(No Model.) 3 Sheets—Sheet 1

C. S. BROWN & F. B. FARGO.

COMBINED Cchurn AND BUTTER WORKER.

No. 550,902. Patented Dec. 3, 1895.

Fig. 1.

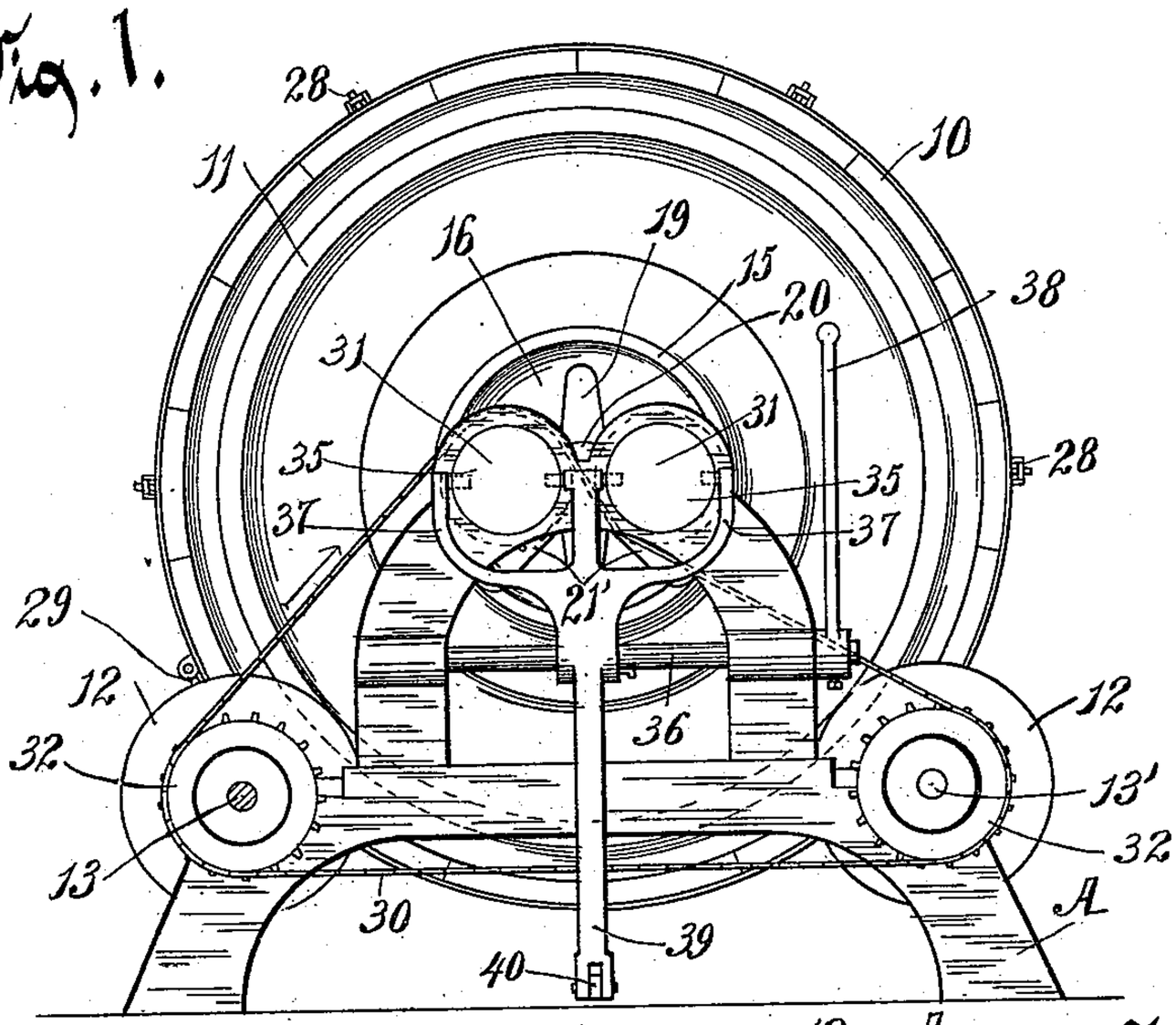
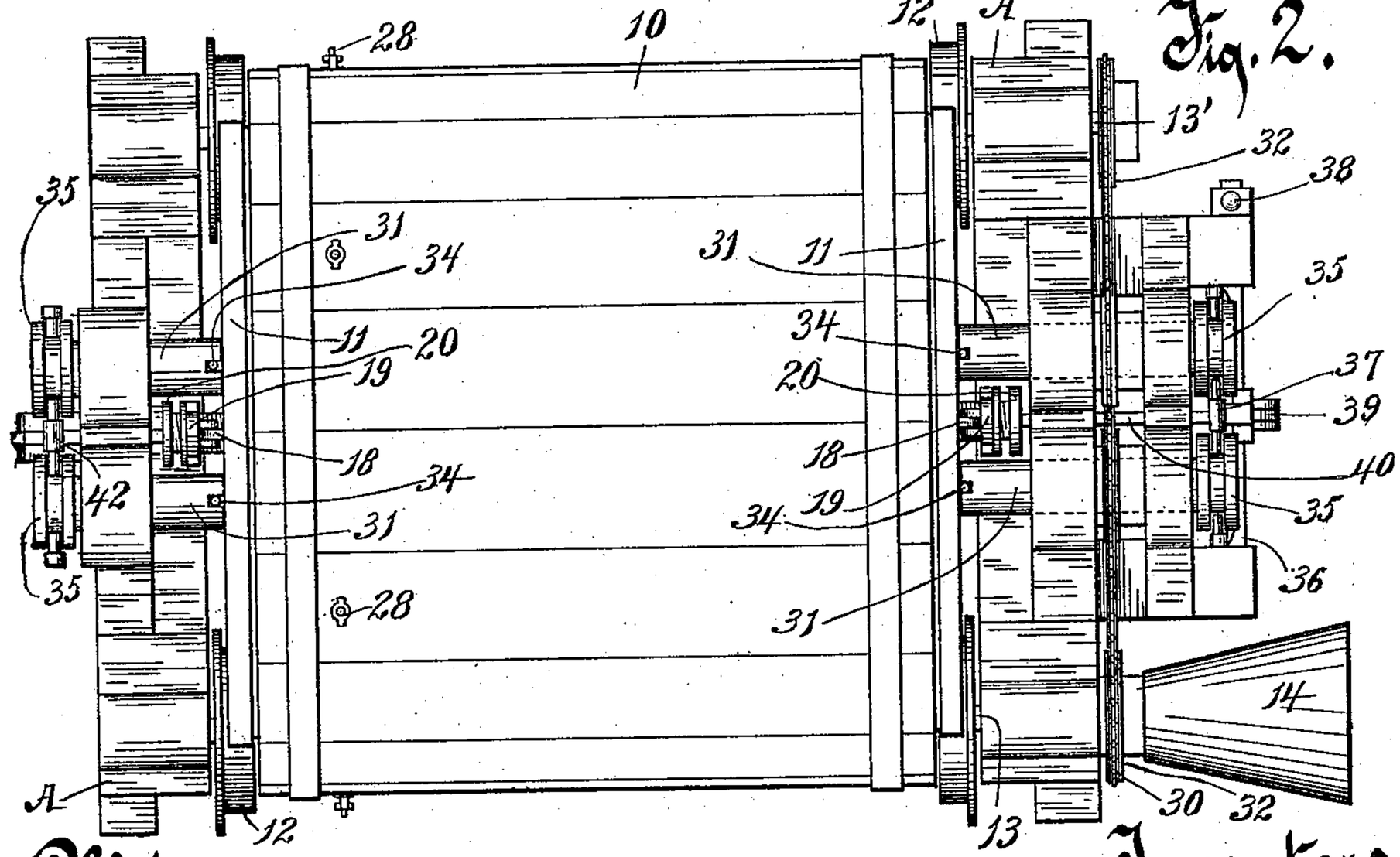


