2 Sheets--Sheet 1.

# C. H. WARREN.

## Rotary-Churn.

No. 162,723. Patented April 27, 1875.

*Fig. 1.*

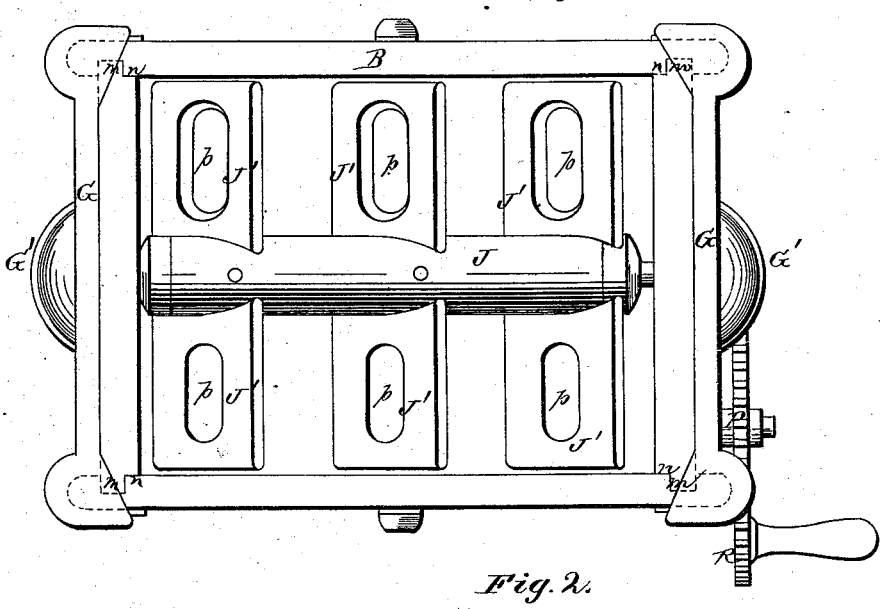



*Fig. 2.*

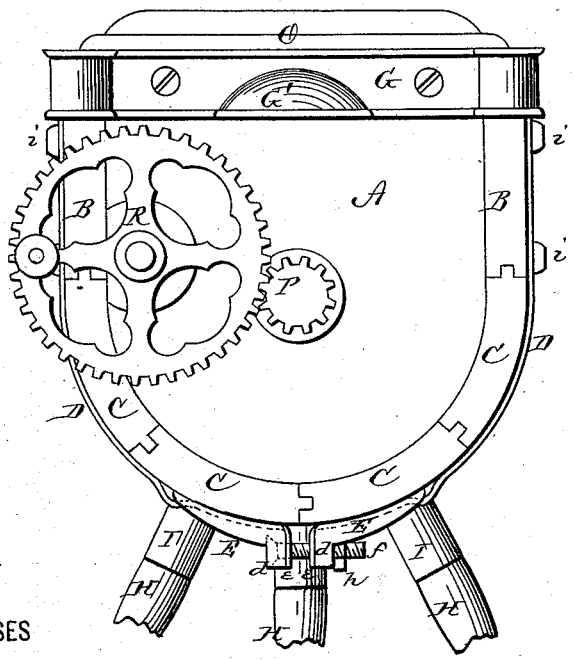
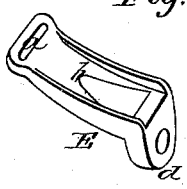



*Fig. 4.*

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2 Sheets--Sheet 2.

# C. H. WARREN.

## Rotary-Churn.

No. 162,723. Patented April 27, 1875.

*Fig. 3.*

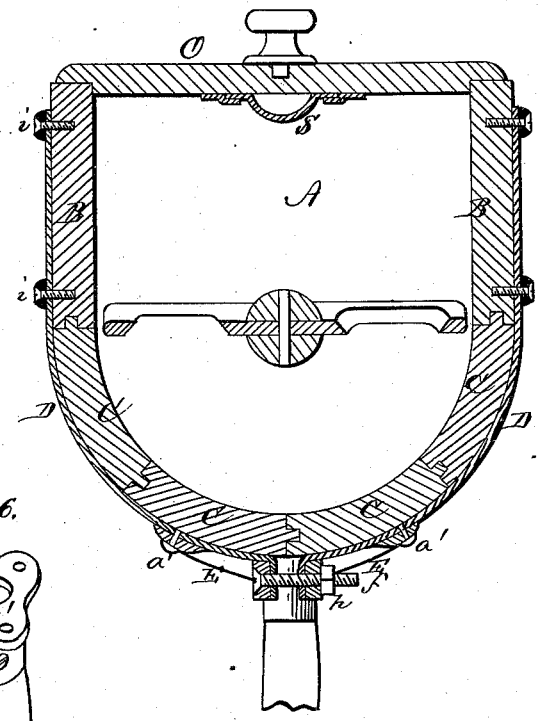



*Fig. 6.*

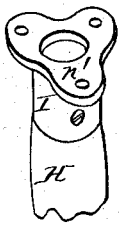
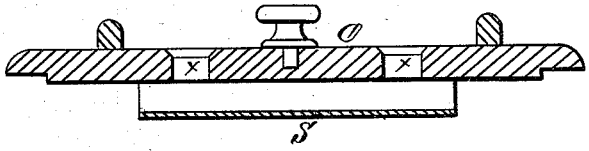



*Fig. 5.*

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# UNITED STATES PATENT OFFICE.

