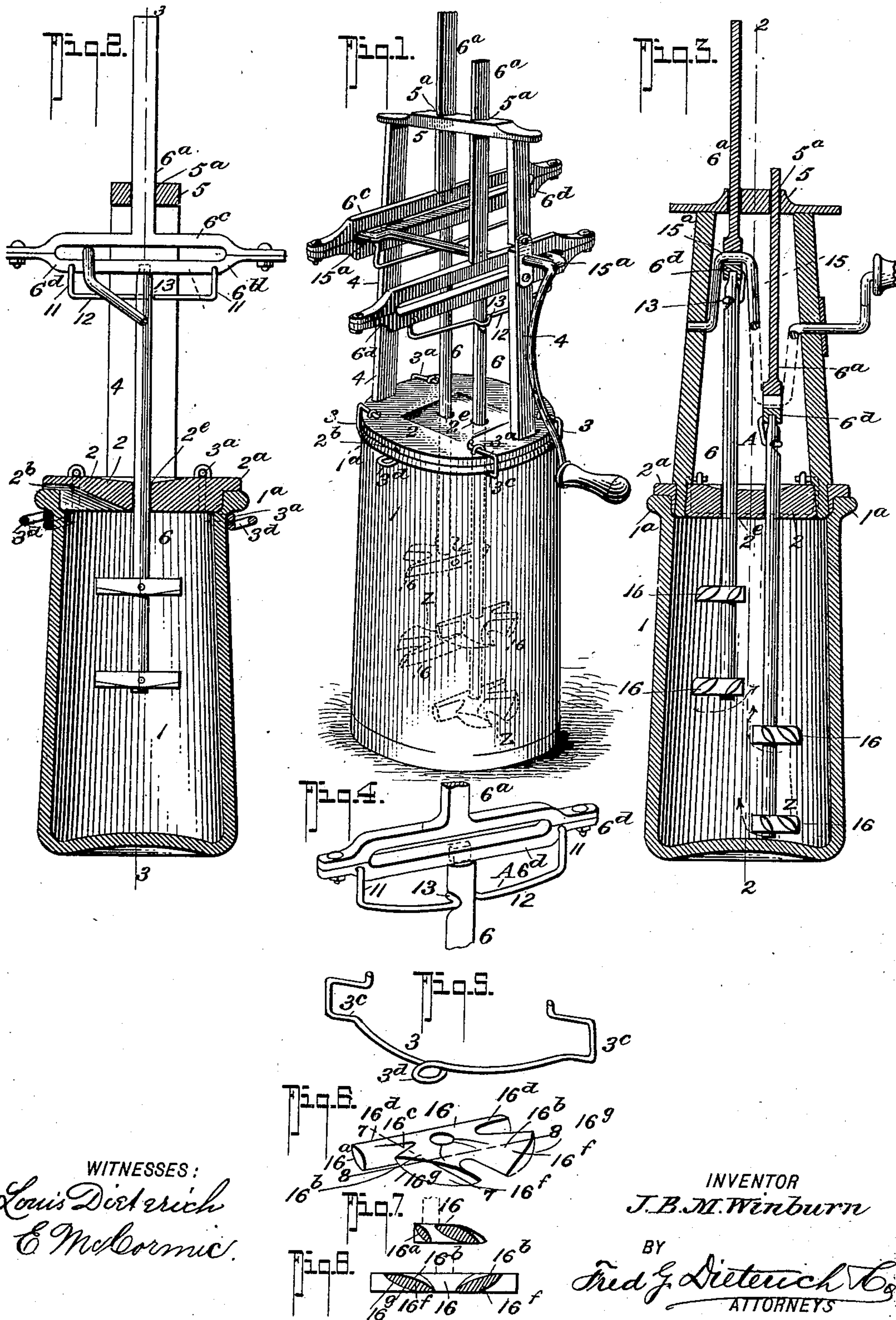
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J. B. M. WINBURN.
CHURN.

(Application filed Apr. 14, 1900.)

(No Model.)



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JAMES B. M. WINBURN, OF GAINESVILLE, GEORGIA.

CHURN.

