

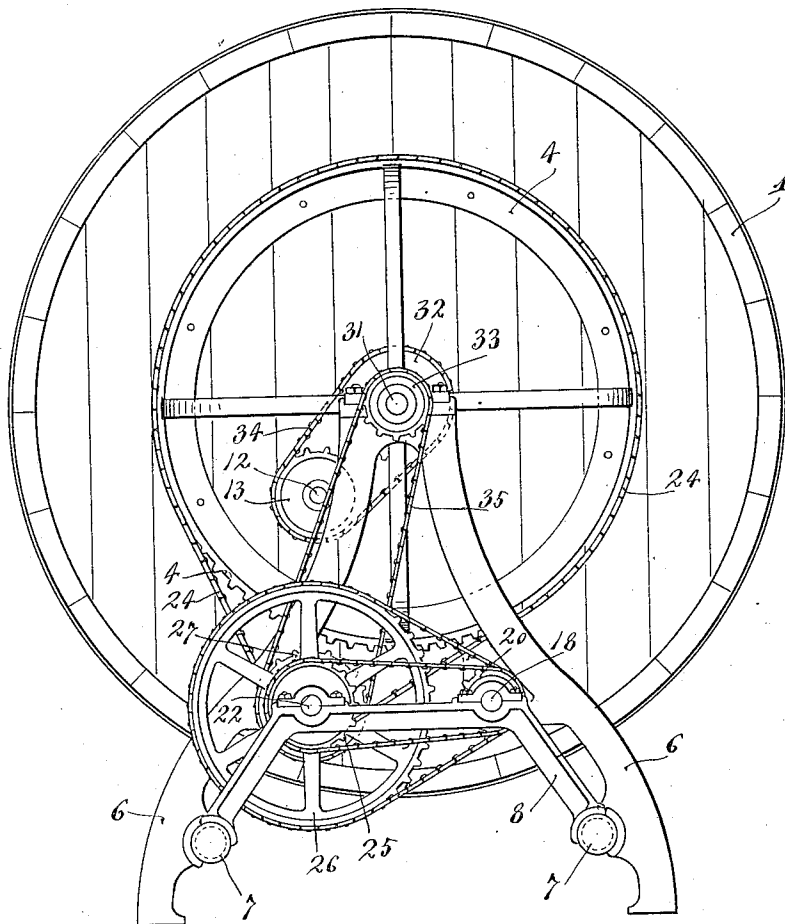
R. B. DISBROW.
COMBINED CHURN AND BUTTER WORKER.
APPLICATION FILED NOV. 10, 1910.

Patented Feb. 11, 1913.

3 SHEETS—SHEET 1.

1,052,899.

