(No Model.) 4 Sheets—Sheet 1.

W. E. PENN & C. S. BROWN.

COMBINED CHURN AND BUTTER WORKER.

No. 583,862. Patented June 1, 1897.

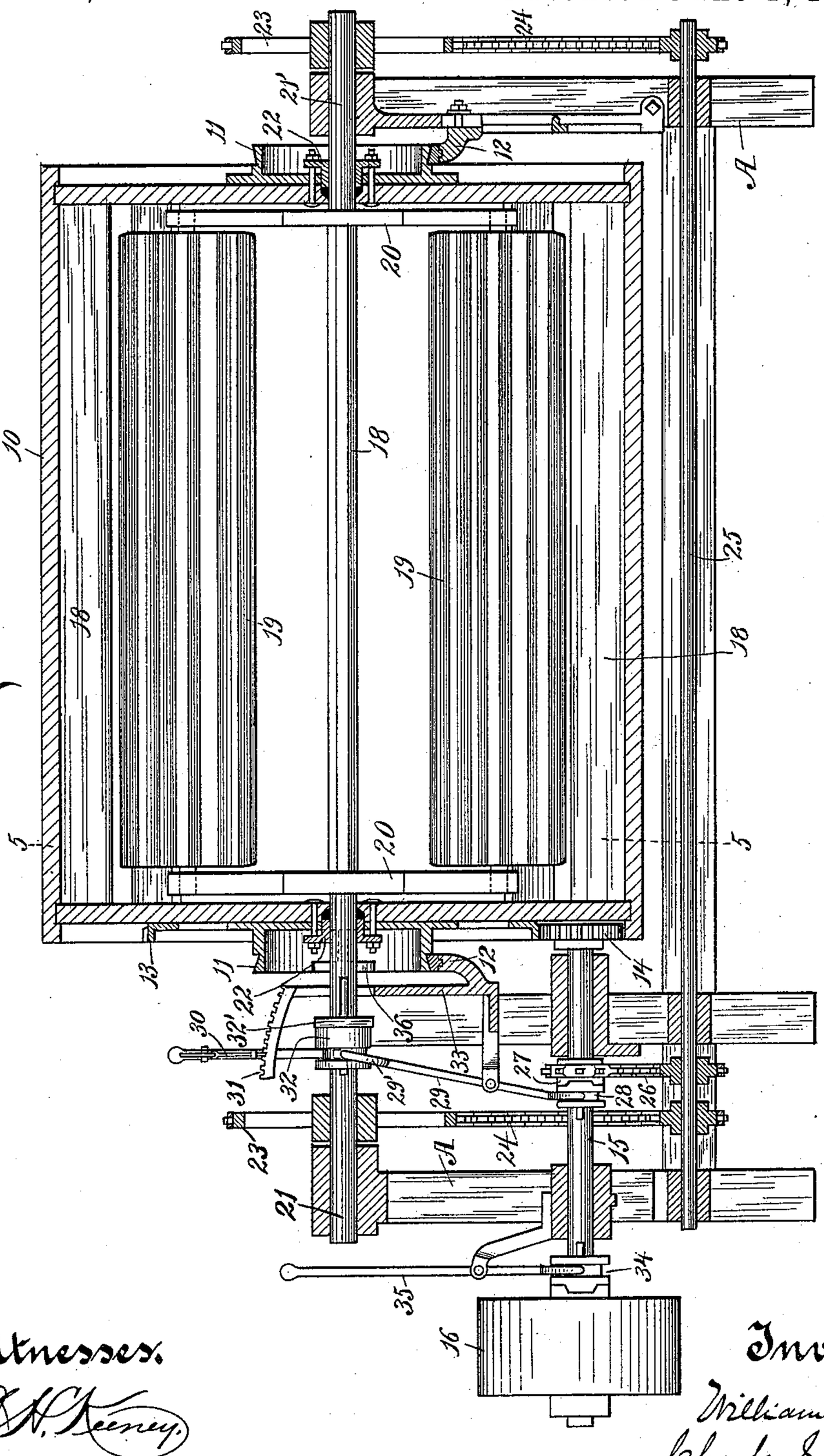

Fig. 1.

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(No Model.) 4 Sheets—Sheet 2.

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Fig. 2.