CHARLES H. WARREN, OF TOLEDO, OHIO.

## IMPROVEMENT IN ROTARY CHURNS.

Specification forming part of Letters Patent No. **162,723**, dated April 27, 1875; application filed March 17, 1875.

*To all whom it may concern:*

Be it known that I, CHARLES H. WARREN, of Toledo, in the county of Lucas and in the State of Ohio, have invented certain new and useful Improvements in Churns; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a churn made in rectangular shape with semicircular bottom, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a plan view of my churn, with the lid removed. Fig. 2 is an end view of the same; and Fig. 3 is a transverse vertical section. Figs. 4, 5, and 6 are detached views of certain parts thereof.

A A represent the end pieces of the churn. B B are the side pieces; and C C the staves forming the semicircular bottom of the churn. D D are the hoops, by which the parts are held together, and the hoops are drawn tight by means of clasps E E, which are constructed as shown at Fig. 4, having a slot, *a*, at one end, longitudinal recess *b* on the inner side, and a projecting lug, *d*, on the other end, through which lug a hole is made for the passage of a screw-bolt, *f*. The hoop D is finished round at the end and a hole punched through it the same size to admit the bolt also. The end *e* of the hoop is then bent so as to conform to the end *d* of the clasp E, after which the opposite end of the hoop is drawn through the slot *a* until the turned-up end *e* of said hoop is brought up against the end *d* of the clasp E, and a part of the hoop lies in the recess *b* on the inner side of the clasp. The opposite end of said hoop is provided with washers and screws *i i* to admit of its being fastened or secured to the side of the churn. After forming two quadrant-shaped hoops and fastening their ends to the sides of the vessel, as shown, their clasp ends are brought together and the screw-bolt *f* is passed through the lugs or ends *d* of the clasps E, and also through the ends *e* of the hoops D, and a nut, *h*, screwed on the end of the bolt in such a manner that the hoops can be drawn toward each other, and the clasps are held steady by the hoops passing through the slots *a* therein. In the section, Fig. 3, I have shown another form of clasp, which differs simply in substituting the rivet *a'* for the slot *a*.

It is obvious that the above hoop and clasps may be applied to any semicircular-shaped vessel.

The end pieces A of the churn are of the form shown in Fig. 2, and are formed on and around the entire edges, with tenon *m* and shoulder *n*. The side pieces B and staves C are grooved or matched into each other, as shown; and near the ends of said side pieces and staves gains are cut for the reception of the projections or tenons *m* on the end pieces, said gains being cut deeper than the length of tenon.

After the hoops D are secured to the side pieces B, and the staves and side pieces placed together in their respective places, the clasp ends of the hoops D are brought together by means of the bolt *f*, and drawn up, as above described, forcing the staves home, and securely holding them there; and, as the gains in the staves are made deeper than the length of the tenons *m*, it will be seen that the staves will be all drawn up before the tenon reaches the bottom of the gain, which compensates for future shrinkage in the staves, admitting of drawing them up at any time. Across each end of the churn is a metal clasp, G, which binds the corners, as shown in Fig. 1, and forms a handle, G', in the center, which clasp is firmly fastened to the churn by screws. The churn is then mounted upon legs H, each of which is fastened to the churn by means of metallic sockets I. The socket I is at its upper end provided with a concave flange, *n'*, conforming to the bottom of the churn, and secured by means of screws in the proper place. The legs H are then driven home in the sockets I. The dasher consists of a shaft, J, with wings or paddles J' set obliquely to the line of the axis of the shaft, and made flush at both ends of the shaft, so as to sweep or scrape clean the ends of the churn at every revolu-

tion of the dasher. The wings or paddles J′ are provided with openings *p*, which are made transversely through them and beveled on one side, thus producing opposing currents. The shaft J is provided with a fixed pivot at one end, and a loose or movable journal at the opposite or gear end, admitting of a ready removal of the dasher from the churn when necessary. The dasher receives a rotary motion through the medium of gears P R. O is the lid of the churn, provided with air-apertures *x x*, and under the same is a trough, S, which will prevent the milk from splashing out, and at the same time convey the air to the ends of the churn, and create two opposing air-currents down into the milk.

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

1. The combination, with the churn-body A B C, of the hoops D, having the bent perforated ends *e*, the clasps E, provided with slots *a*, recesses *b*, and perforated lugs *d*, and the bolt *f* passing through the ends *e* and lugs *d*, substantially as and for the purposes herein set forth.

2. The combination, with the churn-body A B C, of the metallic castings G G, provided with end sockets to inclose the corners of the churn, and having handles G′ cast therewith, all substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of November, 1874.

C. H. WARREN.

Witnesses:
ELIHU W. TOLERTON,
CHAS. H. LEMMON.