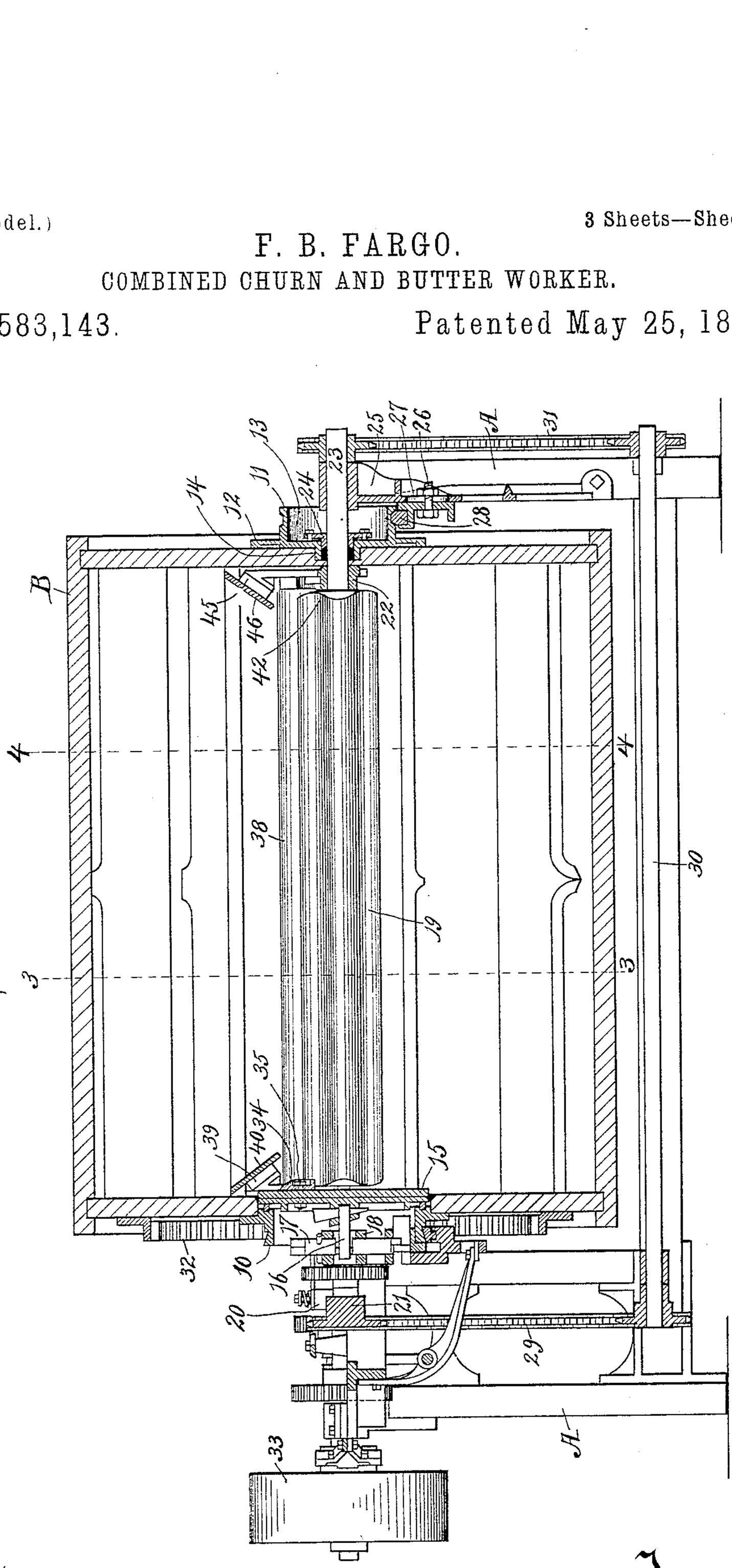
(No Model.) 3 Sheets—Sheet 1.

F. B. FARGO.

COMBINED Cchurn AND BUTTER WORKER.