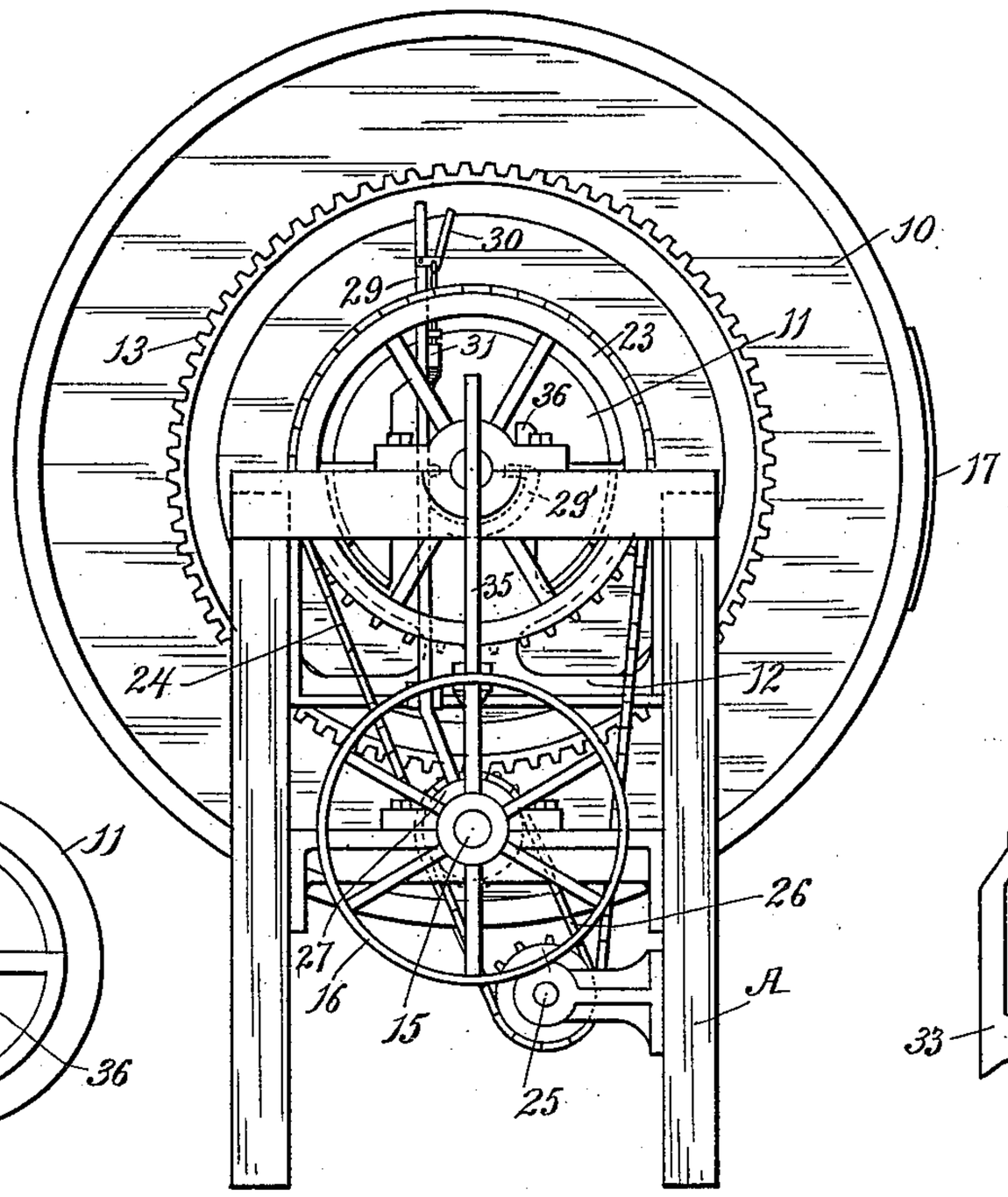


Fig. 6.

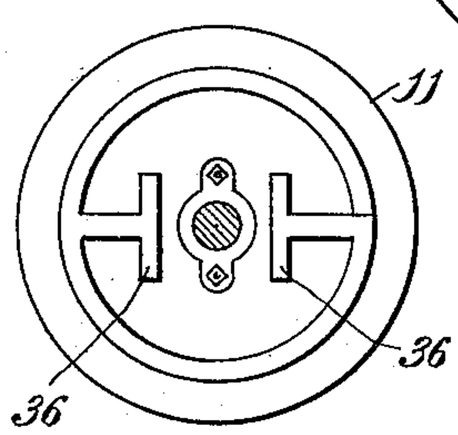
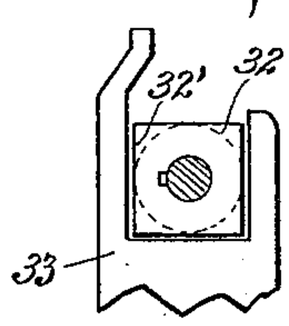


Fig. 7.



