

(No Model.)

L. W. MURCH.

ROTARY CHURN.

No. 323,878.

Patented Aug. 4, 1885.

Fig. 1.

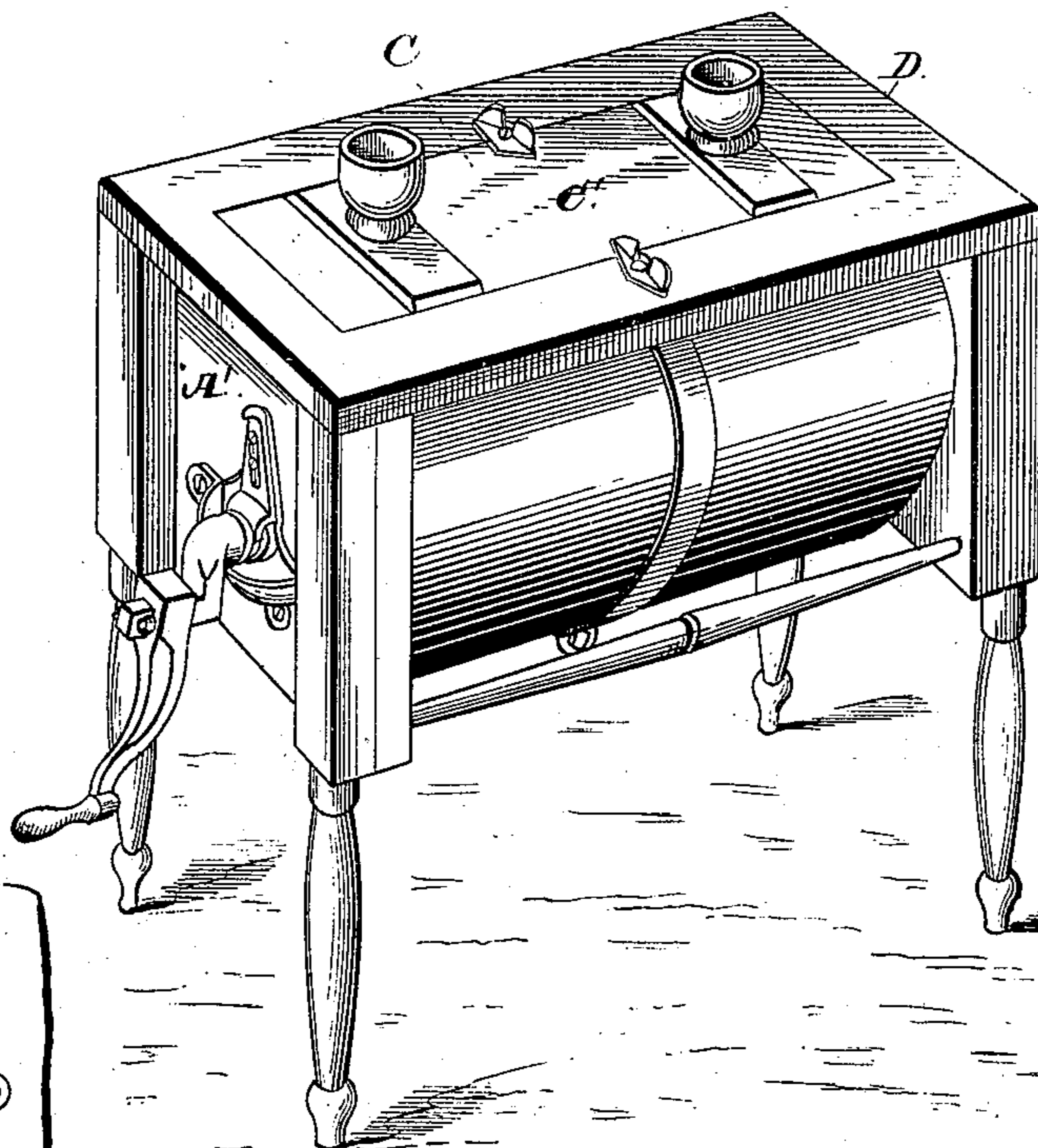


Fig. 4.