No. 583,143. Patented May 25, 1897.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

F. B. FARGO.

COMBINED CHURN AND BUTTER WORKER.

No. 583,143. Patented May 25, 1897.

Fig. 2.

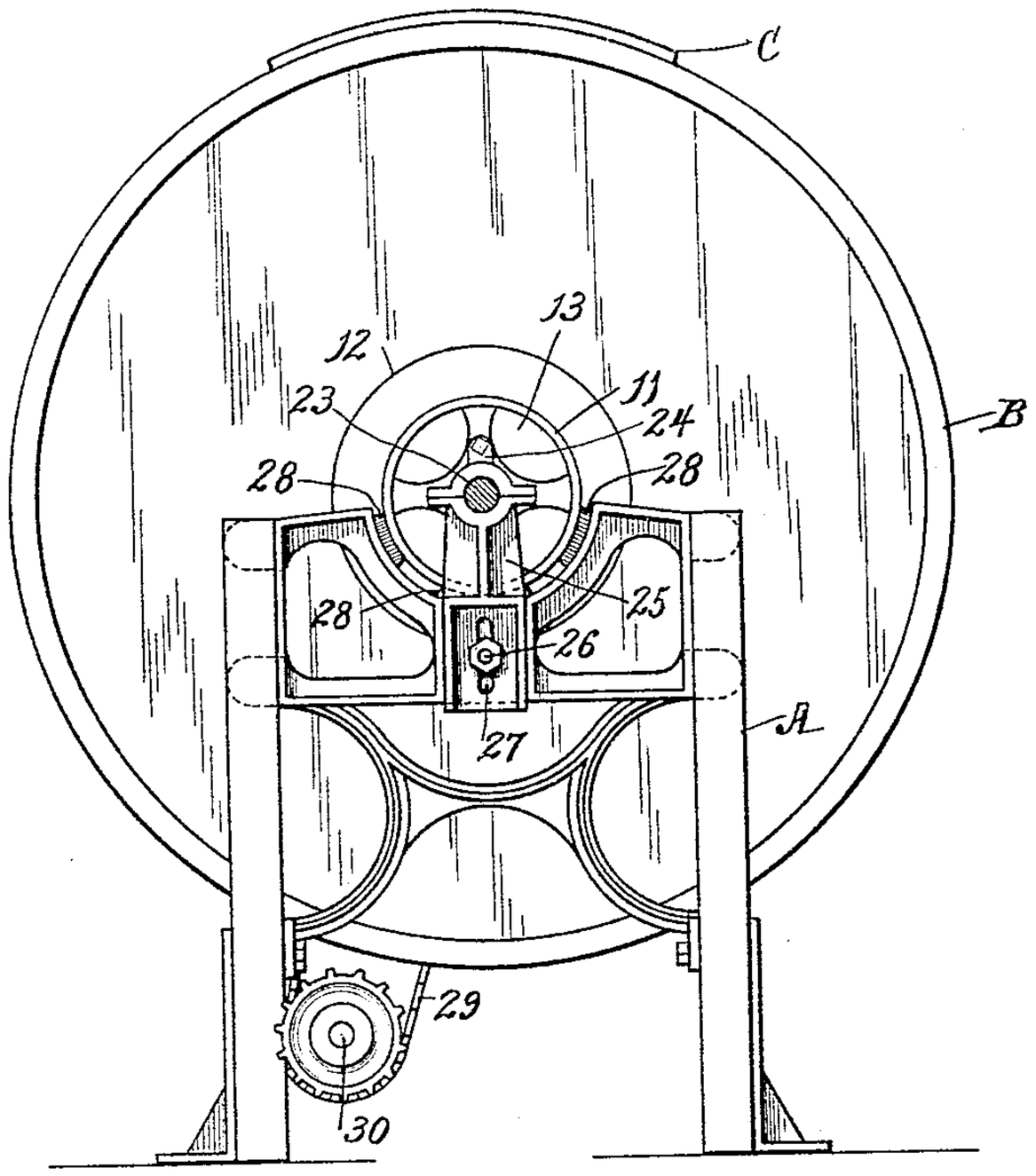
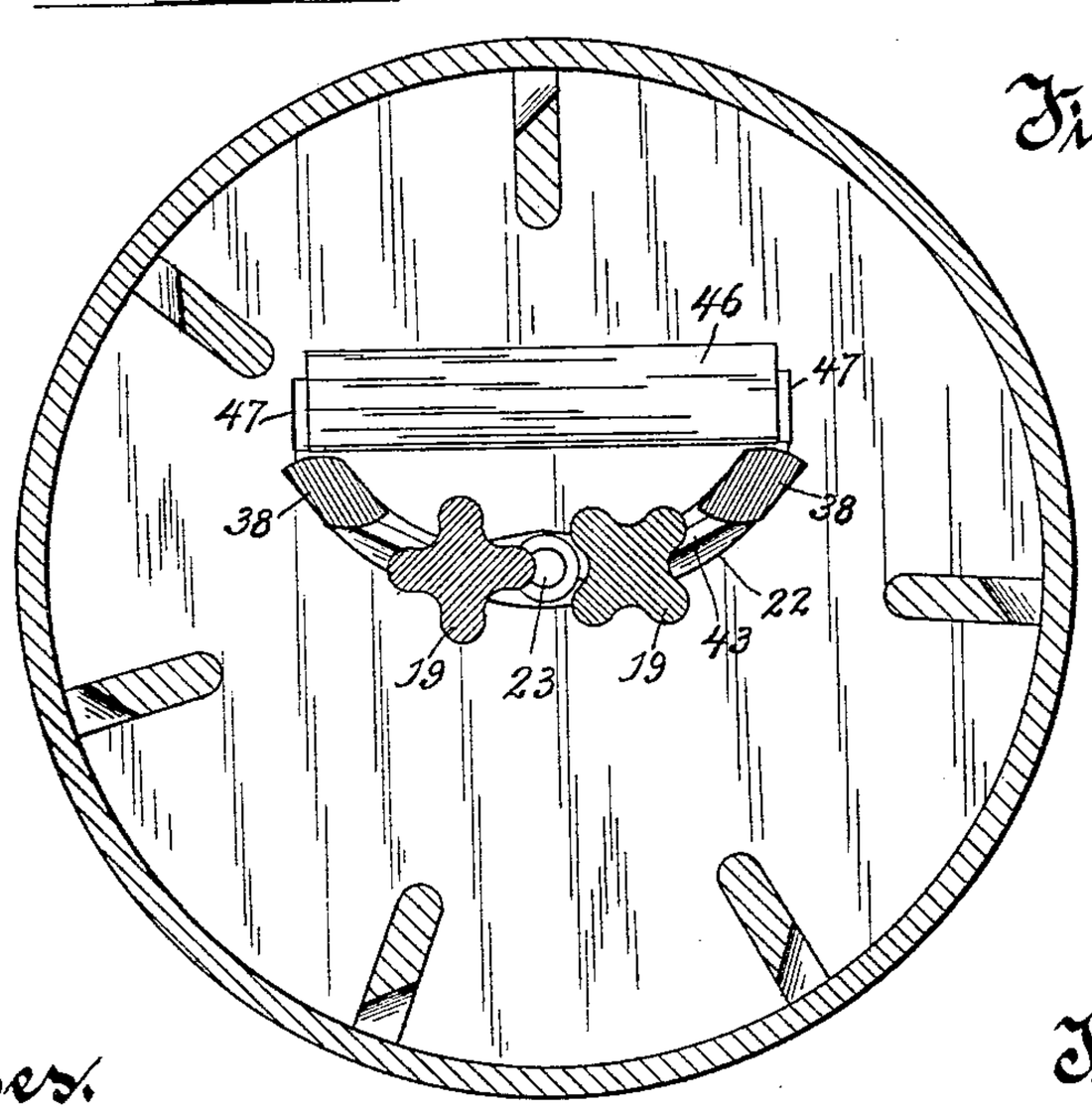


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

F. B. FARGO.

COMBINED CHURN AND BUTTER WORKER.

