

No. 639,022.

Patented Dec. 12, 1899.

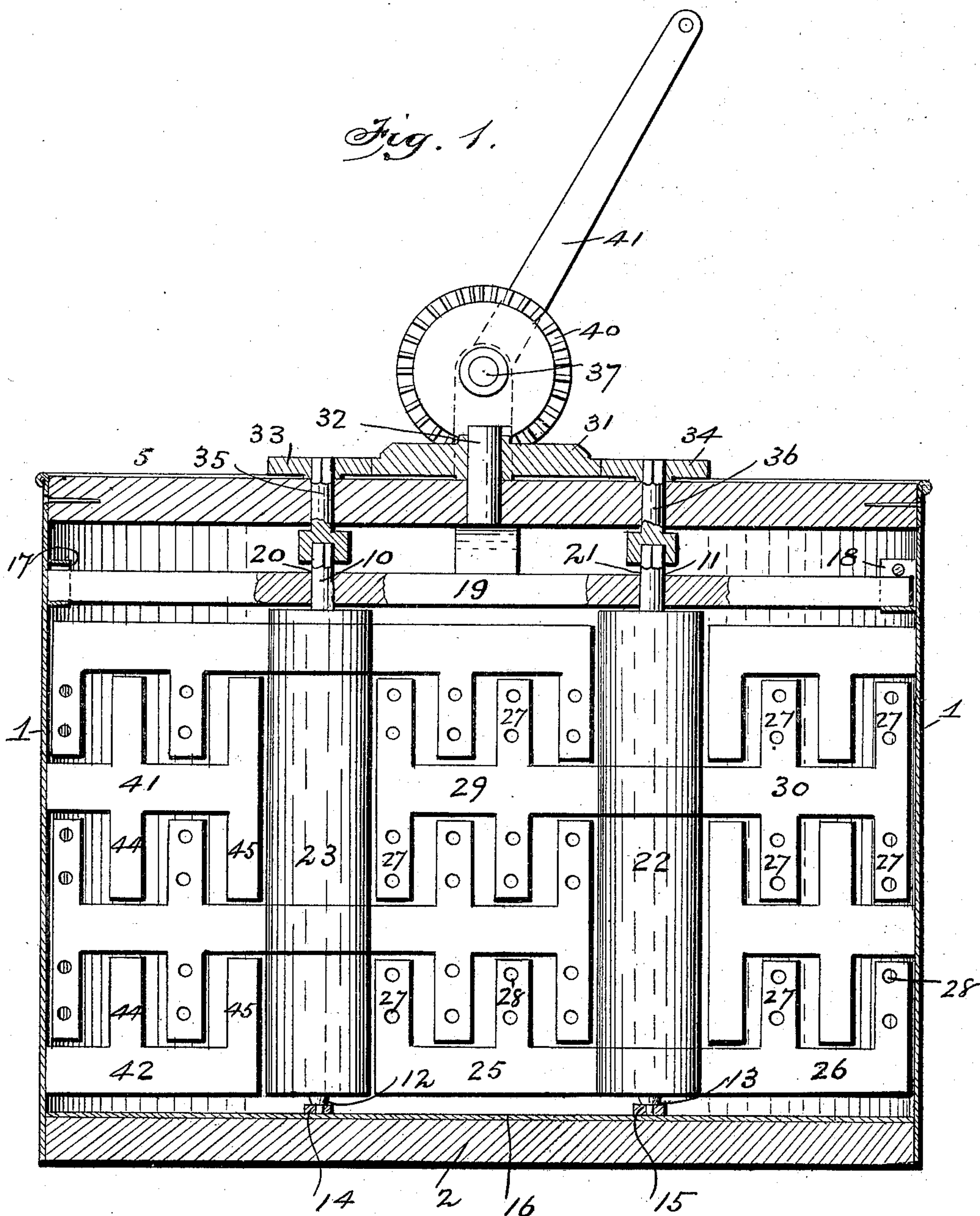
W. W. COOPER.

CHURN.

(Application filed Aug. 16, 1897.)

(No Model.)