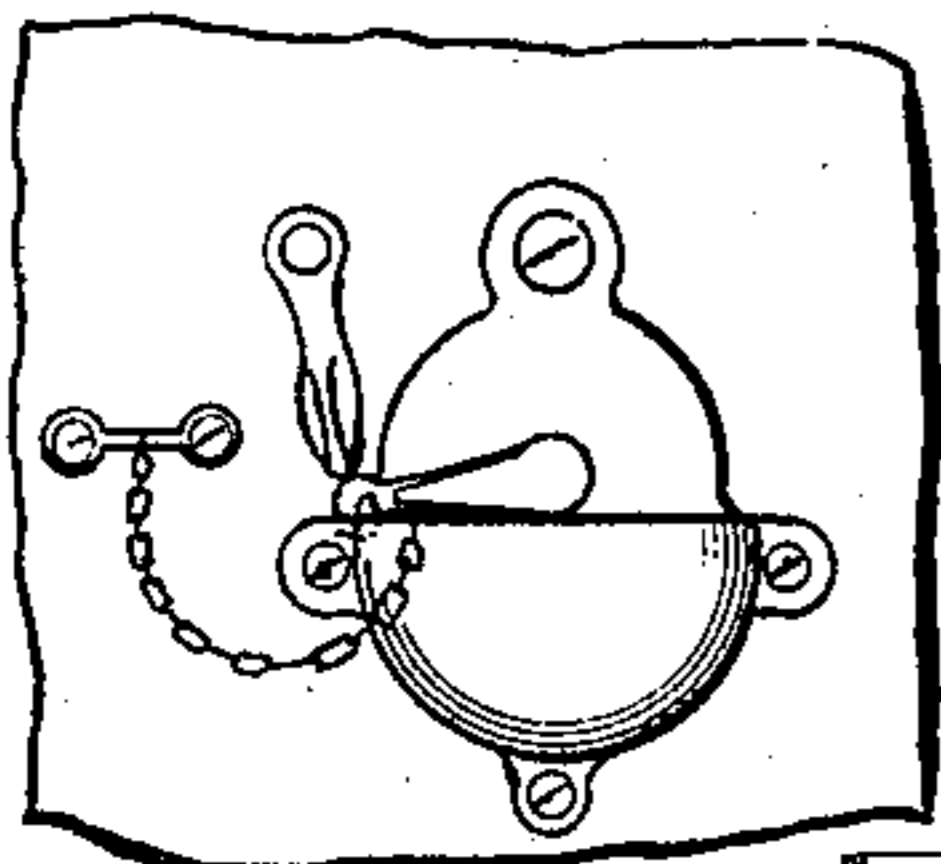


Fig. 2.

