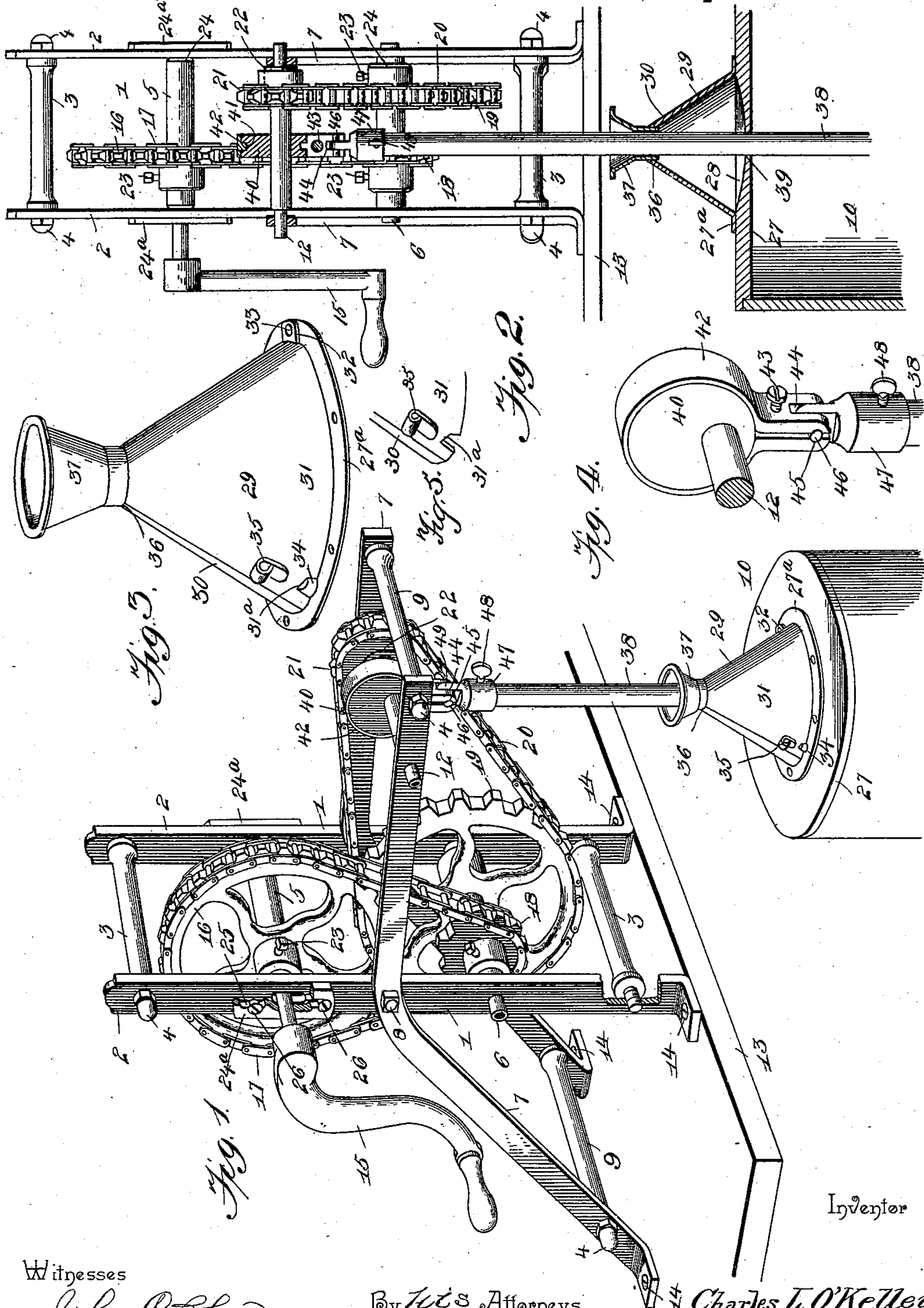


(No Model.)

C. L. O'KELLEY.  
CHURN.

No. 567,354.

Patented Sept. 8, 1896.



