

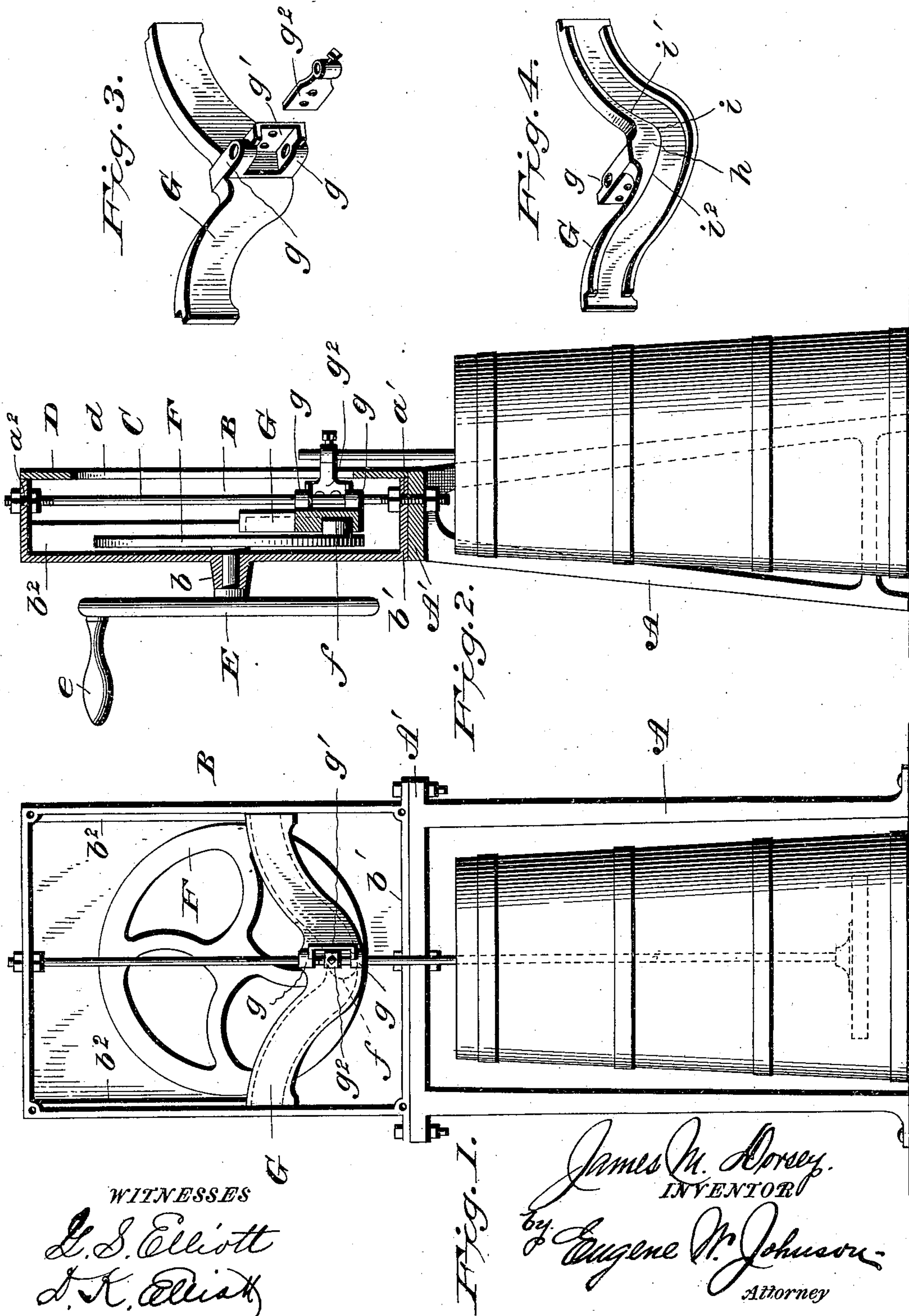
No. 616,830.

Patented Dec. 27, 1898.

J. M. DORSEY.  
CHURN POWER.

(Application filed May 6, 1898.)

(No Model.)



WITNESSES  
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# UNITED STATES PATENT OFFICE.

JAMES M. DORSEY, OF TORONTO, OHIO, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO ROBERT E. DORSEY, OF EAST PALESTINE, OHIO.

## CHURN-POWER.

SPECIFICATION forming part of Letters Patent No. 616,830, dated December 27, 1898.

Application filed May 6, 1898. Serial No. 679,912. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. DORSEY, a citizen of the United States, residing at Toronto, in the county of Jefferson and State of Ohio, have invented new and useful Improvements in Churn-Power, of which the following is a specification.

This invention has relation to certain new and useful improvements in mechanisms for operating churns; and it consists in the novel construction and arrangement of the parts, as will be hereinafter fully set forth, and specifically pointed out in the claims.

The object of my invention is to provide improved means for operating a reciprocating dasher-rod so as to impart thereto not only the usual reciprocating motion, but also a short stroke when the dasher-rod reaches the limit of its downward movement.

In the accompanying drawings, Figure 1 is a front elevation, the covering-plate being removed, so as to better show the arrangement of the operating mechanism. Fig. 2 is a vertical sectional view. Figs. 3 and 4 are detail perspective views of the cross-head detached.