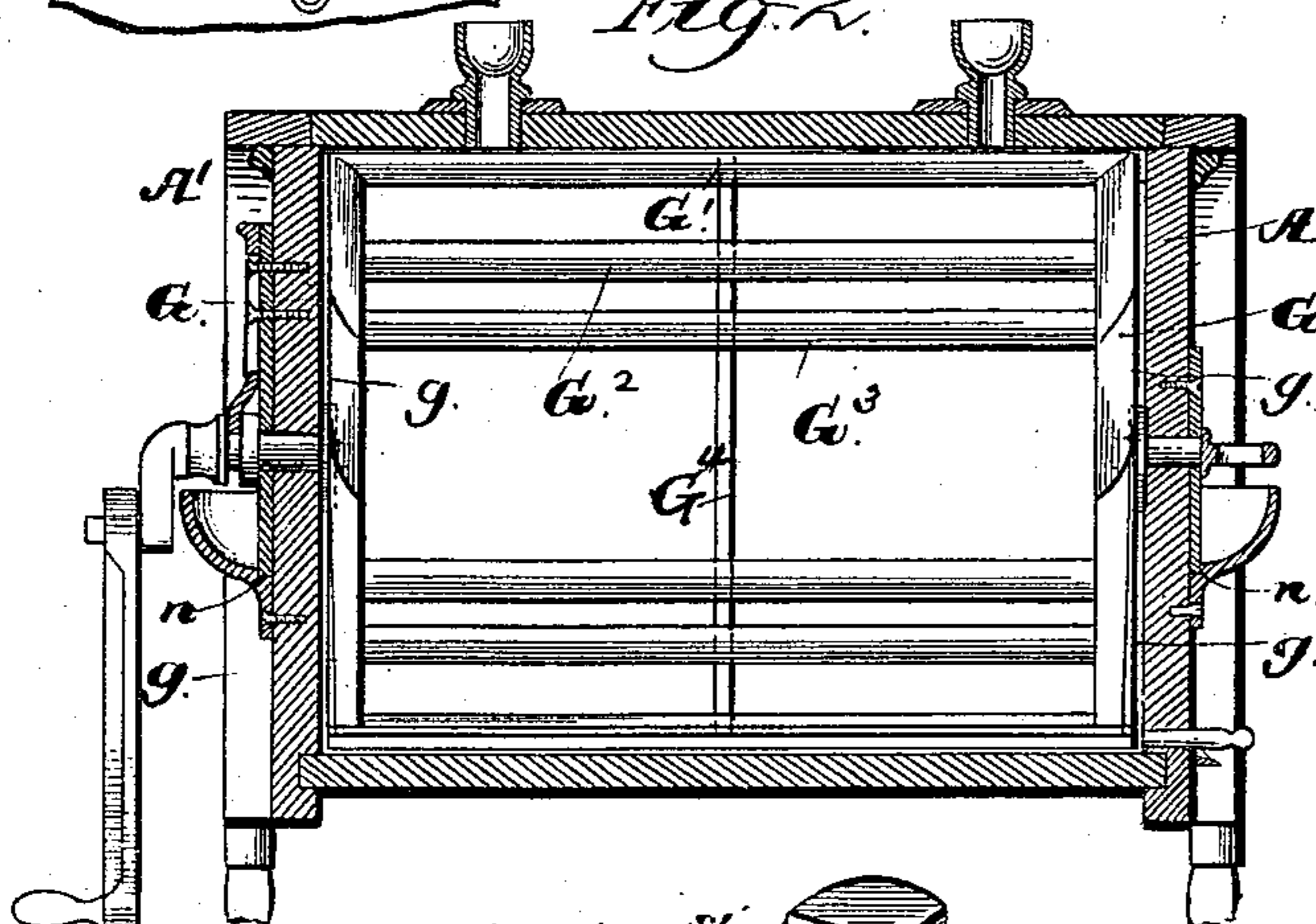


Fig. 3.