Witnesses

John C. Shaw  
G. H. Maxwell,

By *W. L. S.* Attorneys,

Charles L. O'Kelley,

*C. A. Snow & Co.*



# UNITED STATES PATENT OFFICE.

CHARLES L. O'KELLEY, OF ASH GROVE, MISSOURI.

## CHURN.

SPECIFICATION forming part of Letters Patent No. 567,354, dated September 8, 1896.

Application filed August 31, 1895. Serial No. 561,126. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES L. O'KELLEY, a citizen of the United States, residing at Ash Grove, in the county of Greene and State of Missouri, have invented a new and useful Churn, of which the following is a specification.

My invention relates to churns, and particularly to the means for mounting the dasher-rod to prevent the escape through the bearing of the contents of the receptacle; and the object in view is to provide such a construction and arrangement of parts as will facilitate the introduction of material for tempering the contents of the receptacle and will allow the progress of the churning operation to be ascertained without removing the churn-cover.

With these and other objects in view my invention consists of the various parts and novel arrangement and combination thereof, as set forth hereinafter by description and claim.

In the drawings, Figure 1 is a perspective view of my improvement with parts broken away. Fig. 2 is a central vertical section on a line with the eccentric-shaft and dasher-rod. Fig. 3 is a detail view of the extended bearing and churn-cap. Fig. 4 is a perspective detail of the eccentric coupling to the dasher-rod. Fig. 5 is a detail view of the swinging portion or door of the inclosure to show the notch in its lower edge for engagement with the beveled stud.

Reference-numeral 1 designates the main upright of the frame, composed of two parallel bars 2, braced apart by rods 3, reduced at either end and threaded to receive the clamping-nuts 4, which secure said bars spaced apart properly to support the main shaft 5 in the upper portion and counter-shaft 6 in the lower portion of the frame. A second pair of frame-bars 7 is secured midway of its length to the middle portion of the upright frame by bolts and nuts 8, and is rigidly spaced by spacing-rods 9 at either end, similar to rods 3. These bars 7 are downwardly bent at their lower ends to form strut-braces to the main frame, and the upper free ends of said bars 7 are carried out horizontally over the churn 10 and provided with eccentric-shaft 12, suitably journaled therein in vertical alinement

with the churn. At their lower extremities bars 2 and 7 are flanged and perforated to be firmly secured to the floor or platform 13 by screws or bolts 14.

The outer projecting end of main shaft 5 is screw-threaded to receive the operating-crank 15, and is provided adjacent thereto and within the frame 1 with a drive-wheel 16 of the sprocket variety. This drive-wheel gears by means of sprocket-chain 17 with a smaller sprocket-pulley 18, alined therewith on shaft 6. On the further end of shaft 6 a transmitting-gear 19 is secured, which is a sprocket-wheel of the same size as the drive-wheel 16, and is geared to shaft 12 by sprocket-chain 20, passing over small sprocket-wheel 21, sleeved over boss 22, near the farther end of said shaft 12. Each of these gear-wheels is provided with a flanged hub on its outer side, perforated to receive an adjusting set-screw 23, by which it is retained in its proper adjustment on its shaft. Each of the shafts is turned down at either bearing end to provide a shoulder 24 within the frame to allow slight longitudinal play of the shaft in its bearings, so as to give greater ease of motion.

The drive-shaft or crank-shaft 5 is not journaled in the bars 2, but passes through vertical slots therethrough and is journaled in bearing-plates 24<sup>a</sup>, one at either end, which are provided with guide-slots 25 to reciprocate on screw-bolts 26. By this means slack in the sprocket-chain 17 may be taken up and the shaft 5 may be raised or lowered, or trued in its bearings, by shifting one or both of the plates 24<sup>a</sup> and tightening them in place by the bolts 26.

The churn-cover 27 is provided on its upper face with a radially-flat ring or flange 27<sup>a</sup>, secured immediately surrounding the usual drip-cup or dished-out portion 28 in said cover. Adjacent to its inner edge this flange is provided with an inclosure 29 in the form of an inverted cone in two halves, one of which constitutes a walled support 30, and is soldered or otherwise permanently secured to said flange 27<sup>a</sup>, and the other of which constitutes a door 31, and is hinged thereto at one of its lower corners by means of the horizontal ear 32 and the vertical pin 33. Near its opposite corner door 31 has a sharp notch 31<sup>a</sup> in its bottom edge to click over the bev-



eled securing-lug 34, projecting from flange 27<sup>a</sup>, so as to hold the door tightly closed. A loop or knob 35 is provided near said locking corner by which to open and close the door.