No. 583,143. Patented May 25, 1897.

Fig. 4.

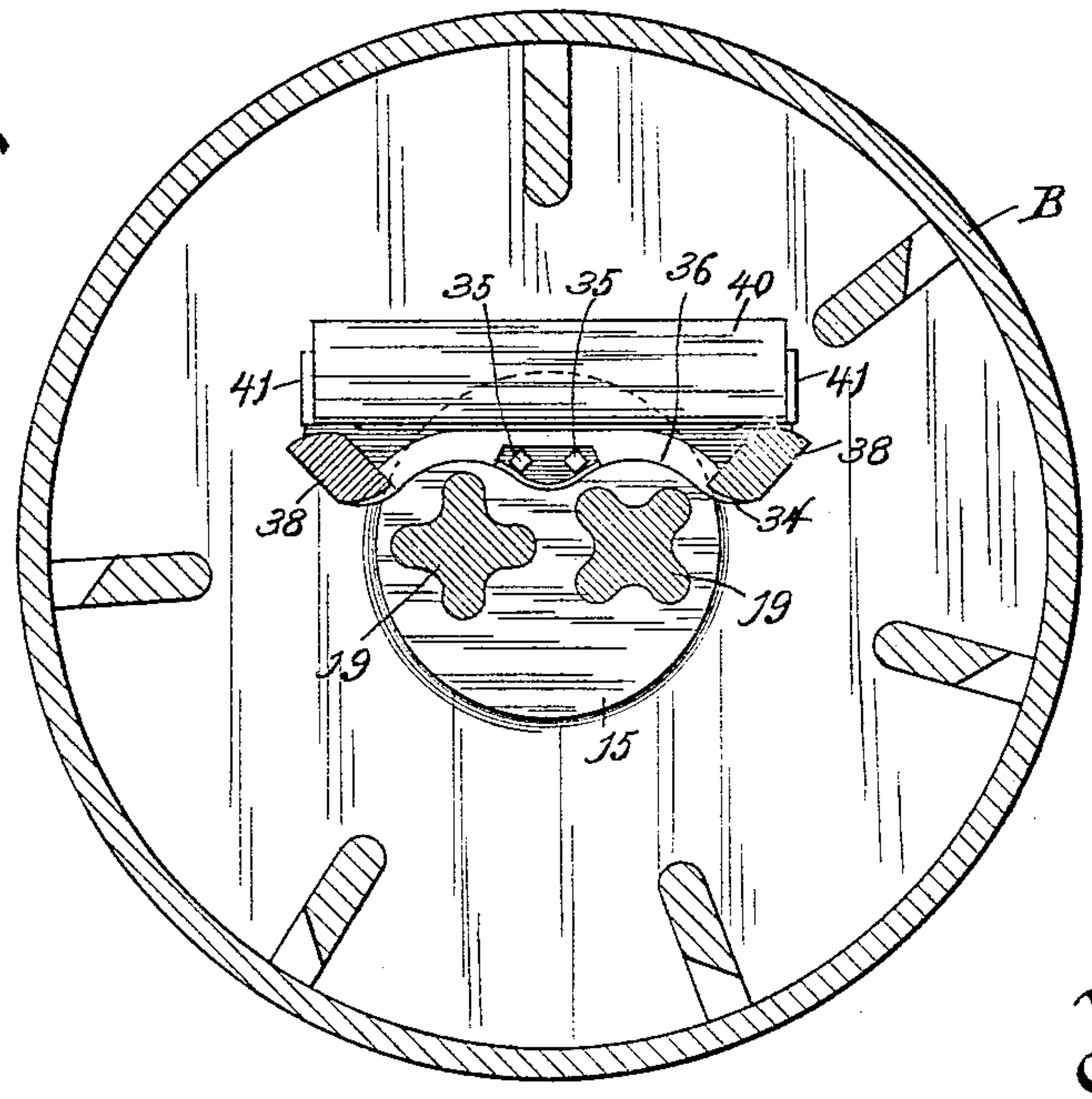


Fig. 6.

