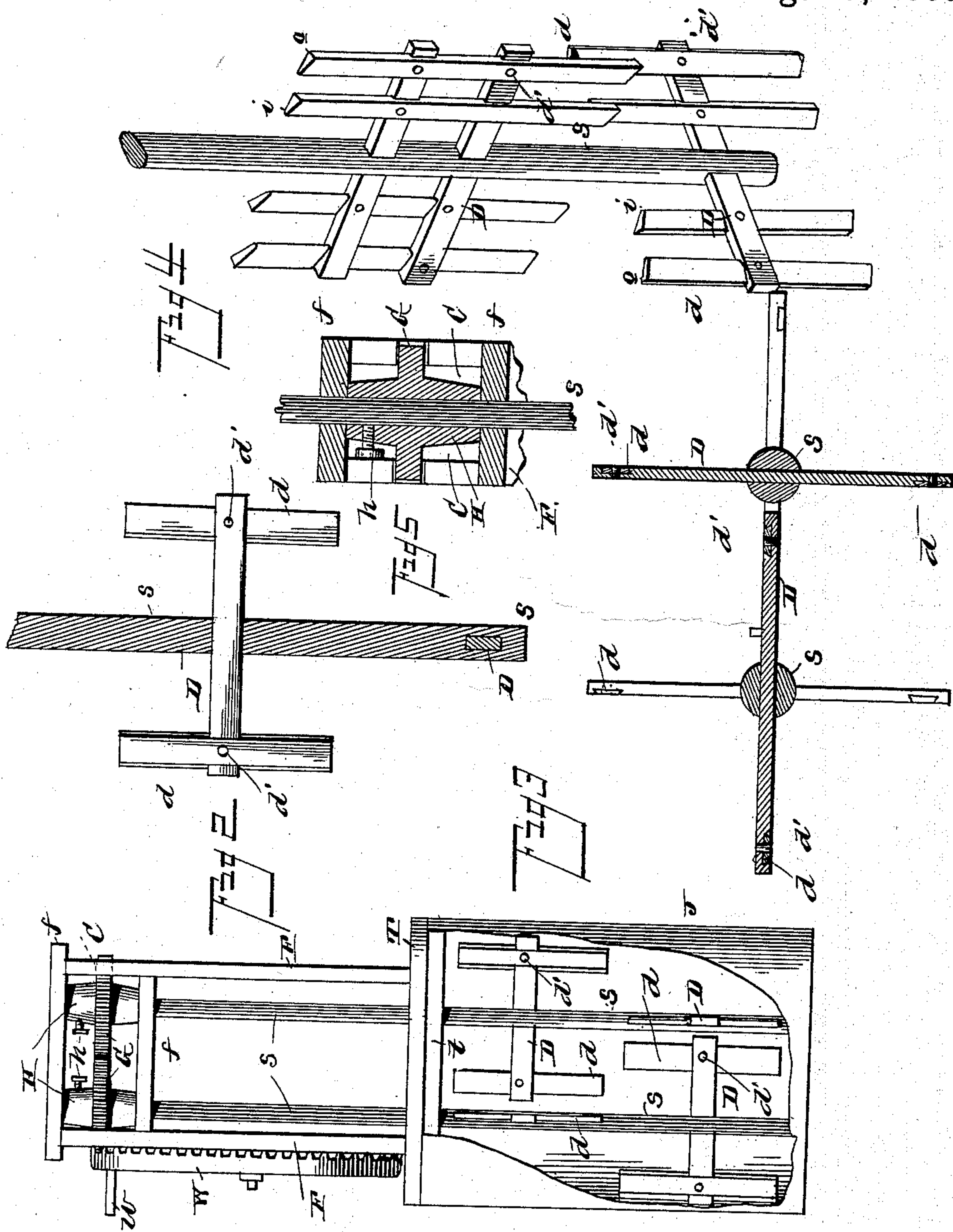


(No Model.)

E. MICHAELS.
CHURN.

No. 409,997.

Patented Aug. 27, 1889.



Witnesses
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UNITED STATES PATENT OFFICE.

ELI MICHAELS, OF SWEETSER'S, INDIANA.

CHURN.

SPECIFICATION forming part of Letters Patent No. 409,997, dated August 27, 1889.

Application filed April 23, 1889. Serial No. 308,242. (No model.)

To all whom it may concern:

Be it known that I, ELI MICHAELS, a citizen of the United States, residing at Sweetser's, in the county of Grant and State of Indiana, have invented a new and useful Improvement in Churns, of which the following is a specification.

This invention relates to churns of that class having a pair of dashers journaled on parallel vertical axes and rotating in opposite directions; and it consists in certain details of construction and arrangement of parts, all as hereinafter more fully pointed out.

In the accompanying drawings, Figure 1 is a side elevation. Fig. 2 is a central vertical section of one of the dasher-shafts. Fig. 3 is a horizontal section through the dashers; and Fig. 4 is an enlarged perspective detail of one of the dashers detached, showing my preferred form of wings. Fig. 5 is a central vertical section of one of the gear-wheels and its hub.