Fig. 1

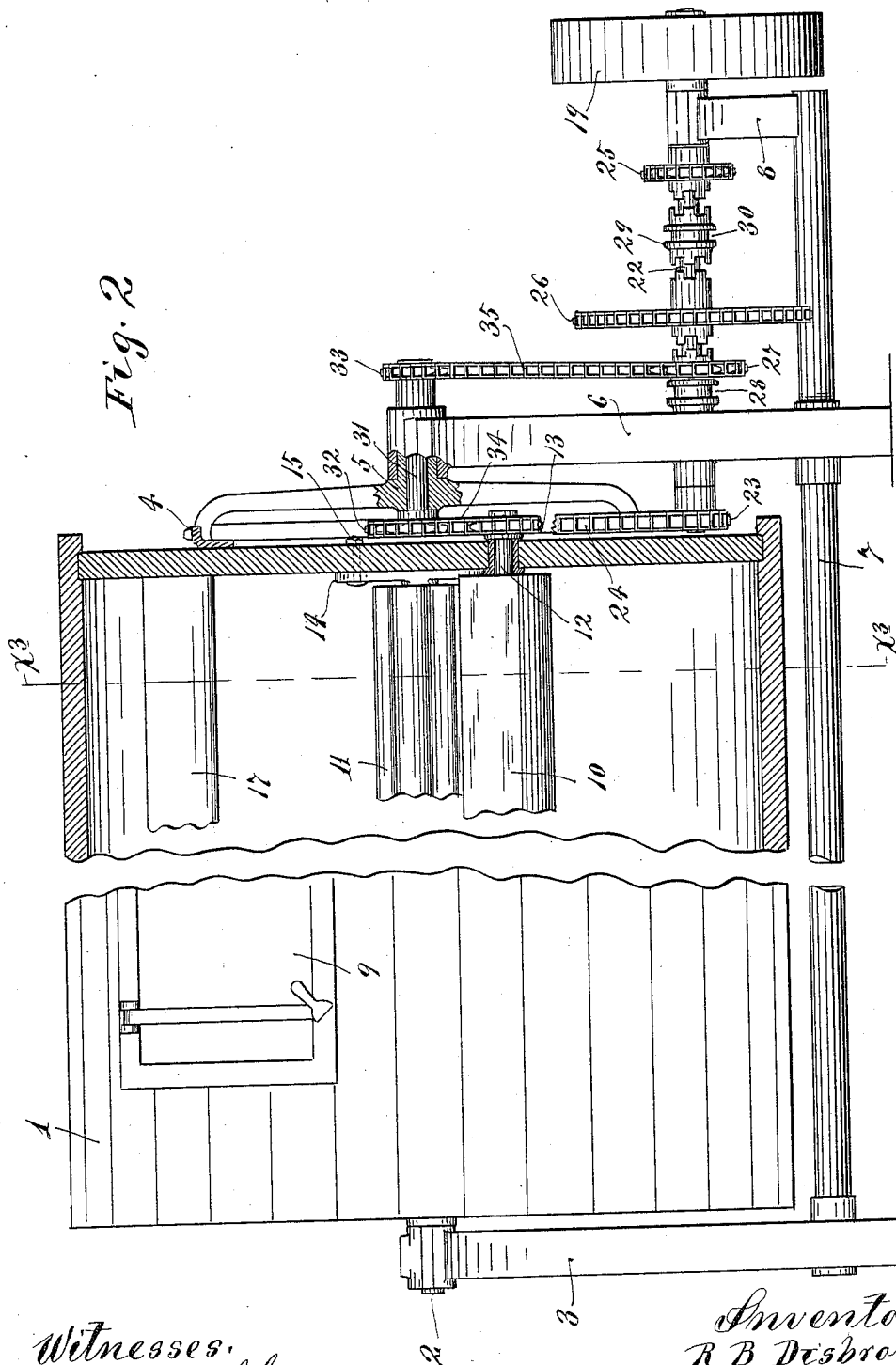


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3 SHEETS—SHEET 2.