SPECIFICATION forming part of Letters Patent No. 669,432, dated March 5, 1901.

Application filed April 14, 1900. Serial No. 12,838. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. M. WINBURN, residing at Gainesville, in the county of Hall and State of Georgia, have invented certain new and useful Improvements in Churns, of which the following is a specification.

This invention relates to improvements in churns, and more particularly refers to that class of churns having duplex or double-acting dashers and central dasher-staffs; and primarily the invention seeks to provide a churning apparatus of the class stated numbering among its characteristic features simplicity of construction, ease of operation, and including the no less desirable quality of providing for an increased capacity with the reduction of labor over that necessary for operating the ordinary style of churn, and the collection of all of the butter, of the cream, and of the milk in a minimum amount of time.

In its general nature my invention comprehends a pair of dasher-staffs each formed of an upper and lower section, the upper sections each including a slotted crank-shaft-engaging member of peculiar construction and having attached thereto a simple and easily-manipulated locking or detent mechanism for securing the upper end of the lower staff-section and holding it in position to be properly reciprocated.

My invention also includes a novel construction of dasher-blade; and in its more subordinate features it consists in certain details of construction and peculiar combination of parts, all of which hereinafter will be fully described, and particularly pointed out in the appended claim, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a churn constructed in accordance with my invention. Fig. 2 is a central vertical section of the same, taken practically on the line 2 2 of Fig. 3. Fig. 3 is a transverse section of the upper or crank end of the churn, taken on the line 3 3 of Fig. 2. Fig. 4 is a detail perspective view illustrating one of the slotted staff-heads, the upper end of the lower staff-section, and the spring-rod devices for holding the lower staff upon the slotted head. Fig. 5 illustrates the fastening devices for securing the cover member to the churn top or body. Fig. 6 is a detail perspective view, on an enlarged scale,

of one of the dasher blades or disks. Figs. 7 and 8 are cross-sections of the same, taken, respectively, on the lines 7 7 and 8 8 of Fig. 6.

In the accompanying drawings, in which like characters indicate like parts in all the figures, 1 indicates the tub or churn-body, which may be of any suitable shape, the upper end of which in my complete construction of churn, however, has an annular bead 1^a, the purpose of which will presently appear.

The cover 2 has an annular rim 2^a, which extends over the upper edge of the tub 1, and to hold the said cover securely upon the tub I provide the same with a pair of oppositely-disposed spring-wire clamping members 3, each of which consists of a single piece of wire having the ends 3^a bent inward to engage eyes 2^b upon the top of the cover and form, as it were, hinge-joints.

The body portion of each clamping member 3 is bent downward or curved concentrically with the cover-rim, it also being bent inward, as at 3^c, whereby when the said clamps 3 are turned down, as indicated in Fig. 1, they will spring over the beads 1^a of the tub and securely hold the cover 2 in place thereon, and to facilitate the manipulation of the clamps 3 their central portions are bent into eyes 3^d, which form finger-pieces.

The under side of the cover has a vent-groove 2^d to ventilate the interior of the churn and permit gases collecting therein to escape therefrom. Fixedly secured to the cover and projecting vertically upward therefrom is a pair of standards 4, the upper ends of which are joined by a cross-head 5, and the said standards and cross-heads straddle a pair of centrally-disposed dasher-staff guide-apertures 2^e 2^e of the cover 2, as shown.

The dashers and the means for connecting them with the dasher-operating devices, the construction of which forms an essential feature of this invention, are best illustrated in Figs. 1 and 4, by reference to which it will be seen each dasher comprises a divided staff formed of a lower section 6 and an upper section 6^a, the lower section being preferably circular and held to reciprocate freely through the cover member 2, the said lower staff-sections passing through the apertures in the cover, as clearly shown in Figs. 2 and 3. The lower staff-sections 6 may be of wood; but I

prefer to construct the upper sections of like material. Each upper dasher-staff section 6^a forms, as it were, a slide portion and passes through an aperture 5^a in the cross-head 5, and on the lower end of each section 6^a is carried a slotted laterally-extending guide consisting of the upper section 6^c, preferably integrally formed upon the lower end of the part 6^a, and the lower section 6^d, having a like shape to that of the section 6^c, to which it is secured by bolts or rivets, as shown. Each lower guide-section 6^d has a non-circular socket 7 to receive the non-circular upper end of the lower staff-section 6. As a simple, effective, and easily-manipulated means for detachably securing the lower staff-section to the upper section I employ a clamping device formed of a single piece of spring-wire. Each of the clamping devices (indicated by A) consists of end portions 11 11, secured to the lower guide-sections 6^d, and a bowed portion 12 12, having a central semicircular loop 13.