5 The cone 29 is truncated near its apex and provided with a tubular vertical bearing 36, soldered to permanent supporting-wall 30. This bearing projects slightly within the cone and extends upwardly in a flaring mouth  
10 or funnel 37. One main purpose of this conical inclosure 29 is to provide an extended guide-bearing for the dasher rod or staff 38 of the churn, so as to insure precision of movement and freedom from binding of said  
15 dasher-rod against the churn-cover. The inner bearing for said rod is the usual cover-hole 39, and the outer bearing is the long bearing 36, rigidly braced by the flared supporting-wall 30, said hole or opening 39 being  
20 sufficiently large to loosely receive the rod and allow adhering milk globules or butter grains to be carried by the rod when raised into the inclosure or cap 29.

Reciprocating motion is given to the churn-  
25 dasher by means of an eccentric 40, keyed or otherwise fixed on shaft 12 and peripherally grooved to receive the internal retaining-bead 41, formed on the eccentric-strap 42. This strap is connected to the upper end of the  
30 dasher-rod 38 by means of the outwardly-bent ends of the strap, which are brought together by set-screw 43 and transversely slitted at 44 and have semicircular bearings 45 formed in their opposing faces to receive  
35 the stub-pivots 46 of the socket 47. This socket 47 sets over the dasher-rod and is secured thereto by thumb-screw 48, and is adjusted to the eccentric by passing its upward ear or lug 49 within slits 44, so as to bring  
40 stub-pivots 46 between the bearing-faces 45, which are then clamped in place around said pivots by set-screw 43.

The operation of my improved churn mechanism is obvious, so as to need no detailed explanation. The uniform rotary motion transmitted by the sprocket-gearing is converted into reciprocating motion by means of the eccentric mechanism. This is much more positive than the ordinary crank for the reason  
50 that there is no lateral yielding and no loose joints for vertical play, so that no wobbling of the dasher-rod at its upper end is possible. At its lower or intermediate portion said dasher-rod is rigidly guided in the extended  
55 and firmly-braced bearings of the churn-cover, so that the motion thereof is necessarily truly vertical, with no possibility of the

rod to wobble or of the churn to creep. The special framework which supports the moving parts is exceedingly simple and at the 60 same time exceedingly strong and efficient, economizing space and providing a compact adjustment for the churn.

Whatever cream may spatter through the perforated cover is caught by the conical walls 65 of the inclosure 29 and flows down the sloping sides of the portion 28 back into the churn. If any cream works up on the dasher-rod, it is caught by the funnel 37. At any time the inside of said inclosure may be inspected by 70 swinging open the door 31. By this means also the progress of the churning may be judged from an inspection of the milk globules or butter grains on the raised rod within the inclosure. 75

The churn may be "washed down" through the open door or the cream tempered by pouring in through the cover-hole 39 hot or cold water, as required, without removing the cover. 80

What I claim is—

The combination with the reciprocating dasher-rod of a churn, and the churn-cover having a central rod-opening loosely receiving the rod, and an annular dished portion 85 surrounding said opening; of a trunco-conical cap or inclosure having at its lower edge a flat attaching ring or flange detachably fastened on top of the churn-cover directly surrounding said annular dished portion and provided 90 with a beveled securing-lug, and having at its upper end a cylindrical rod-bearing extended into a flared mouth or funnel, said cap or inclosure essentially comprising duplicate sections, one of which forms a door-section 31 95 hinged at one of its lower corners to the attaching ring or flange and provided near its opposite lower corner with a notch adapted to spring into engagement with said securing-lug when the door-section is closed, said door-section, being adapted to be opened to allow for an inspection of the material adhering to the dasher-rod when the latter is raised, and also for the introduction of materials into the churn to facilitate the churning operation 105 without removing the churn-cover, substantially as set forth.

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

CHARLES L. O'KELLEY.

Witnesses:

A. C. TWADDELL,  
J. N. COMEGYS.