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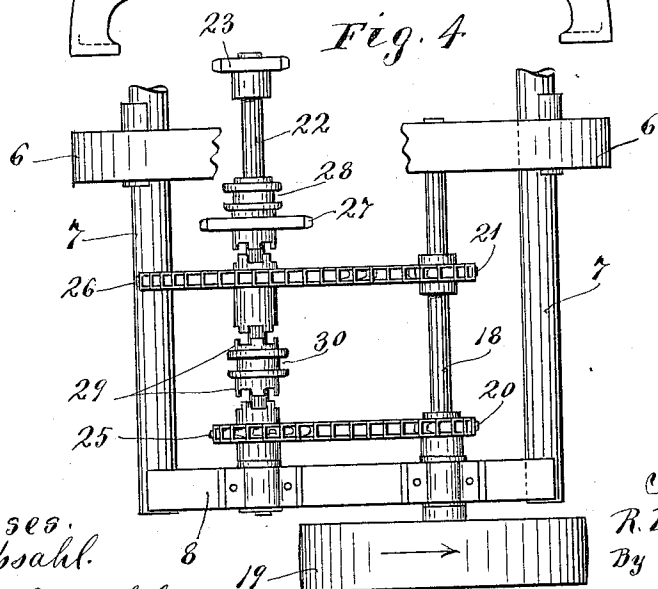
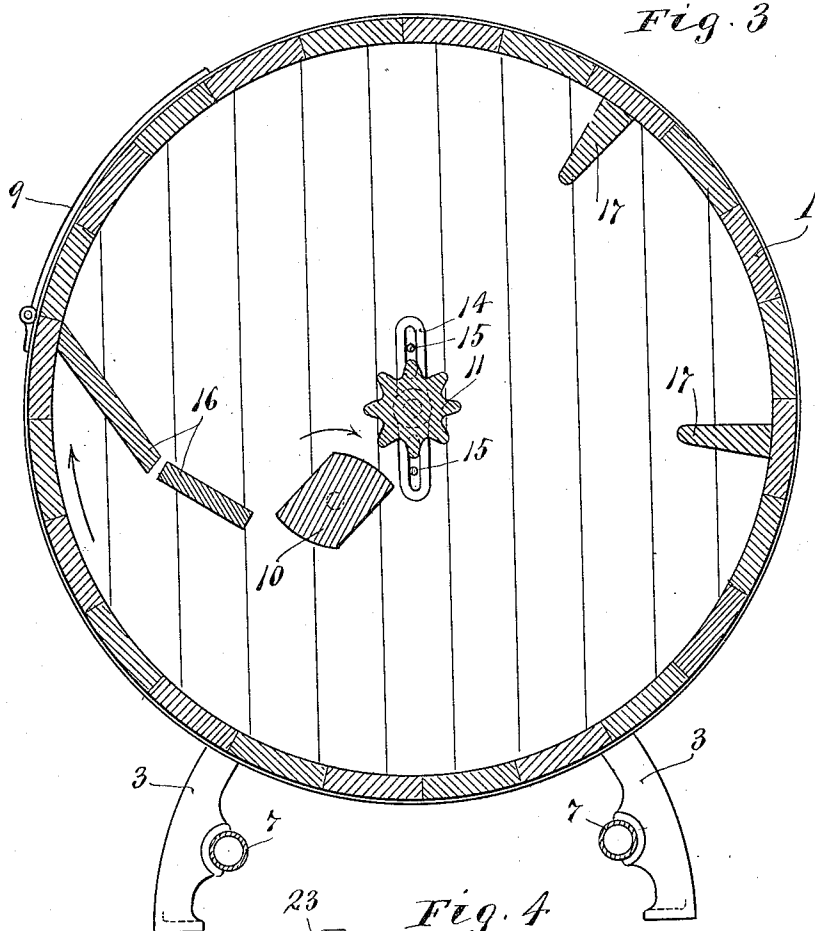
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

REUBEN B. DISBROW, OF OWATONNA, MINNESOTA.

COMBINED CHURN AND BUTTER-WORKER.

1,052,899.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed November 10, 1910. Serial No. 591,562.

To all whom it may concern:

Be it known that I, REUBEN B. DISBROW, a citizen of the United States, residing at Owatonna, in the county of Steele and State of Minnesota, have invented certain new and useful Improvements in Combined Churns and Butter-Workers; and I do hereby 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.

My invention has for its object to provide an improved combined churn and butter worker, and to this end the invention consists of the novel devices and combination of devices hereinafter described and defined in the claim.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings; Figure 1 is a front elevation of the improved machine; Fig. 2 is a view partly in side elevation and partly in vertical section showing the improved machine, some parts being broken away; Fig. 3 is a transverse vertical section taken through the churn on the line $x^3 x^3$ of Fig. 2; and Fig. 4 is a plan view with parts broken away, showing parts of the drum and roller driving mechanism.

The rotary drum 1 is horizontally disposed and at one end it is provided with trunnions 2 journaled in a bearing pedestal 3, while at its other end it is provided with a large sprocket 4 the spokes of which are off-set from the adjacent head of the drum and are connected to a hub having a tubular trunnion 5, that is journaled in the other bearing pedestal 6. The bearing pedestals 6 are connected at their lower portion by tie bars 7 which, as shown, are tubular in form and project at the head end of the drum and support a shaft bearing 8.

The drum 1 is provided with the customary peripheral doors 9. Within the drum is a pair of coöperating parallel longitudinally extended working rollers 10 and 11. The working roller 10 is positively driven and its shaft 12 is journaled in the heads of the drum and projects at the front of the drum and is provided with a small sprocket 13.

The roller 11 is adjustably supported for movements toward and from the roller 10, and, as shown, its end trunnions are jour-

naled in elongated bearing heads 14 that are rigidly but adjustably secured to the drum held by nutted bolts 15, passed through closely fitting seats in the drum heads and working through longitudinal slots 14^a of said bearing heads. The slots 14^a extend diametrically of the drum and approximately tangential to the roller 10, so that when the roller 11 is moved farther away from the said roller 10, it will be raised vertically in respect to the position of the parts shown in Fig. 3.