Referring to the drawings, A designates a base of any suitable type, preferably with side legs which support a platform A', with vertical apertures therethrough for the passage of bolts which rigidly connect thereto a frame B, which frame or casing is made of metal, the same being cast so as to provide adjacent to the center of the rear plate or wall a boss or shaft-bearing b. The bottom plate b' of the casing is constructed to present projecting ends, said ends having apertures which register with the apertures in the ends of the platform A' as well as the central aperture a', the casing B being rigidly attached to the platform by bolts, as shown. The vertical side pieces of the casing have guide-flanges b<sup>2</sup> b<sup>3</sup>, formed by increasing the thickness of the side pieces, and the longitudinal edges are made smooth by planing or otherwise.

C refers to a guide-rod maintained in place within the casing by being passed through the apertures a' a<sup>2</sup> therein, and it is retained in place by nuts, and said guide-rod may assist in holding the casing B to the platform A' by being passed through the same and having the nuts disposed above the bottom plates

of the casing and below the lower edge of the platform. The upper end of the rod C is held to the top plate of the casing by nuts, as shown.

D refers to a covering-plate which is bolted to the casing and has therethrough a vertical longitudinal slot d, said plate being held to the casing by screws which pass through the corners thereof.

The movable parts of the operating mechanism consist of a wheel E, having a crank-handle e, said wheel being attached to a shaft which projects from a disk F and has its bearing in the boss b. The disk F carries a roller f, which is mounted in the usual manner thereon and engages with a slot in the cross-head G, which cross-head has its ends recessed for engagement with the guide-flanges b<sup>2</sup> and is provided centrally with projections g g, having apertures through which passes the guide-rod C, and said projections are connected by a vertical flange g', having apertures for attaching thereto, by means of suitable bolts, a fixture g<sup>2</sup>, having a socket and set-screw for connecting thereto the dasher-rod.

The cross-head G is preferably made of a casting and has considerable weight and has formed therein a recess or groove within which the roller f lies.

In the construction illustrated it will be noted that the groove or recess in the cross-head is such as to provide near the center a depending portion h, whose under surface is concave on one side of the center and convex on the other and that the curves on each side of the center are such that they are substantially in the path followed by the roller when the disk is turned, the form of groove or recess operating so as to impart to the dasher-rod not only the usual vertical reciprocating motion, but also an additional reciprocating motion when the dasher-rod and cross-head are near the limit of their downward movement. When the disk F is turned, the roller thereon will engage the upper flange of the cross-head and when it reaches a point slightly beyond the center will lift the cross-head until the roller passes the horizontal center. The roller then reverses its movement and raises the cross-head to its highest point, the roller being at the vertical center.



After passing the vertical center the cross-head lowers or falls, and just as it reaches its downward limit of movement the cross-head is raised and falls almost instantaneously, so as to impart to the dasher a very quick and short stroke, thereby thoroughly agitating the cream and quickening the operation of churning.

I am aware that prior to my invention it has been proposed to provide a device for operating churns, comprising a cross-head with a straight slot, with which engages a roller mounted on a disk; also, that a dasher-rod has been operated by the employment of irregularly-shaped grooves formed in cam-wheels for increasing the number of reciprocations of the dasher-rod, and such devices form no part of my invention.

The shape of the groove in the cross-head, it will be noted by reference to Fig. 4, is such that the roller engages with the upper projecting portion thereof and that the lowest position occupied by the dasher is when the roller *f* engages with the point *i*, positioned slightly to one side of the center of the cross-head, and this projecting portion is a convex curve merging into a concave part *i'*. At the same distance on the other side of the point *i* the flange is convex, as shown at *i''*, and beyond these points the configuration is such that it follows for a short distance the path of travel of the roller. Thus it will be seen that on the upstroke the movement imparted to the dasher-rod is practically and substantially the same as would be imparted thereto by a straight slot or groove in the cross-head; but when the dasher reaches the limit of its downstroke it has not only imparted thereto the ordinary vertical reciprocating movement, but an additional short reciprocation, effected not only by the shape of the groove, but also by the weight of the cross-head. In other words, near the limit or adjacent to the reversal of the dasher-rod from downward to upward there is imparted thereto a short upward stroke and a quick downward stroke

before the dasher-rod commences its long stroke upward, which movement agitates to a greater extent the lighter cream, which is at the bottom of the churn.

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

1. In combination with the dasher-rod, a reciprocating cross-head and operating-disk with roller which engages with the cross-head, said cross-head having to one side of the center a curved depending portion and adjacent thereto on opposite sides a convex portion and a concave portion so as to impart to the dasher-rod a quick rapid and double reciprocating movement at or near the limit of its downward movement, substantially as set forth.

2. In a churn-operating mechanism, the combination with an operating-disk having a roller, a vertical guide-rod, a reciprocating cross-head mounted thereon so as to be in engagement with the roller, a dasher-rod connected to the cross-head, the cross-head being shaped so as to provide end portions positioned above the horizontal plane of the central portion said cross-head having a convex projecting portion to one side of its center and adjacent thereto and on the same side of the center a concave portion, the convex portion on the opposite side from the concave portion joining a curved portion of the same configuration as the end curved portion on the opposite side of the cross-head, substantially as shown, whereby a reciprocating motion is imparted to the dasher-rod and a short reciprocating motion at or near the limit of its downward movement, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES M. DORSEY.

Witnesses:

GEO. W. CONN,

J. E. BLACKBURN.