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

C. S. BROWN & F. B. FARGO.

COMBINED CHURN AND BUTTER WORKER.

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Fig. 3.

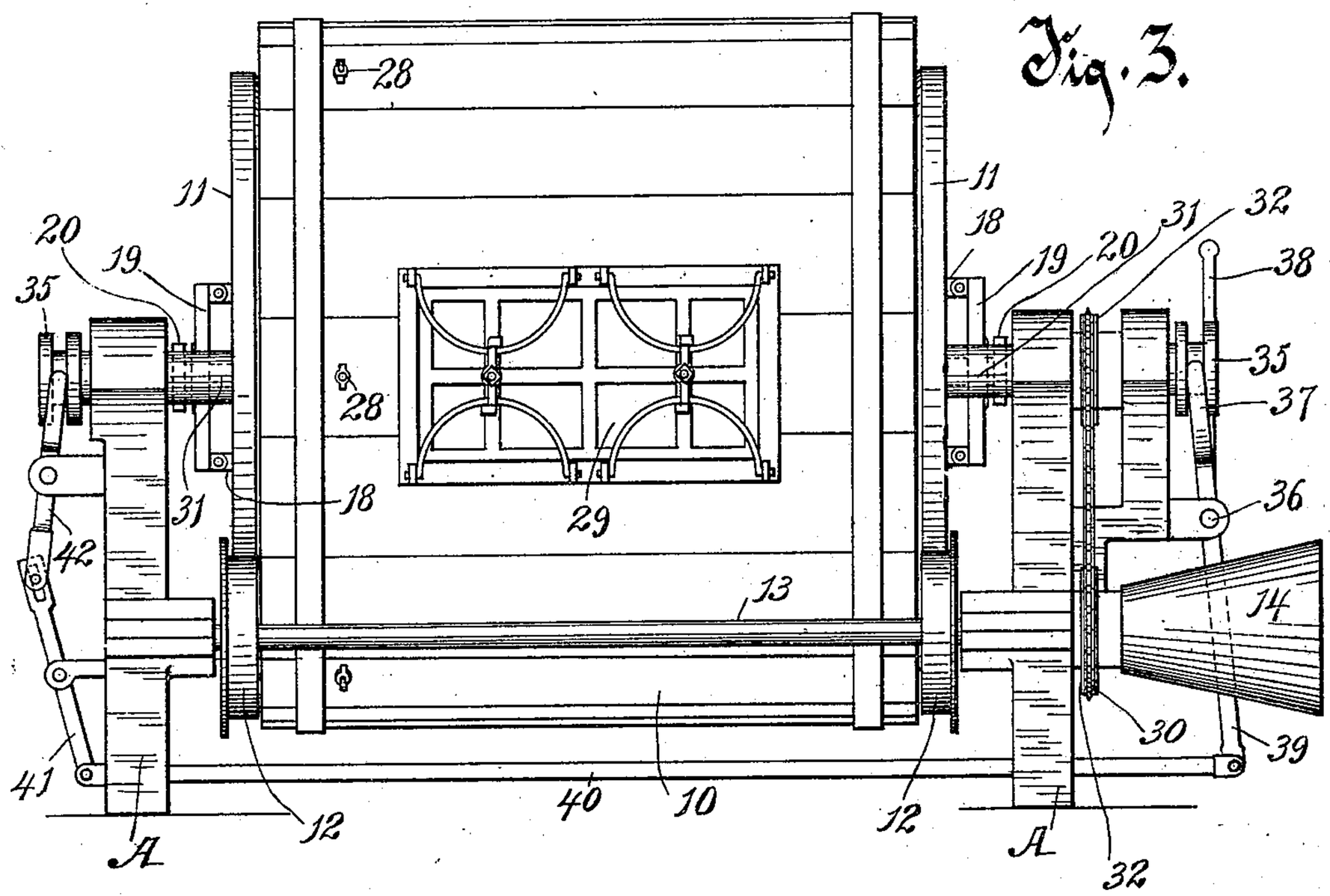
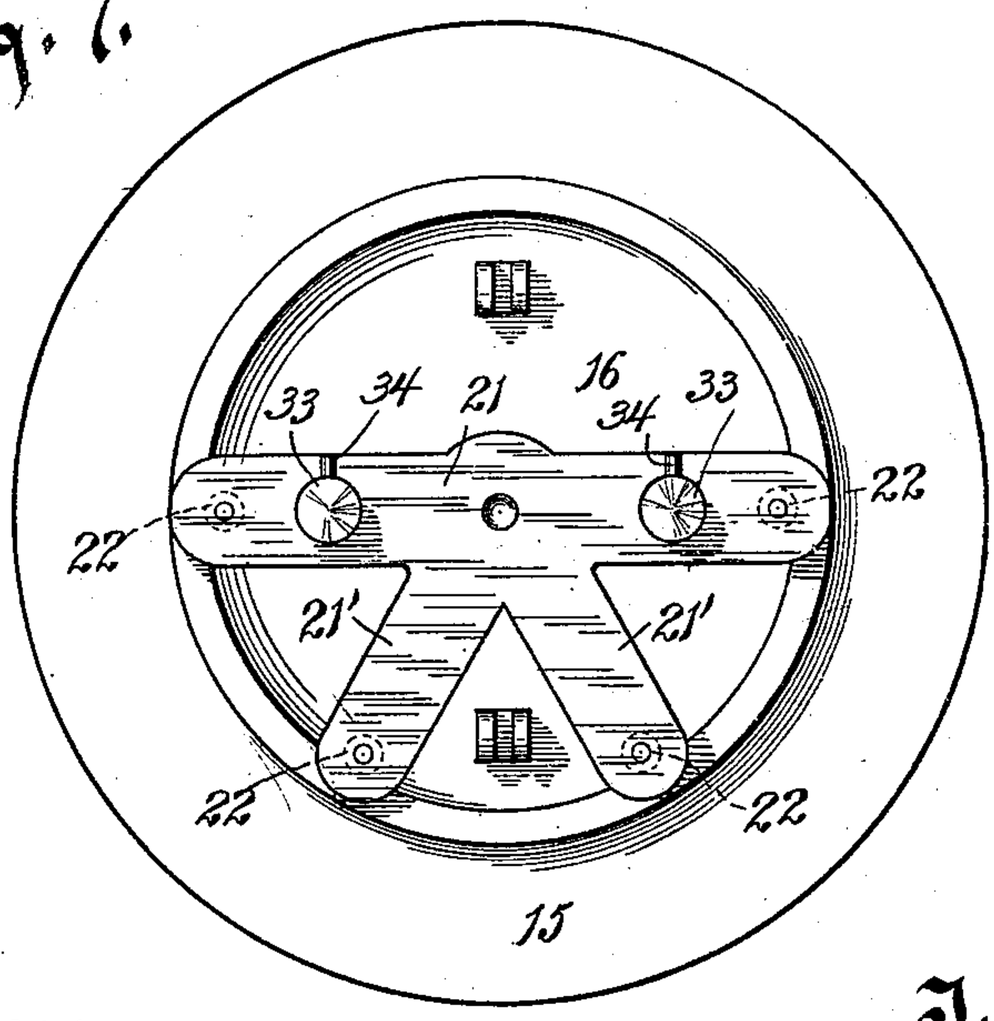