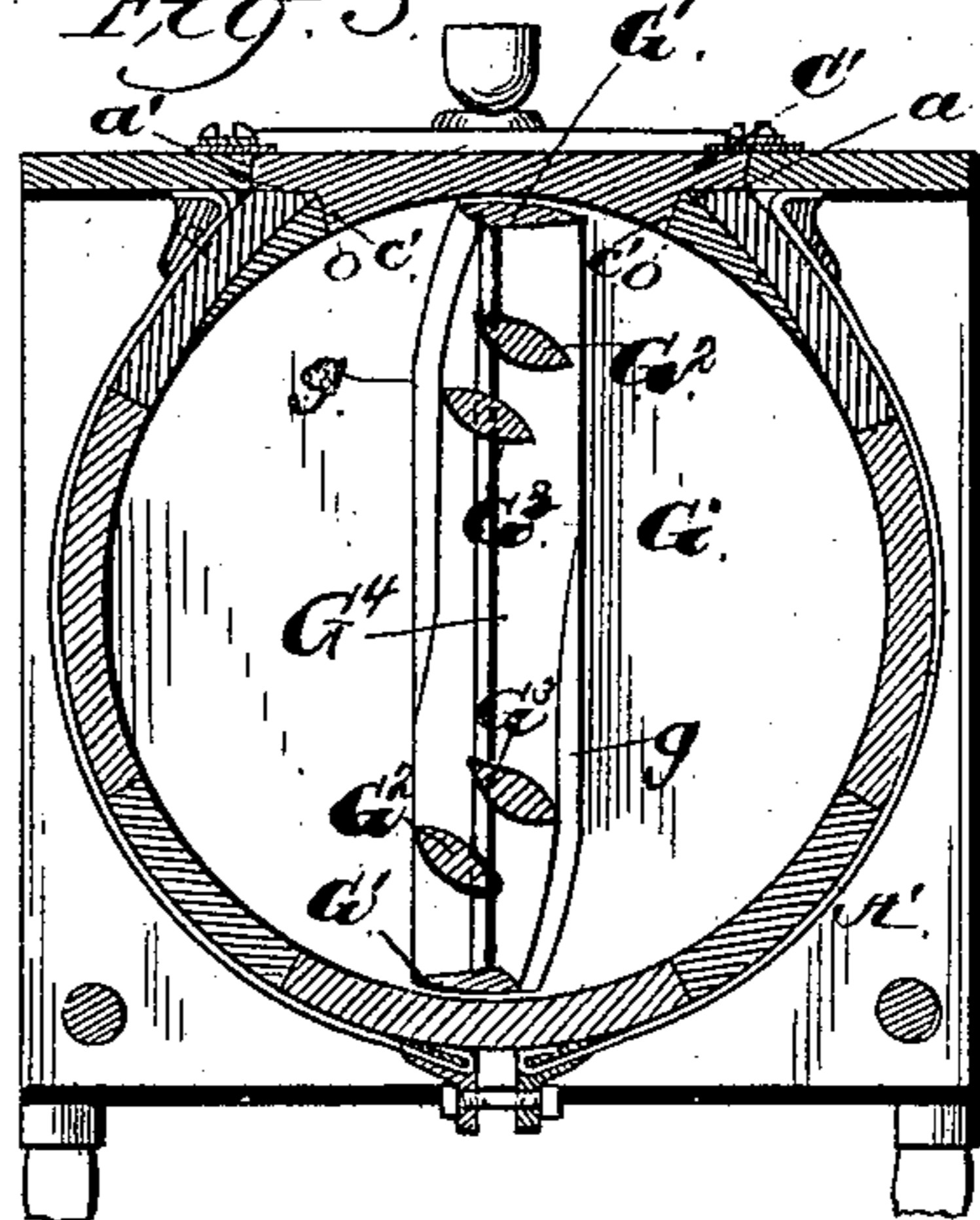


Fig. 5.

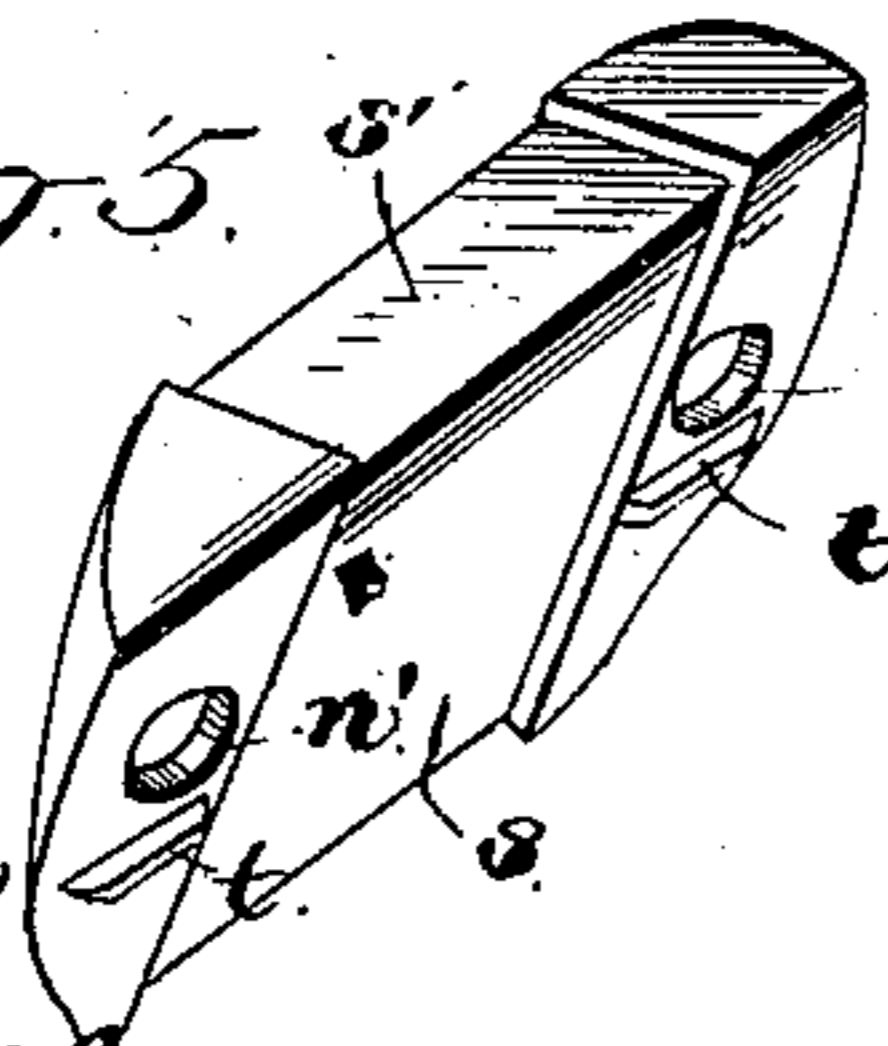
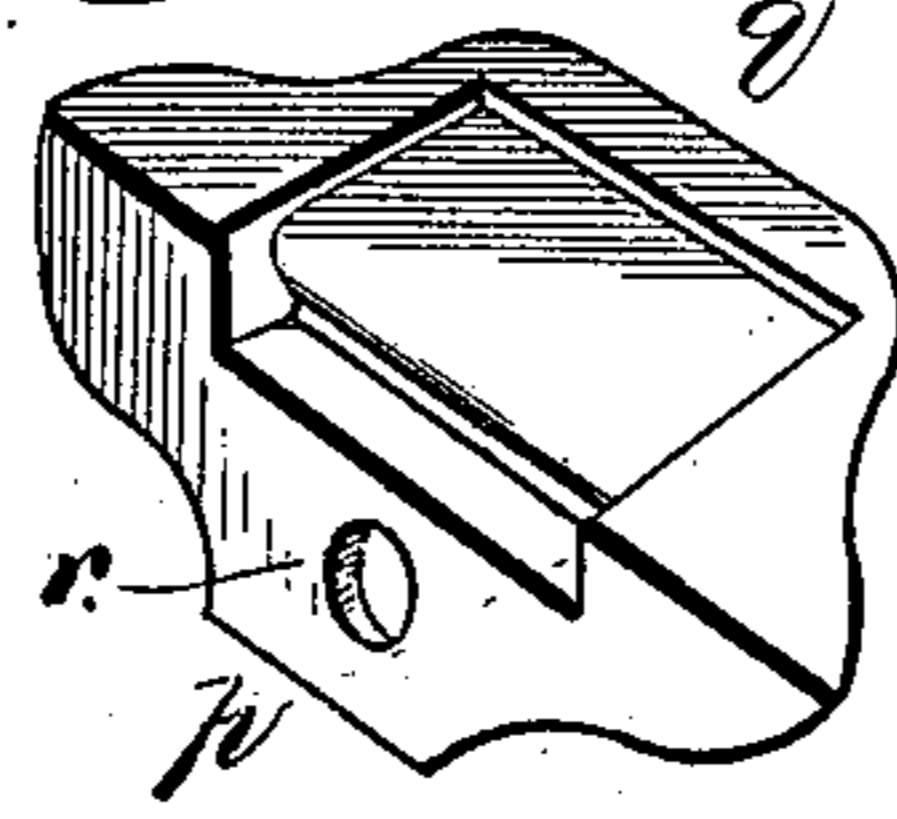