For delivering the butter to the rollers 10 and 11, on the rising side of the drum, the drum is provided with a wide lifting shelf 16 which, as shown, is made up of two sections secured to the drum heads. The drum is also, preferably, provided with several longitudinally extended flights 17, that extend radially inward from the shell of the drum.

The direction of the rotation of the drum and of the positively driven roller are indicated by arrows marked on Fig. 3 and these rotations are imparted, preferably, but not necessarily, by the novel driving mechanism illustrated, and which will now be described.

Journaled in the pedestal 6 and in the bearing 8 is a driving counter shaft 18 provided with a pulley 19 and with two sprockets 20 and 21. Motion will be imparted to the counter shaft 18 by a power-driven belt, not shown, which will run over the pulley 19. Also, journaled in the pedestal 6 and bearing 8 is an intermediate counter shaft 22 provided at its rear end with a small sprocket 23 over which and the large sprocket 4 on the drum, runs a sprocket chain 24 which serves to transmit motion from the said counter shaft 22 to the drum in the direction stated, it being assumed, of course, that the pulley 19 is driven in the direction marked thereon in Fig. 4. Loosely mounted on the counter shaft 22 are three sprockets 25, 26 and 27, each of which is provided with a half clutch on its hub. The sprocket 26 is much larger than the sprockets 25 and 27. The sprocket 26 is provided with half-clutches on both ends of its hub. The sprockets 25 and 26 are loose on the shaft 22 but are held against sliding movement thereon while the sprocket 27 is not only loose for rotation but is free to slide on the said shaft. This sprocket 27 is therefore provided with a peripheral groove

28 with which a shipper lever, not shown, may be engaged.

Mounted to slide on the shaft 22 but keyed, or otherwise held, to rotate therewith, is a double ended clutch sleeve 29 having a peripheral groove 30 with which a shipper lever, not shown, is adapted to be engaged.

Journalled in and extended through the hollow trunnion 5 is a short counter shaft 31 provided at its rear end with a sprocket 32 and at its front end with a sprocket 33. A sprocket chain 34 runs over the sprocket 32 and the roller sprocket 13, and a sprocket chain 35 runs over the sprockets 33 and 27.

When it is desired to rotate the drum at high speed, as in churning, the clutch sleeve 29 is engaged with the clutch of the sprocket 25; but when it is desired to rotate the drum at slow speed, as in working butter, the said clutch sleeve 29 is engaged with the clutch of the large sprocket 26. The roller 10 will be driven whenever the clutch of the sprocket 27 is engaged with the clutch of the continuously driven sprocket 26 so that, as is evident, the said roller may be thrown into action or out of action at will, both under high or low speeds of the drum. The said roller 10 will, of course, be driven at all times when working butter, but when the butter has been worked and it is desired to collect and pick the same up, the said roller 10, should be thrown out of action so that the butter will not then be worked downward between the cooperating rollers 10 and 11. The adjustment of the working rollers so as to vary the space between the same is highly important for the following reasons:

Sometimes, it will be found necessary or desirable to work butter churned from a greater amount of cream than at others. Furthermore, though having the same amount of cream always placed within the churn, it will produce at certain times of the

year, a larger per cent. of butter than at others. Obviously, to properly work a larger amount of butter, it will require the working rollers to be set farther apart than when working a smaller amount of butter. For these reasons, I have made one of the rollers adjustable in respect to the other and, preferably, this relatively adjustable roller is an idle roller which does not require positive driving connections, but will, nevertheless, be rotated when the butter is forced downward between the two rollers by the action of the positively driven roller.

In actual practice the efficiency of the churn, above described, has been demonstrated.

What I claim is:

In a machine of the kind described, the combination with a horizontal rotary drum and working rollers located therein, of means for driving said drum and rollers comprising a driving counter shaft, an intermediate counter shaft and an upper counter shaft, the latter being extended through one of the drum journals and having connections to the said roller, a pair of sprockets on said driving counter shaft, a relatively large and small sprocket loose on said intermediate counter shaft, sprocket chains running over the cooperating sprockets of the said driving and intermediate counter shafts, means for connecting the said relatively large and small sprockets, at will, to the said intermediate counter shaft, and means for driving the said upper counter shaft at will from the said relatively large sprocket.

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

REUBEN B. DISBROW.

Witnesses:

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