2 Sheets—Sheet 1.



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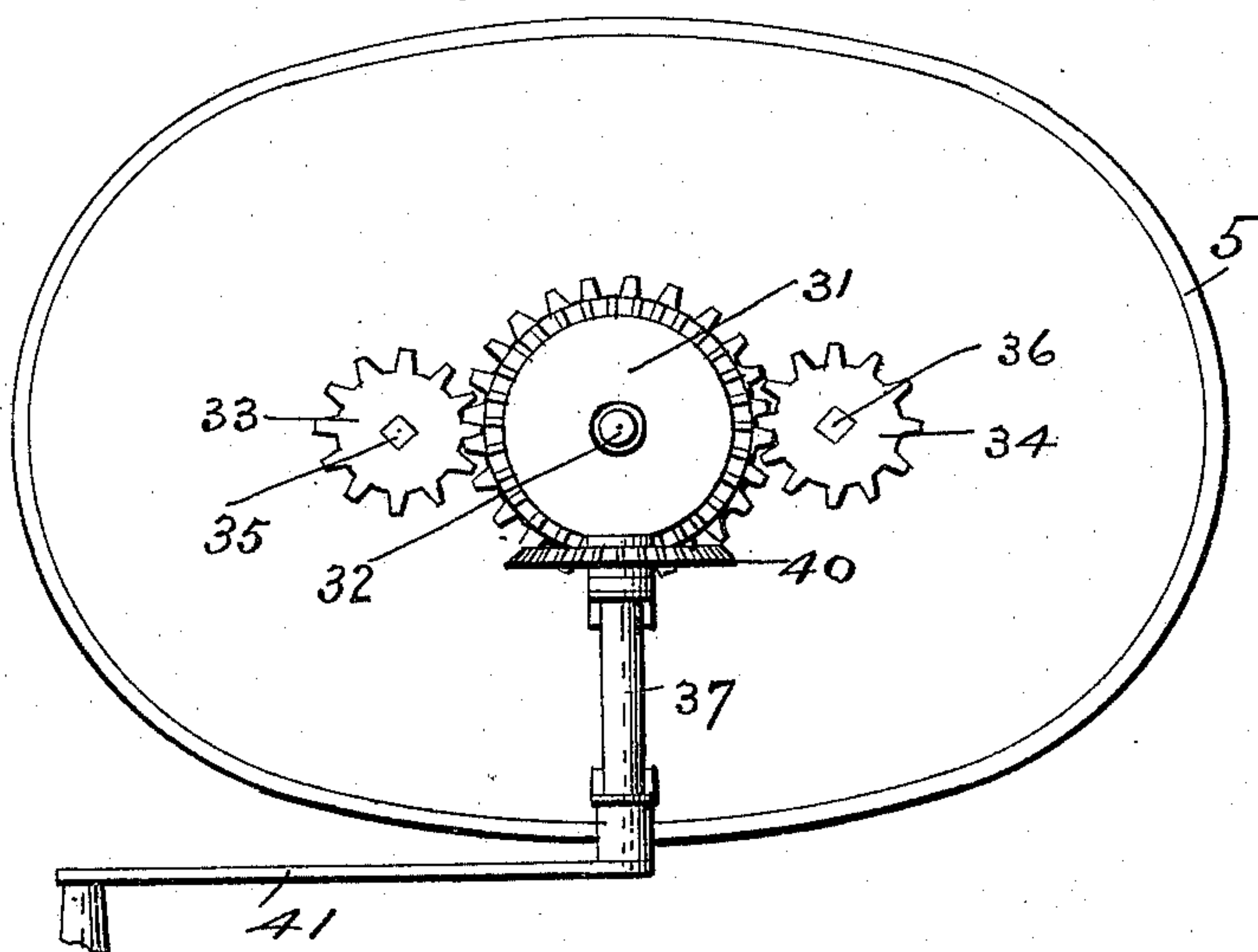
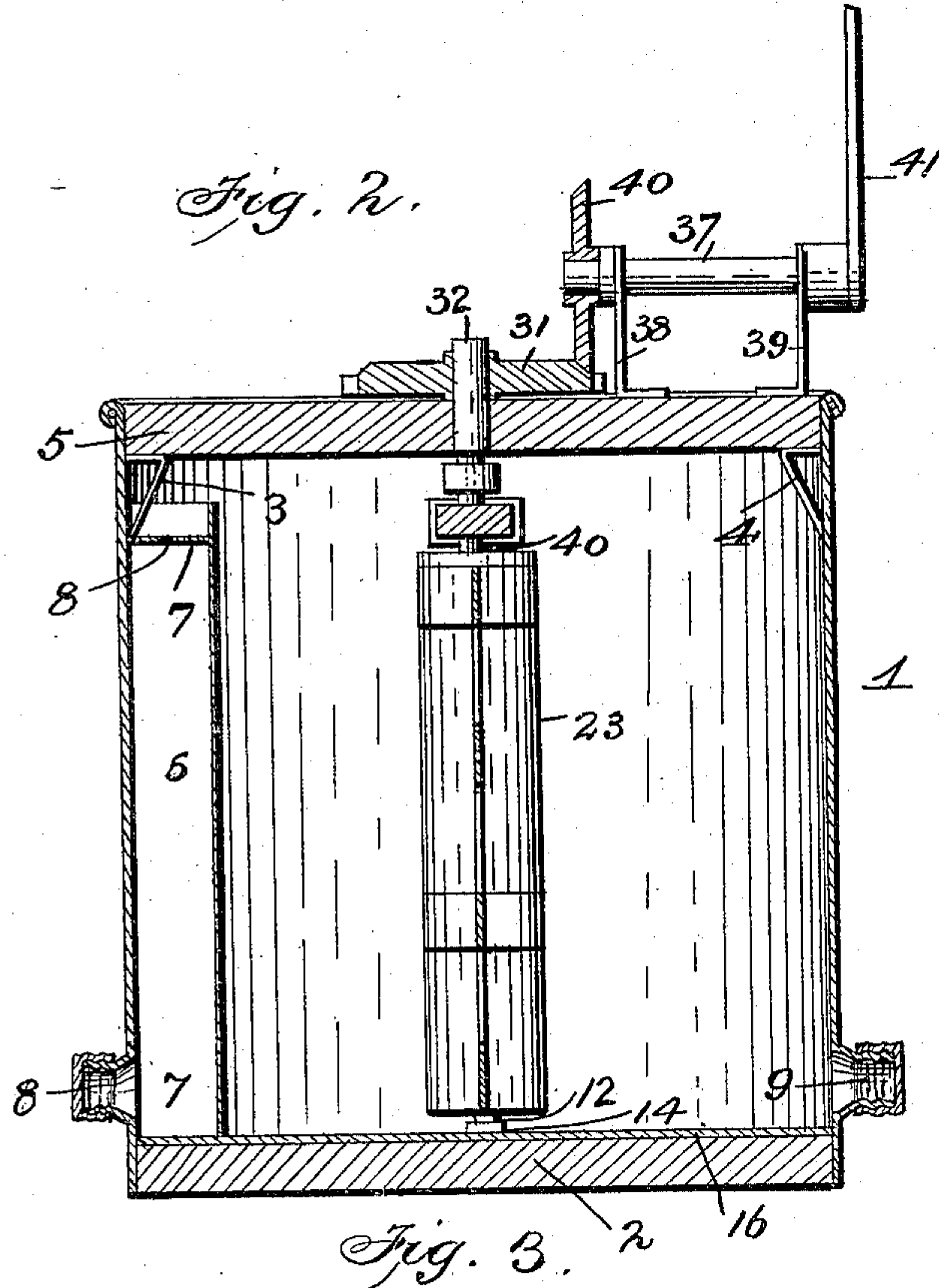
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# UNITED STATES PATENT OFFICE.

