

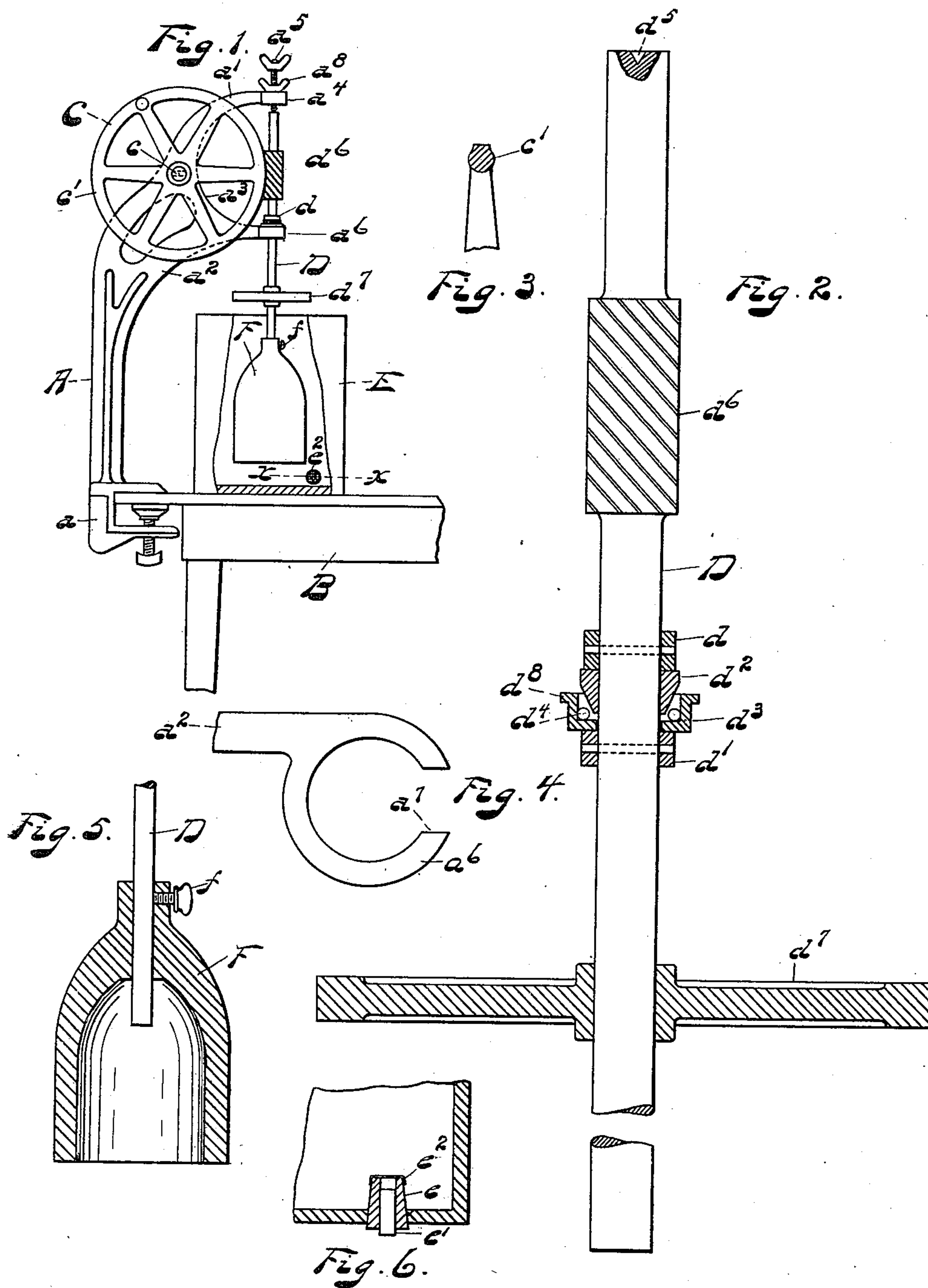
No. 662,129.

Patented Nov. 20, 1900.

S. A. MITCHEL.
CHURN.

(Application filed May 5, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

SAMUEL A. MITCHEL, OF GREENFIELD, OHIO, ASSIGNOR TO THE SUN
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CHURN.

SPECIFICATION forming part of Letters Patent No. 662,129, dated November 20, 1900.

Application filed May 5, 1900. Serial No. 15,588. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL A. MITCHEL, a citizen of the United States of America, and a resident of Greenfield, in the county of Highland and State of Ohio, have invented certain new and useful Improvements in Churns, of which the following is a specification.