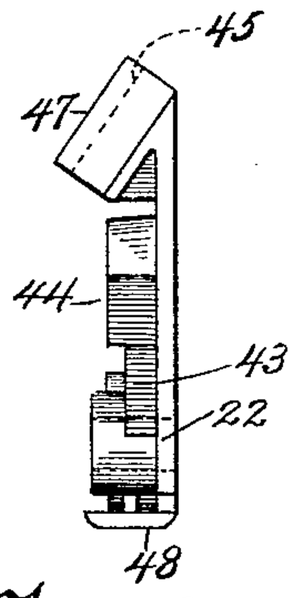


Fig. 5.

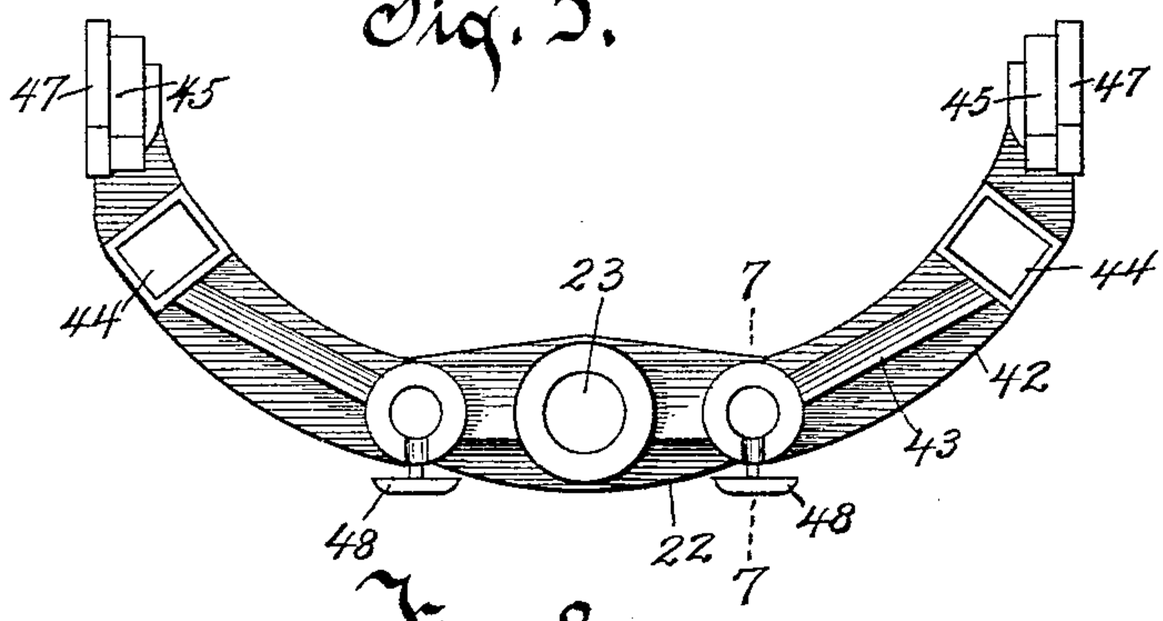


Fig. 8.