The same letters of reference are applied to corresponding parts throughout.

The letter J designates a jar, can, tub, barrel, or other receptacle within which the churning takes place.

My invention consists of the operative mechanism adapted to be removably and detachably connected with said jar, the latter being supplied by the operator, and hence of any desired size, shape, construction, and material.

T is a table having a downwardly-projecting flange *t*, adapted to fit closely the mouth of the jar. Upon this table is mounted a frame-work comprising two side pieces F, connected near their upper ends by horizontal strips *f*. Journaled in these strips and passing through holes in the table T are two vertical shafts S.

Upon the shafts are a pair of intermeshing gears G, having enlarged hubs H, and set-screws *h* pass through said hubs and are adapted to impinge against the shafts, thus adapting the gears to be set at any desired point upon the shafts. Said hubs H are elongated and bear at their upper and lower ends against the inner faces of said strips *f*, whereby the shafts S are held from vertical

disarrangement. The side pieces F are cut away at proper points C, to permit the gears G to project therethrough, and on one of said pieces is pivoted a large gear-wheel W, turning in a vertical plane, meshing with one of the gears G, and having a handle *w* by which it may be rotated. There are about three times the number of teeth on the large gear-wheel W as on the small gears G, whereby the latter make three revolutions to the former's one. Each shaft S carries within the jar two dashers standing at right angles to each other. Each dasher comprises a horizontal arm D, passing through a rectangular transverse hole in the shaft, but not fastened therein, and vertical wings *d*, dovetailed upon each end of the arm D, with a pin *d'* passing through the junction to hold the parts in relative position. The shafts S are set within the hubs H, so that the two upper arms D shall stand at right angles to each other and their wings *d* pass alternately between the shafts when the latter are rotated. The two lower arms being at right angles to the two upper ones, their wings will be just quartering thereto, and will also pass alternately between the shafts, one upper and the opposite lower wing passing therethrough simultaneously.

All the parts are preferably constructed of wood, excepting the wheel W, which is of heavy iron-casting, in order to cause it to serve as a balance-wheel, and the set-screws *h*, which are obviously of metal. The wings *d* are dovetailed into the ends of the arms D, preferably on the front faces thereof, and are held in place by wooden pins *d'*. The dasher-arms D, as above stated, pass loosely through rectangular transverse holes in the shafts, and the swelling of the wood, when the parts are wet, will hold them in position. When withdrawn from the jar and dried, the arms may be slid laterally in the shafts and thoroughly cleaned, after which they may be set at any desired position, and the wetting afterward received will lock them there. The jar being filled or partially filled with cream, the wheel W is revolved by its crank, resulting in the rapid rotation of the dashers in two horizontal planes. The body of cream in the jar will be set in motion in two verti-

cal columns, of which the shafts S are the axes, and these columns will intersect between the shafts, resulting in the violent dashing and thorough and rapid churning of the cream.

It will be obvious that the churn mechanism proper may be removed from one jar and placed in another, larger or smaller, and that it may be manufactured and sold without the jar, which can easily be furnished by the user, thus lessening the selling price of the device, resulting in an increased market for it.

My preferred form of wing *d*, as illustrated in Fig. 4, comprises one or more vertical members, preferably dovetailed into the front face of the horizontal arm D in its direction of rotation, and retained in position therein by wooden pins *d'*, as above described. If the wings *d* are long, I may provide two horizontal arms D—one at the upper and the other at the lower end thereof—to afford a strong support therefor, both of said arms being mounted loosely in transverse slots in the vertical shaft S, and adapted to slide therein, as above described.

Each wing *d* is beveled on its front face, so as to taper from its outer edge *o* to its inner edge *i*, as clearly seen in the drawings. By this construction, when two or more wings are used on each side of the shaft S, and when said shaft is rapidly rotated in the proper direction, the cream will be driven inwardly along said beveled face of each wing

and thrown against the broad outer edge of the wing adjacent to it, and this will result in a centripetal action exerted on the cream being churned, in contradistinction to the centrifugal force simultaneously generated by the rotation of the dasher entire.

It will be obvious that a dasher so constructed would effect a more thorough and complete churning of the cream in a given time than the plain dashers now on the market.

I claim as the salient points of my invention—

The shaft S, the two arms D, passing through transverse holes therein at right angles thereto and to each other, vertical wings *d*, dovetailed in the ends of said arms at right angles thereto, and wooden pins *d'*, for holding them in place, in combination with a second shaft S, having similar arms and wings and standing parallel with said first shaft, the opposite arms being set quartering to each other, a pair of intermeshing gears keyed to said shafts, and a hand-wheel for imparting rotary motion thereto, as set forth.

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

ELI MICHAELS.

Witnesses:

RICHARD BEESOR,
JAMES MORE.