Fig. 7.



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(No Model.) 3 Sheets—Sheet 3.

C. S. BROWN & F. B. FARGO.

COMBINED CHURN AND BUTTER WORKER.

No. 550,902. Patented Dec. 3, 1895.

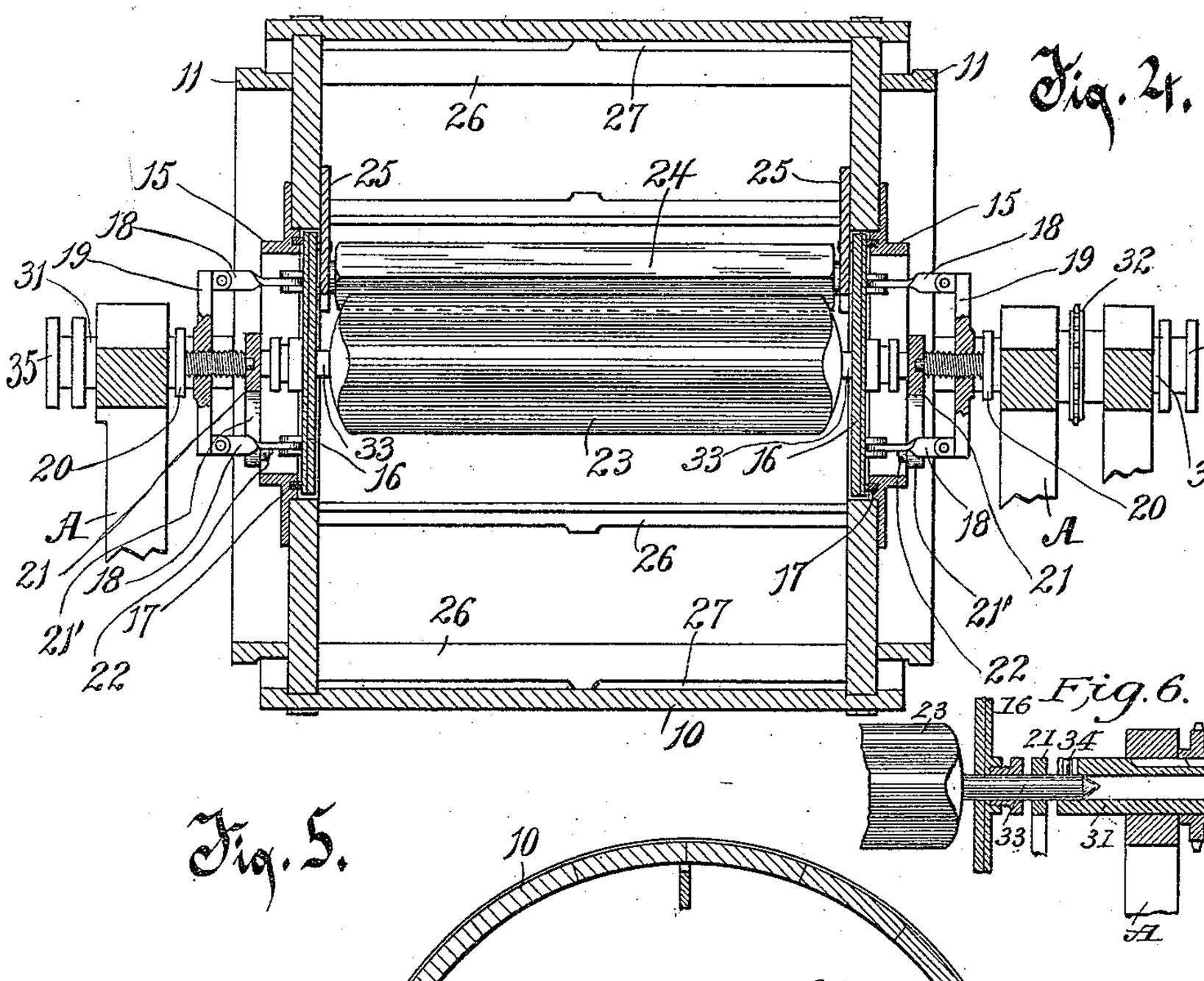
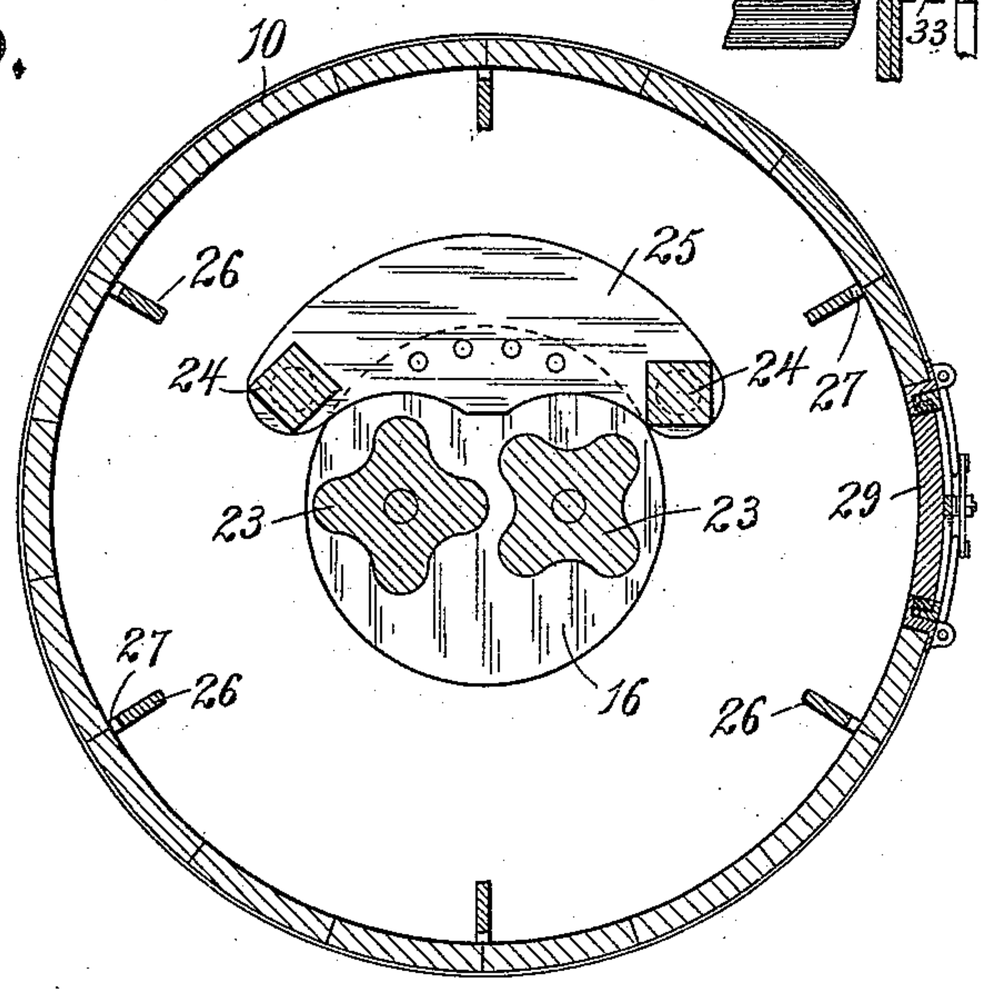