The object of my invention is a churn in which the shaft bearing the dasher may be quickly both disengaged from its bearings for removing the dasher from its vessel and again put in place for churning and in which said shaft is supported in its bearings, so as to have an easy but steady rotation in its bearings. This object is attained by the means described in the annexed specification and illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a churn-operating mechanism embodying my invention attached to a table, the vessel being shown partly broken away to expose the dasher. Fig. 2 is an elevation of the shaft upon a greatly-enlarged scale, its lower end being shown broken off, its ball-bearings and its balance-wheel being shown in cross-section. Fig. 3 is a detail cross-section through the rim of the driving-wheel. Fig. 4 is a detail plan view, upon a greatly-enlarged scale, of the lower bearing of the shaft. Fig. 5 is a detail sectional view of the dasher. Fig. 6 is a detail sectional plan view upon line xx , Fig. 1, showing the combined plug and strainer for the outer vessel.

Referring to the parts, standard A has at its lower end a clamp a for fixing it to the edge of a table B and at its upper end two laterally-divergent arms a' and a'' , connected by a cross-brace a^3 . Where the cross-brace joins arm a' is formed the bearing for the horizontal shaft c of the driving-wheel C. The material of wheel C is concentrated in its rim c' , making the rim large in cross-section, and its periphery is reduced in width and flattened, as shown in Fig. 3. Arm a' terminates in a collar a^4 , which is internally screw-threaded to receive a screw-threaded pin a^5 . Arm a'' terminates vertically below collar a^4 in a collar a^6 , which has a slot a^7 of a width equal to the diameter of shaft D.

Shaft D has secured to it two collars d and d' , between which upon the shaft are a cone-bearing d^2 and a loose flanged cup d^3 , which is of the same external diameter as the internal diameter of collar a^6 and in which are a number of balls d^4 . Collars d and d' are placed at such a distance apart that while the cup d^3 has a slight vertical slipping movement on shaft D there is not space enough between its upper edge and the cone-bearing to allow balls d^4 to pass out of it. In its upper end shaft D has a conical depression or seat d^5 . Shaft D is put in place by passing it through slot a^7 , allowing it to descend and rest with flange d^8 of cup d^3 resting on collar a^6 and lowering pin a^5 to extend loosely into depression d^5 . Pin a^5 is then secured in that position by winged lock-nut a^8 . The weight of shaft D causes cone-bearing d^2 to center itself upon balls d^4 .

Formed integral with shaft D is a worm d^6 , which meshes with driving-wheel C when the shaft is placed in its bearings. Secured to the shaft, so as to come below its lower bearing and immediately above vessel E and made in shape of a solid disk, is a balance-wheel d^7 , which subserves a triple purpose—viz., to steady the shaft in its bearings, to catch and throw off by its tangential force any lubricant that may drip from the bearings, and thus prevent its falling into the cream, and by the horizontal or tangential currents of air it generates to keep the spray or mist caused by the rapid rotating of the cream within the vessel.

At the lower end of the shaft D is a bell-shaped dasher F, which may be adjusted up or down upon the shaft, according to the depth of cream in vessel E, by set-screw f . This shaped dasher creates a great agitation in the cream, the exterior imparting a centrifugal current thereto, which causes it to be depressed about the dasher and to rise up around the wall of the vessel, while the hollow interior creates a suction which tends to draw the cream into it, creating counter-currents to the centrifugal current and causing the liquid to be filled with bubbles of air.

Vessel E is made, preferably, rectangular, so that its corners break the centrifugal cur-

rents of the cream; but a round vessel, with breakers, might be used. Seated in a perforation in the side of the vessel near its bottom is a conical plug *e* with an axial hole, within which is seated a stopper *e'*. The inner end of plug *e* is covered with a strainer *e*².

What I claim is—

1. In a churn the combination of a standard with two lateral divergent arms terminating in annular bearings the upper bearing being internally screw-threaded to receive a screw-threaded pin and the lower one being slotted to pass the dasher-shaft, the dasher-shaft, a cup upon the shaft with a flange to rest upon the lower of said bearings, balls within the cup, a cone-bearing upon the shaft to rest upon the balls, a worm secured to or formed integral with the shaft, a driving-wheel upon the standard to mesh therewith, the screw-threaded pin in the upper bearing of the standard to form the bearing for the upper end of the shaft, a lock-nut to hold the pin in a set position, and a dasher

secured to the lower end of the shaft, substantially as shown and described.

2. In a churn the combination of a standard with two laterally divergent arms terminating in bearings the upper bearing internally screw-threaded to receive a screw-threaded pin the lower one slotted to pass the dasher-shaft, the shaft, upon the shaft a cone-bearing and a loose flanged cup to rest in the lower bearing of the standard, balls within the cup, collars secured upon the shaft above the cone and below the cup at a distance apart such that the cup has a slight slipping vertical motion upon the shaft, a worm secured to or formed integral with the shaft, a driving-wheel journaled upon the standard to mesh with the worm and a dasher secured to the lower end of the shaft, substantially as shown and described.

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Witnesses:

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