WALTER W. COOPER, OF CORA, KANSAS.

## CHURN.

SPECIFICATION forming part of Letters Patent No. 639,022, dated December 12, 1899.

Application filed August 16, 1897. Serial No. 648,424. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER W. COOPER, a citizen of the United States, residing at Cora, in the county of Smith and State of Kansas, have invented certain new and useful Improvements in Churns; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

The invention relates to churns; and it consists in the construction and novel combination of parts, as will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a vertical longitudinal sectional view showing the dasher-shafts and dasher-blades in full lines. Fig. 2 is a vertical transverse sectional view taken through the milk-outlet and the water-outlet. Fig. 3 is a plan view of the churn-cover, showing the gearing employed to operate the churn-dashers.

Referring by numerals to the accompanying drawings, 1 is the churn-body, which is elliptical in form in horizontal section and is of tin, the bottom of the churn-body being reinforced or strengthened by an external bottom of wood 2, incased by the extended wall of the churn-body, said bottom 2 of wood being secured in place by screws, nails, or in any other suitable manner. At opposite points on the line of its shorter diameter and near the rim of the churn-body are provided supports or shoulders 3 4, upon which the covers of the churn-body rest when in place on said body.

At one side of the churn-body 1 is provided an interior chamber 6, which is used for receiving hot water for regulating the temperature of the cream during the operation of churning. Near its upper end or mouth the chamber 6 is provided with a horizontal partition 7, having openings 8 therein, through which the hot water is poured into the chamber 6. At the bottom of the chamber 6 is provided in the body-wall of the churn an outlet 7 to permit the discharge of the water from said chamber 6 when the water has become cool, so that the chamber 6 may be refilled with hot water

when necessary. The outlet 7 is provided with a screw-cap 8, by which to retain the water in said chamber and to permit its discharge when necessary or desirable. At a point almost opposite the outlet 7 is an outlet 9 in the churn-body, which outlet 9 communicates directly with the interior of the churn-body and is used to draw off the contents of the churn-body whenever it may be necessary. This outlet 9 is also provided with a screw-cap, by which to close and open it at the pleasure of the operator.