Fig. 2.

Fig. 6.

Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES S. BROWN AND FRANK B. FARGO, OF LAKE MILLS, WISCONSIN.

COMBINED CHURN AND BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 550,902, dated December 3, 1895.

Application filed July 13, 1894. Serial No. 517,427. (No model.)

To all whom it may concern:

Be it known that we, CHARLES S. BROWN and 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.

Our invention relates to a machine adapted when the parts are in certain relations to each other for use as a churn and on slight readjustment of some of the parts is adapted for use as a butter-worker.

The invention consists of the machine and its several parts and combinations, as hereinafter described and claimed; but anything herein stated is not to be construed as depriving us of our right to protection hereunder for equivalent devices and of the right to use these devices and their equivalents for every purpose for which they are adapted, notwithstanding no mention of such equivalents is herein otherwise made.

In the drawings, Figure 1 is an end view of our improved machine. Fig. 2 is a top plan view of the same machine. Fig. 3 is a side elevation of the machine. Fig. 4 is a central longitudinal section of the machine. Fig. 5 is a transverse vertical section substantially centrally of the case. Fig. 6 is a detail in section of the device for communicating rotary motion to a roller in the case. Fig. 7 is an enlarged view of the end of a bushing fixed in one head of the case and of the sub-head closing the aperture in a bushing and a piece of the apparatus for securing the sub-head therein.

A is the frame, of suitable size and form for supporting the operative mechanism thereon. The hollow cylindrical case 10 is provided with heads, one at each end, having annular laterally-projecting rims 11 11 of less diameter than the case fixed severally on the respective heads of the case, concentrically therewith, adapted to serve as gudgeons on which the case is supported and revolved. These gudgeons 11 rest and travel on flanged wheels 12 12, fixed in pairs on axles 13 13′. The two wheels on the axle 13 are located, respectively, at the two ends of the case and below and a little at one side of the longitudinal center thereof, and the two wheels on the axle 13′ are correspondingly located on the other side of the center of the case. The axle 13 is provided with a cone-pulley 14, by and through which it is driven by means of a belt running thereon from the power-supply.