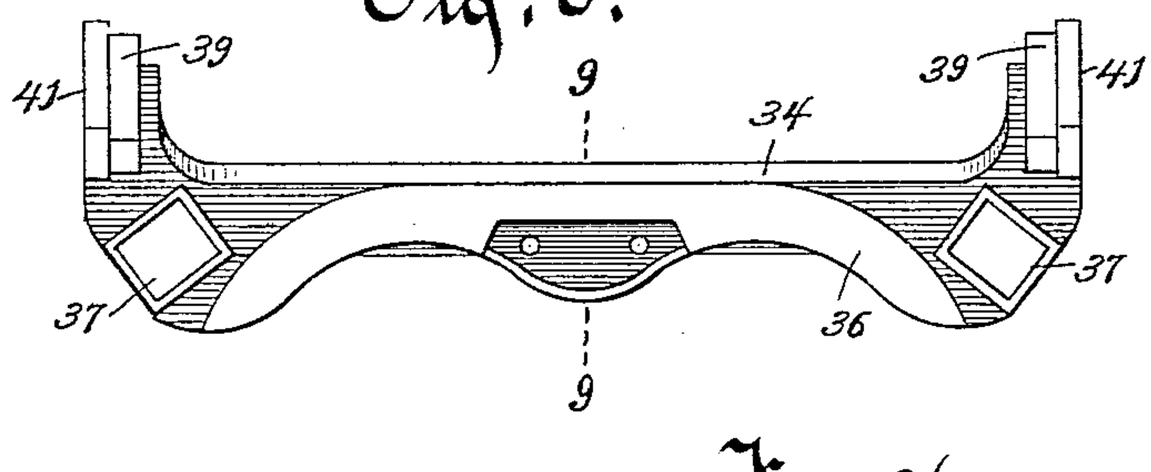


Fig. 9.

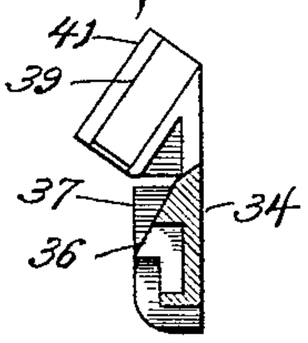
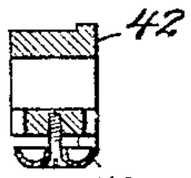


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK B. FARGO, OF LAKE MILLS, WISCONSIN.

COMBINED CHURN AND BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 583,143, dated May 25, 1897.

Application filed March 19, 1896. Serial No. 583,928. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. FARGO, of Lake Mills, in the county of Jefferson and State of Wisconsin, have invented a new and useful Improvement in a Combined Churn and Butter-Worker, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in machines adapted to be used, in certain changed relations of the parts, both as a churn and as a butter-worker.

The invention is particularly adapted to a machine which in its general features is substantially like the one for which an application, Serial No. 561,712, for a patent has heretofore been made.

The invention consists of the devices and mechanism hereinafter described and claimed or their equivalents.

In the drawings, Figure 1 is a central longitudinal section of the drum and principal parts of the machine, exhibiting some of the features of my invention therewith. Fig. 2 is an elevation of the rear end of the machine. Fig. 3 is a transverse section of the drum and parts therein on line 3 3 of Fig. 1, looking toward the right. Fig. 4 is a transverse section on line 4 4 of Fig. 1, looking toward the left. Figs. 5 and 6 are respectively a front and edge view of parts at the rear end of the drum shown in place in Fig. 3. Fig. 7 is a transverse section on line 7 7 of Fig. 5. Fig. 8 is a front view of parts at the front end of the drum shown in place in Fig. 4. Fig. 9 is a transverse section on line 9 9 of Fig. 8.

In the drawings, A is a frame of suitable size and form to support the operative mechanism.

B is a cylindrical drum adapted to hold the material, either milk or butter, to be operated on. The drum is provided with a door C in its periphery, through which the material to be operated on can be put into the drum and its product removed therefrom.