Fig. 6.



WITNESSES.

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LEWIS W. MURCH, OF RACINE, WISCONSIN.

ROTARY CHURN.

SPECIFICATION forming part of Letters Patent No. 323,878, dated August 4, 1885.

Application filed April 1, 1885. (No model.)

To all whom it may concern:

Be it known that I, LEWIS W. MURCH, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Rotary Churns, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to rotary churns; and it consists in certain improvements made to the invention for which Letters Patent No. 233,272 were granted to me October 12, 1880, which improvements will be hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and in which like letters refer to similar parts, said improvements are fully illustrated.

Figure 1 is a perspective view of my improved churn. Fig. 2 is a longitudinal vertical section of the churn-body, showing the dasher and drip-cup. Fig. 3 is a cross-section of the churn-body. Figs. 4, 5, and 6 are detail views of the drip-cup, and the clamps for securing the band around the body of the churn.

My first improvement relates to the cap-piece C' of the cover C. In my patent above mentioned the side flanges to said cap-piece have vertical edges to fit the vertical sides of the shoulder-pieces in the rectangular opening in the cap-piece. It is found, when the churn is used, that said flanges and shoulder-pieces swell, rendering it difficult, if not impossible, to remove and replace the cover. To overcome this difficulty I now construct said side flanges with beveled edges, as shown in Fig. 3 at o, and the sides of the shoulder-pieces a' to conform thereto, thus forming a key-stone cover, which may be readily removed and replaced notwithstanding the swelling of the parts.

In my patent the dasher is formed of two end pieces of irregular shape, provided with feather-edges, and connected by eight stretchers, the outer stretchers having outer slightly-oval plane surfaces and inner oval surfaces, and the inner stretchers having oval surfaces on both sides, and being set horizontally to the end pieces. The end pieces are so formed as to bear closely against the end pieces of the

churn-body, and have washer-bearings let into recesses formed therein, so as to form a plane surface. It is found with a dasher so constructed that the butter forms between the stretchers and clogs up, and to overcome this difficulty I now construct the dasher with end pieces of such length as to allow the outside stretchers to revolve freely but not loosely, and with a less number of inner stretchers—preferably with two—and these I set and arrange in a different manner.