The heads of the case are provided centrally with apertures, in and about which are placed bushings 15, secured to the heads of the case. These apertures in the heads of the case are closed by the disk sub-heads 16, which are fitted in the apertures in the heads and rest against the inner ends of the bushings 15, annular cork-gaskets 17 being fitted in grooves in the inner ends of the bushings and, projecting therefrom, receive the bearings of the sub-heads thereagainst and form tight joints. Rods 18 18, hinged at one extremity to the sub-heads 16, connect the heads to cross-heads 19, through which screws 20 turn against bars 21, bearing against the outer edges of bushings 15. These screws 20 are provided with enlarged heads, whereby they are readily rotated. By means of this construction the sub-heads 16 are readily drawn tightly to their seats against the bushings 15 or released therefrom, as desired. The bars 21 are preferably provided with downwardly-projecting legs 21′, forming a part thereof, and the bar and its legs are provided with rollers 22 22 on pins fixed in and projecting laterally therefrom, which rollers are so disposed as to bear against the inner surfaces of the bushings 15. This construction permits of the rotation of the case and bushings about the sub-heads and bars 21 when the machine is used as a butter-worker.

Two deeply-corrugated rollers 23 23, substantially as long as the interior of the case and disposed parallel with and at opposite sides of the axis of the case, are journaled in boxes therefor in the sub-heads 16. This construction permits the rollers 23 to revolve on their own axes and also to be whirled about each other by the revolution of the case.

Bars 24 24, located in the case above the sides of the rollers 23 and journaled in plates 25, fixed on the sub-heads 16, serve, when the machine is used as a butter-worker, being disposed, as shown in Fig. 5, from the sides of a hopper, to carry butter falling from above onto the rollers 23, by which the but-

ter is suitably compressed. Buckets 26, arranged at distances apart longitudinally along the peripheral wall of the case, are adapted for agitating the milk when the machine is used as a churn and for elevating the butter when it is used as a butter-worker. The buckets are provided with apertures 27 near their inner edges for the escape of water or milk therefrom, and other apertures in the case closed by the valves 28 are adapted to allow the escape of water or milk therethrough. A door 29 in the side of the case provides access to the chamber of the case.

Means for revolving the case and for rotating the rollers 23 consists of the following mechanism: Sprocket-wheels are provided on the shafts 13 13′, and a sprocket-chain 30 runs on these wheels and also on wheels 32 on the hollow spindles 31 31, journaled in the frame. Said sprocket-wheels 32 are splined on the spindles 31, the spindles being movable endwise in their bearings. The spindles are hollow or recessed at their inner ends, so as to receive therein the journals 33 of the rollers 23, and pins 34, fixed in the journals 33, are adapted, when the spindles 31 are slipped over the journals 33, to enter recesses therefor in the spindles and thereby to lock the spindles to the journals and compel concurrent revolution thereof. The spindles 31 are located in a horizontal plane, and when the rollers are so adjusted as to be in the same plane the spindles are in a right line with the journals 33, so as to be adapted to be coupled thereto and thereby to become practically an extension of the journals. The sprocket-chain 30 runs over one of the wheels 32 and under the other one, so as to rotate the rollers 23 inwardly at the top toward each other in opposite directions.

When the machine is in use as a churn, the sub-heads 16 are drawn tightly to their seats against the bushings 15 and rotate with the case, carrying the rollers 23 and the bars 24 around with the case, the spindles 31 being out of engagement with the journals 33. When the machine is used as a butter-worker, the rollers 23 are brought into the horizontal plane and the journals 33 are put in engagement with the spindles 31, the sub-heads 16 are loosened somewhat from their seats against the bushings 15, and the case and the rollers 23 are caused to revolve each about its own axis by rotating the driving-shaft, the mechanism being coupled up as shown in Figs. 1, 2, and 3. When used as a butter-worker, the sub-heads 16 are loosened from their bearings against the bushings 15 and do not revolve with the case 10. For coupling the spindles 31 at both ends of the machine to the journals of the rollers the spindles are provided with heads 35, having annular grooves, and at the front end of the machine a rock-shaft 36 is journaled in the frame, said rock-shaft being provided with upwardly-projecting fingers 37, having pins that enter and ride in the grooves of the heads 35 at that end of the machine. A radial handle 38, fixed on the rock-shaft, is adapted for oscillating the shaft and thereby throwing the spindles endwise into or out of engagement with the journals 33 at that end of the machine. For accomplishing a similar operation at the rear of the machine the rock-shaft 36 is provided with a downwardly-extending arm 39, connected by a rod 40 to a lever 41, pivoted medially on the frame, which lever 41 is at its other extremity connected movably to one arm of a lever 42, also pivoted medially on the frame, the furcate extremities of which lever 42 are provided with pins that enter and ride in the grooves in the heads 35 of the spindles 31 at the rear end of the machine. By throwing the handle 38 the spindles 31 at the front and at the rear of the machine are concurrently thrown into or out of engagement with the journals 33 on the rollers 23 at the will of the operator.