10 and 11 are two vertically-disposed dasher-shafts, the lower ends of which are provided with journals 12 and 13, which are stepped, respectively, in bearing-cups 14 and 15, secured to the bottom 16 of the churn-body. The upper ends of the dasher-shafts 10 and 11 are made rectangular in outline in cross-section to permit engagement with the operating mechanism described farther on. At opposite points on the line of its longer diameter and on the inner face of the vertical wall of the churn-body and near the upper edge of the latter are provided seats 17 and 18, the latter being open at the top for the reception of the removable cross-bar 19, having bearing-seats or openings 20 21, in which the upper ends of the dasher-shafts are journaled and through which said shafts project upwardly. Surrounding the dasher-shafts and secured thereto near the upper and lower ends of the shafts are cylindrical enlargements or drums 22 and 23, which extend nearly the entire length of said dasher-shafts. Secured to the drum 22 at its lower end are diametrically-opposed dasher-arms 25 and 26, which are provided with upwardly-projecting blades 27, having perforations 28 therein, through which the cream is forced when the churn-dashers are operated. A little above the middle of the cylindrical enlargement or drum are dasher-arms 29 and 30, having both upwardly and downwardly projecting perforated blades 27. Spaces are left between the ends of the adjacent blades on the dasher-arms on the drum or cylinder 22 in order that the lower arm on the drum or cylinder 23 may freely pass when the dashers are rotated. The construction of the drum or cylinder 23 and its dasher-arms and perforated blades is precisely similar to the corresponding parts of



those of 22; but the drums or cylinders are secured to their respective shafts in precisely inverted or reversed positions, so that the dasher-arms and blades pass when the shafts are revolved.

Upon the cover or lid of the churn is provided a combined spur or miter cog gear-wheel 31, which is mounted loosely on the vertical shaft 32. The spur-gear portion of the wheel 31 engages pinions 33 and 34 on the upper ends of the short key-shafts 35 and 36.

The crank-shaft 37, which is the driving-shaft for the operating mechanism, is journaled in bearings in the upper ends of standards 38 and 39, rising from the churn-cover, and is provided at its inner end with a miter gear-wheel 40, which engages the miter portion of the spur and miter cog-wheel 31. A crank 41 is employed to operate the churn.

Projecting inwardly from the wall of the churn-body are stationary dasher-arms 42, which are provided with blades 44 and 45. At one side the lower arm has upwardly-projecting blades, and the upper arm has the oppositely-projecting blades, while at the opposite side of the churn-body the stationary arms are reversed—that is to say, the upper arm has downwardly-projecting blades and the lower arm has the oppositely-projecting perforated blades—in order that the dashers may revolve freely, the arms passing through their appropriate spaces in the revolving dashers and in the stationary auxiliary dashers.

The body, cylinders, dasher-arms, hot-water receptacles and all except the dasher-shafts and parts, the material of which is designated, are made preferably of tin, although any suitable material may be used in the construction of the churn.

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

The herein-described churn, consisting of a pair of rotating drums therein one of the drums 23, having pairs of arms extending outwardly from opposite sides thereof, the upper pair being provided with integral downwardly-extending spaced dasher-blades, the lower pair of arms on the same drum having both upwardly and downwardly extending integral spaced dasher-blades, and the rigid beaters, secured to the side of the churn-body next to drum 23, having single arms 41, and 42, arranged one above the other, the one 41, having both upwardly and downwardly extending integral spaced blades, the other arm 42, having upwardly - extending integral spaced blades, the drum 22, having pairs of arms on opposite sides thereof, the same as drum 23, with spaced dasher-blades of the same construction as those on the drum 23, but connected in a reverse position on the drum 22, and the rigid beaters connected to the opposite side of the churn-body next to drum 22, having arms with spaced blades thereon the same being of the same construction as those of beaters 41 and 42, but connected in a reverse position on that side of the churn, next to drum 22, whereby when the drums are rotated the dasher-blades on the arms of both drums 22, and 23, mesh between the spaces of each other, and the spaced blades on drum 23, meshing between the spaces of the blades of the beaters 41 and 42, and those on the drum 22, meshing between the spaced blades of the opposite beaters next to drum 22, substantially as shown and described.

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

WALTER W. COOPER.

Witnesses:

J. M. HARBAUGH,  
DAVID HUBBARD.