In my improved dasher the end pieces are beveled to an edge on the opposite cutting sides, and the outer stretchers, G', have slightly oval outer surfaces, to conform to the inner surface of the churn-body, and an inner oval surface at one edge and a flat reduced surface at the other. By having the stretchers thus shaped on their inner surfaces firm joints are formed with the end pieces by cutting notches or recesses therein of like shape. The stretchers G² and G³ have oval sides, and are set diagonally across the end pieces, G. By having the inner stretchers set diagonally instead of horizontally a greater surface is presented to the cream when the dasher is revolved and a better action is secured. By lessening the number of inner stretchers clogging is obviated and a constant free movement of the cream obtained.

The washer-bearings in my improved dasher are recessed in but extend slightly beyond the end pieces, G, and thereby allow free rotation of the dasher and obviate the grinding or breaking of the globules or butter particles.

In large machines it has been found that the stretchers warp and spring, and to overcome this difficulty I pass a rod, G⁴, of galvanized metal, from one outer stretcher to the other, about midway of their length, through the inner stretchers, securing its ends to the outer stretchers in any suitable manner, as shown in Fig. 2. This rod makes the dasher stronger, and holds the stretchers firmly, and thereby the end pieces in their proper position.

In my patent the drip-cups are formed of a plate and a basin rigidly attached thereto. The joint between the plate and said basin is formed by a square shoulder, partly in the basin and partly in the plate. Much difficulty has been experienced in making this joint sufficiently tight to prevent leakage

without unnecessary care and expense in casting and fitting the parts. This difficulty I overcome by forming the shoulder entirely in the basin and having the plate fit squarely and firmly therein, as shown at *n* in Fig. 2, the entire cup being shown in Fig. 4. By so doing a perfect joint is obtained, leakage prevented, and the cost of making the cups greatly lessened.

10 In order to hold the staves in my churn firmly in position a metal band or bands in two parts is passed around under the churn-body and secured at its ends and under the churn-body by clamps and bolts. These fastenings, 15 and especially those under the churn-body, are unsatisfactory and too expensive, the latter requiring two bolts where only one is necessary. To simplify these parts, and at the same time secure more perfect fastenings, 20 I now use under the churn body, to secure and tighten the band or bands, clamps like the one shown in Fig. 6. Two of these clamps, set face to face, are used, the ends of the band being brought around on the outside and 25 passed through the slot *p* and turned back into the recess *q*. A bolt is then passed through the holes *r r* and the clamps brought firmly and snugly together. The clamp shown in Fig. 5 is for fastening the band to the 30 churn-body under the cap-piece D. This clamp is provided with projections *t t*, to be driven into the churn-body. The band is brought up and through recess *s* and its end turned back in recess *s'*. Screws are then 35 passed through holes *n' n'* and firmly screwed into the churn-body. The band is thus more securely fastened and its cost greatly lessened.

40 I also place a molding on the ends of the churn-body and under the cap-piece D, as shown in Fig. 2, to strengthen the parts and hold the end pieces, A', more firm and rigid.

The improvements herein described render my churn stronger and more serviceable for

the purpose for which it is designed, and at 45 the same time greatly lessen the cost of its manufacture, its mode of operation remaining the same.

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

1. In a rotary churn, a dasher formed of end pieces, having the opposite cutting sides beveled to an edge, outer stretchers slightly oval on the outside, and with inner oval surfaces on one edge and flat reduced surfaces 55 on the other, one or more inner oval diagonally-arranged stretchers, washer-bearings recessed in, but extending slightly beyond the end pieces, and a tie-rod connecting the outer 60 and inner stretchers, substantially as described.

2. The combination of the churn-body, the divided band, clamps, each having a slot, through which the end of the band is passed, 65 and a recess, in which said end is turned back, a screw-bolt engaging said clamps, and clamps for securing the band to the upper portion of the churn-body, each provided with projections, which enter the body, recesses 70 for receiving the band, and perforations, through which screws are passed, substantially as described.

3. The combination, with a churn body, of a divided band, means for clamping and securing the same at the lower ends, and clamps, 75 having projections *t t*, which enter the body, recesses *s s'*, and perforations *n n'*, through which latter screws are passed for securing the clamps to the churn, substantially as described. 80

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

LEWIS W. MURCH.

Witnesses:

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