The front head of the drum is provided with a central aperture of considerable diameter, in which a hollow annular gudgeon 10 is inserted axially and is secured to the drum-head liquid-tight. The gudgeon has its bearings on the frame A. The rear head of the drum is provided with an enlarged annular gudgeon provided with a radially outwardly-extending flange 12 and a radially inwardly-extending flange 13, provided centrally with an aperture and a short tubular member 14 thereabout. The tubular member 14 is inserted in and partially through the rear head of the drum, axially thereof, and the flanges 12 and 13 bear against the outer surface of the head of the drum, the flange 12 serving as a means for attaching the gudgeon 11 securely to the drum.

At the front end of the drum a partial head 15 is provided, which fits loosely against the inner end of the gudgeon 10 and is arranged to be clamped thereto liquid-tight on an interposed gasket by means of a link 16, an eccentric 17, and a spider 18, which spider rests loosely in and against the outer end of the gudgeon 10. Within the drum there are two preferably corrugated and mismatched rollers 19 19 substantially as long as the interior of the drum, which at their front ends are provided with journals that pass through the partial head 15 and are mounted revolubly in the spider 18, through which they pass and carry thereon a cross-bar 20, which is provided with a medial hub 21, concentric with the axis of the drum. At the rear end these rollers 19 are journaled in a cross-head 22, which is provided medially with an arbor 23, which projects through the rear head of the drum and has its bearings in an adjustable part of the frame hereinafter specifically described. A gland 24 is provided which is secured releasably and adjustably to the flange 13, which, with the tubular member 14 and an interior portion of the head of the drum, forms a stuffing-box about the arbor 23, where it passes through the head and the tubular member 14.

For conveniently centering the arbor 23 in the drum and adjusting it on the frame with reference to other parts of the mechanism and for providing for taking up wear of the parts a frame member 25 is provided which is clamped to and is adjustable vertically in ways therefor on the frame conveniently by means of the bolt 26, fixed in the frame and projecting through a longitudinal slot 27 therefor in the member 25. The arbor 23 has its journal-

bearing in this member 25, being thus mounted adjustably vertically on the frame and concentrically with the drum. The gudgeon 11 is supported on the main frame A, bearing directly against segmental Babbitt blocks 28, which are socketed in the frame and enter an annular groove therefor in the gudgeon 11.

The hub 21 on the cross-head 20 is provided with a sprocket-wheel and is connected operatively, by the sprocket-chain 29, the counter-shaft 30, and the sprocket-chain 31, to the arbor 23, whereby concurrent motion is communicated to the cross-heads 20 and 22, thereby compelling the homogeneous whirling or revolving of the rollers 19 about the axis of the drum. This movement is employed when the machine is used as a churn, at which time the partial head 15 is clamped firmly to the drum and revolves therewith, carrying the rollers 19 around with it and the drum.

The drum is provided with a ring-gear 32, rigid on its front head, by and through which it is rotated by means of gear from the driving-pulley 33, and the rollers 19 are also geared to the shaft of the pulley 33 and are rotated on their own axes therefrom when the machine is used as a butter-worker. The gearing connecting the pulley 33 operatively to the drum and to the rollers 19 is not shown in detail, as it forms no part of the present invention.

Much trouble has heretofore been found in so constructing and arranging the rollers in the drum that material, especially butter when it is being worked, shall not get into the joints or spaces between the ends of the rollers and the heads of the drum and there to be rubbed and ground into an oily and sometimes a black mass very objectionable in butter-making; and for this purpose I have devised and use devices of new and peculiar construction adapted to overcome the difficulty heretofore experienced, which devices are preferably substantially of the following character: At the front end of the drum a U-shaped bracket 34, Figs. 8 and 9, is provided, which is secured rigidly to the partial head 15 in such position as to be directly above the ends of the rollers 19 when the machine is employed as a butter-worker and while the rollers are held in place against revolution about the axis of the drum. This bracket 34 is secured to the head 15, preferably, by bolts 35 35. The bracket is provided with an elongated ledge 36, somewhat curved at its lower edge to correspond with and fit close over the ends of the rollers 19, which ledge projects from the body of the bracket into the chamber of the drum sufficiently far to cover the spaces or joints between the ends of the rollers and the partial head 15, so as thereby to catch any stray particles of butter and thereby prevent them from getting into the joints between the ends of the rollers and the partial head 15. Sockets 37 37 are also provided on this bracket for receiving and holding therein the ends of the hopper-bars 38. Above these sockets 37 I provide bearing-surfaces 39 39, inclined and extending inwardly downwardly, adapted to receive thereon and support the hopper-plate 40, which hopper-plate is adapted to receive thereon falling lumps or masses of butter and carry them inwardly downwardly onto the rollers at some distance from their extremities. Flanges 41 41 alongside the bearing-surfaces 39 39 fit against and cover the ends of the hopper-plate 40 and provide a bearing for it against longitudinal displacement.