It will be noticed by reference to Fig. 3 that the device lies in a plane directly in line with the inner face of the section 6^d and the loop portion 13 projects toward the socket of the part 6^d. By this arrangement it is manifest that by inserting the upper end of the lower dasher-staff section into the loop 13 and fitting the said upper end into the socket in the part 6^d, with its undercut notch portion in line with the loop 13, the said loop will spring in a locked engagement with the said notch and hold the lower section 6 securely attached to the upper section 6^a and to move therewith. To disconnect the lower staff-section from the upper, it is only necessary to spring the clamp devices A from engagement with the said section, which permits the upper end being pulled out of the socket in the guide portions 6^d.

15 indicates a double crank-shaft journaled on the uprights 4 4, the said shaft having two crank portions 15^a, which operate in the slotted guide members of the dasher-staff, and the said cranks are so arranged as to impart alternate reciprocal motion to the said staff.

By forming the guide portion of the dasher-staff in sections the said sections may be readily disconnected and the dasher-staff separated from the crank-shaft members. Each lower staff-section carries a pair of dasher-blades, the peculiar construction of which also forms a feature of this invention.

Each dasher-blade consists, essentially, of a semicircular disk 16, apertured to fit upon the lower end of the staff-section 6, upon which they are held by clamp-screws or otherwise. Each disk 16 is fitted on its staff with its straight edge innermost, whereby a straightway passage is provided between the contiguous edges of the disks on the two staff-sections 6, and the front or facing surfaces are beveled downward and inward, as at 16^a, whereby on the descending thrust of the staff

the cream will be forced down at one side by the downgoing dasher-disks operating against the correspondingly-shaped disk edges of the opposing dasher-blades as they rise.

To thoroughly agitate and divide the cream globules, the disks are cut out, as indicated at 16^c, to form cutting-fingers 16^d, the upper and lower edges of which taper to a point, and to produce a centrifugal or whirling action to the cream the said disks are also cut out in a direction at right angles to the space 16^c to form wings 16^f, each disk or blade having a pair of such wings the under faces of which taper from the front edge rearwardly, as at 16^g, while the upper faces taper likewise from the rear edge forward, as at 16^b.

Forming the wings in the manner stated provides for dividing the cream at a point indicated at Z on the uplift of the disks, and thereby produces a whirling of the cream in opposite directions, the direction of whirl effected by one blade or disk being toward that effected by the disks on the other staff.

In operation by reason of the peculiar construction of the dasher-blades the cream will be effectively separated and a centrifugal as well as a whirling action produced, providing, as it were, a rucking action, which will thoroughly aerify the same and produce butter in a minimum amount of time.

All of the parts can be simply constructed and are so combined as to cooperatively act to produce the results desired in an easy, quick, and efficient manner.

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

In a churn the combination with the body and standards projected therefrom, the cross-head joined with the standards, and the crank-shaft journaled upon the standards; of the dasher-staff consisting of an upper and a lower section, the upper section comprising a guide portion 6^a, movable through the cross-head, its lower end terminating in a base portion 6^c, extended in a line transversely to that of the crank-shaft, the ends of the said portion 6^c, being bent down, and a second base portion 6^d, shaped like the portion 6^c, and opposing the said portion 6^c, said portion 6^d, having a non-circular socket in its under side, and means for detachably joining the ends of the said portions 6^c 6^d, the lower staff portion consisting of a rod having blades at the lower end and having its upper end terminating in a non-circular portion, adapted to fit the socket in the member 6^d, and means for detachably locking the said lower section to the member 6^d, as shown and described.

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Witnesses:

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