Some of the features described and shown in this specification, which we claim to be our invention and for which we are entitled to protection by patent, we have described and claimed in another application for patent, which has been or will be filed about the same date that this specification is filed, and we therefore omit claims thereof herein.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination with a cylindrical case, of annular rings or hollow gudgeons of slightly less diameter than the case affixed to and projecting in tubular form from the heads of the case, concentrically therewith, wheels in pairs fixed on a plurality of axles one wheel of each pair at each end of the case, on which wheels the gudgeons by exterior contact are supported and travel, a sprocket wheel on each of said axles, a sprocket chain running on said sprocket wheels compelling concurrent rotation of the axles, and means for rotating one of the axles from a power supply so that both axles and the wheels thereon are driven positively, thus rotating the case by frictional contact with the supporting wheels, substantially as described.

2. The combination with a cylindrical case provided with heads in its ends, having central apertures therein, of bushings inserted in the apertures and projecting laterally therefrom, sub-heads fitted in the apertures in the heads and bearing against the ends of the bushings, closing the apertures therethrough, cross heads connected to the sub-heads by hinged rods, screws turning through the cross heads against bars, and said bars bearing against the outer ends of the bushings, substantially as described.

3. The combination with a cylindrical case having heads in its ends provided with apertures centrally therein, of sub-heads bearing against the bushings and closing the apertures therethrough, cross heads connected to the sub-heads, screws turning through the cross heads and footed against bars 21 bear-

ing against the larger ends of said bushings, said bars being provided with rollers disposed to bear against the inner surfaces of the bushings and permit revolution of the bushings thereagainst, substantially as described.

4. The combination of a case having heads provided with apertures centrally therein, sub-heads fitted in the apertures in the heads, rollers in the case journaled in the sub-heads, rotating spindles and means for coupling the spindles rotatively to the journals of the rollers, substantially as described.

5. The combination of a case having heads provided with apertures centrally therein, sub-heads fitted into the apertures in the heads, rollers in the case alongside each other, said rollers being journaled in the sub-heads, spindles journaled and movable endwise in the frame and so disposed as to be adapted to be coupled rotatively with the journals of the rollers, wheels splined on the spindles, and means for coupling the spindles to the journals and other means for rotating the spindles in opposite directions, substantially as described.

6. The combination of a case, axles provided with wheels thereon on which the case is supported and rotated, a pair of rollers in the case, two wheels connected operatively to and adapted to rotate the rollers, wheels on said axles, and a sprocket chain or belt running on the wheels on the axles and on opposite sides of the other two wheels aforesaid whereby they are rotated in opposite directions, substantially as described.

7. In a butter worker, the combination with two butter-working rollers, of spindles journaled revolubly and so as to have endwise motion in the frame, heads having annular grooves on the spindles, levers having fingers riding in the grooves, a rock shaft and connecting devices for shifting said spindles and coupling them to or uncoupling them from the rollers, substantially as described.

8. The combination in a butter worker, of a roller 23 having a journal 33 provided with a pin 34, a hollow longitudinally movable spindle 31 mounted in a fixed support, a driving wheel 32 splined on the spindle, a spindle head 35 and a lever riding in the groove in said head, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES S. BROWN.
FRANK B. FARGO.

Witnesses:
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A. HUNTER.