At the rear end of the drum a U-shaped bracket 42, Figs. 5 and 6, is provided, which is an elongation of what has hereinbefore been called the "cross-head" 22. This bracket and cross-head are provided with inwardly-projecting ledges 43, approximately like the ledge 36 and adapted at the rear end of the machine to catch and carry particles of butter away from the journal-bearings. This bracket 42 is also provided with sockets 44, adapted to receive and hold therein the hopper-bars 38. Above these sockets there are inclined bearing-surfaces 45, substantially like the bearing-surfaces 39 39 at the front end of the drum, which bearing-surfaces 45 are adapted to receive and hold the hopper-plate 46, which hopper-plate is adapted to receive thereon lumps or masses of butter and carry them downwardly away from the spaces between the ends of the rollers and the drum-head onto the rollers. Flanges 47 47 on the bracket alongside the bearing-surfaces 45 fit against and partially cover the ends of the hopper-plate 46 and prevent its displacement endwise.

Notwithstanding the provisions made for protecting the journal-bearings from getting butter or foreign matter therein and for grinding it and discharging it in blackened particles into the butter there is still danger that this will sometimes occur, and to obviate this trouble, especially when the machine is being used as a butter-worker, I provide drip-cups 48 48, which are secured to the bracket 42 immediately below the inner ends of the roller journal-bearings therein to catch any discharge of residuum or foreign matter therefrom and prevent its getting into the butter. It will be observed that these are located immediately below the journal-bearings when the mechanism is in position for working butter and are therefore satisfactory for the purpose for which they are intended during the process of butter-working. After the butter-working and when the drum is being washed out these drip-cups will be cleaned by the swashing of the water. Of course these drip-cups are not available when the machine is being used as a churn; but there is little danger of objectionable wear of the parts or grinding of foreign matter therein during the churning process. They are especially adapted and intended for use during the process of working butter.

What I claim as my invention is—

1. In a churn and butter-worker, the combination of a revoluble drum, a U-shaped bracket 42 provided with a medial arbor journaled in the drum axially and with roller-bearings adjacent to and at both sides of the arbor-axis, hopper-bar sockets adjacent to and radially beyond and above the roller-bearings, and hopper-plate bearings adjacent to and radially beyond and above the hopper-bar sockets, and rollers, hopper-bars and hopper-plates supported in the bearings and sockets.

2. In a churn and butter-worker, the combination with a frame and a revoluble drum supported thereon, said drum having and being supported revolubly at one end by an annular gudgeon bearing on said frame, of a roller-supporting cross-head in the drum having an arbor piercing the drum-head axially, and a vertically-adjustable frame member in which said arbor is journaled concentrically with the drum.

3. The combination with a frame, of a revoluble drum supported thereon, said drum having at one end a substantially tight head and an enlarged annular drum-supporting gudgeon 11 thereon provided with a radial inwardly-extending flange, a centrally-disposed contracted tubular member at a right angle to, and integral with, said flange, inserted in and partially through the head of the drum, and a gland secured releasably to the flange at the outer end of the tubular member and so as therewith to form a stuffing-box about a journal therethrough.

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

FRANK B. FARGO.

Witnesses:

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W. O. RICKFORT.