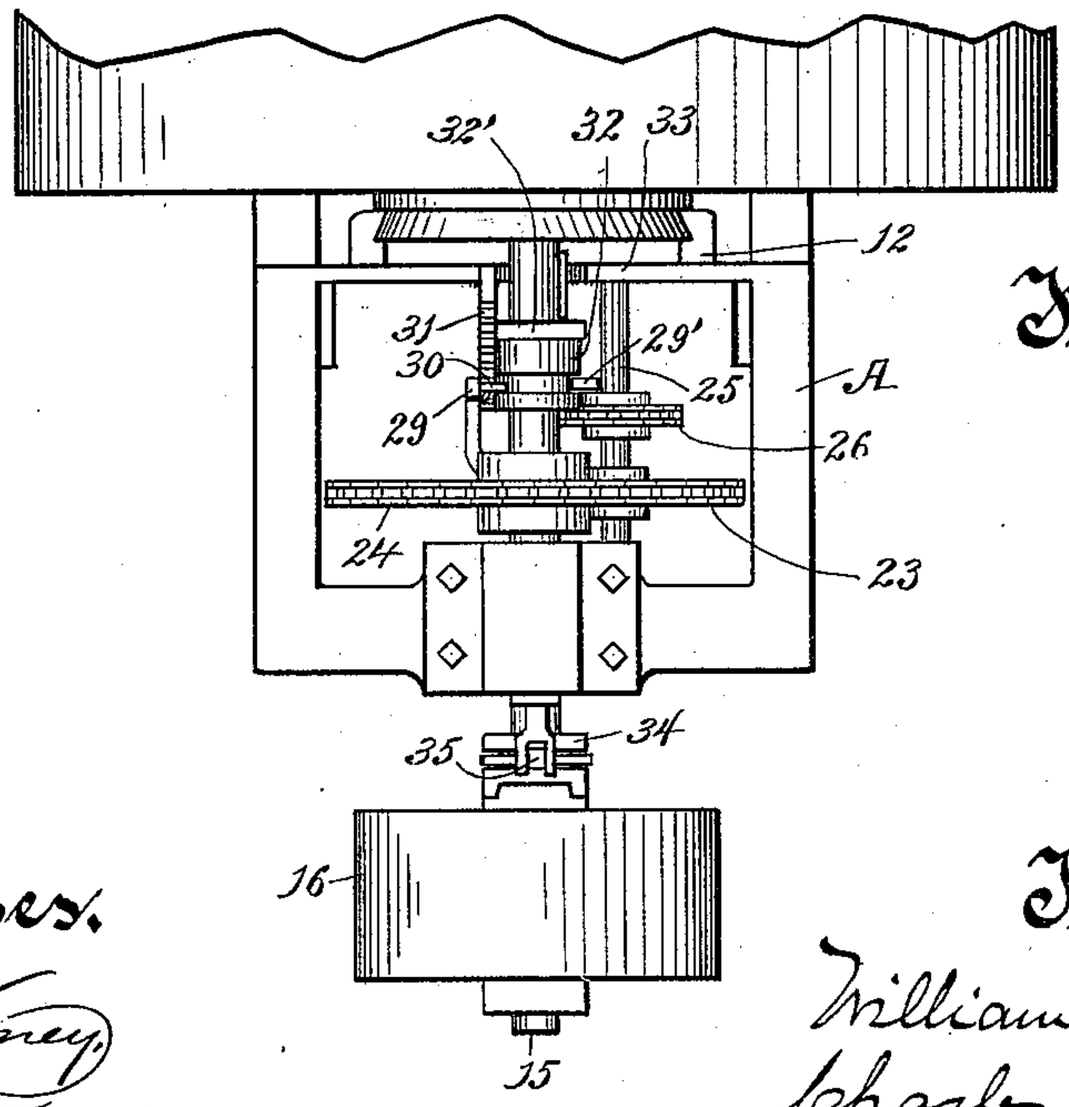


Fig. 3.

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W. E. PENN & C. S. BROWN.

COMBINED Cchurn AND BUTTER WORKER.

No. 583,862. Patented June 1, 1897.

Fig. 4.

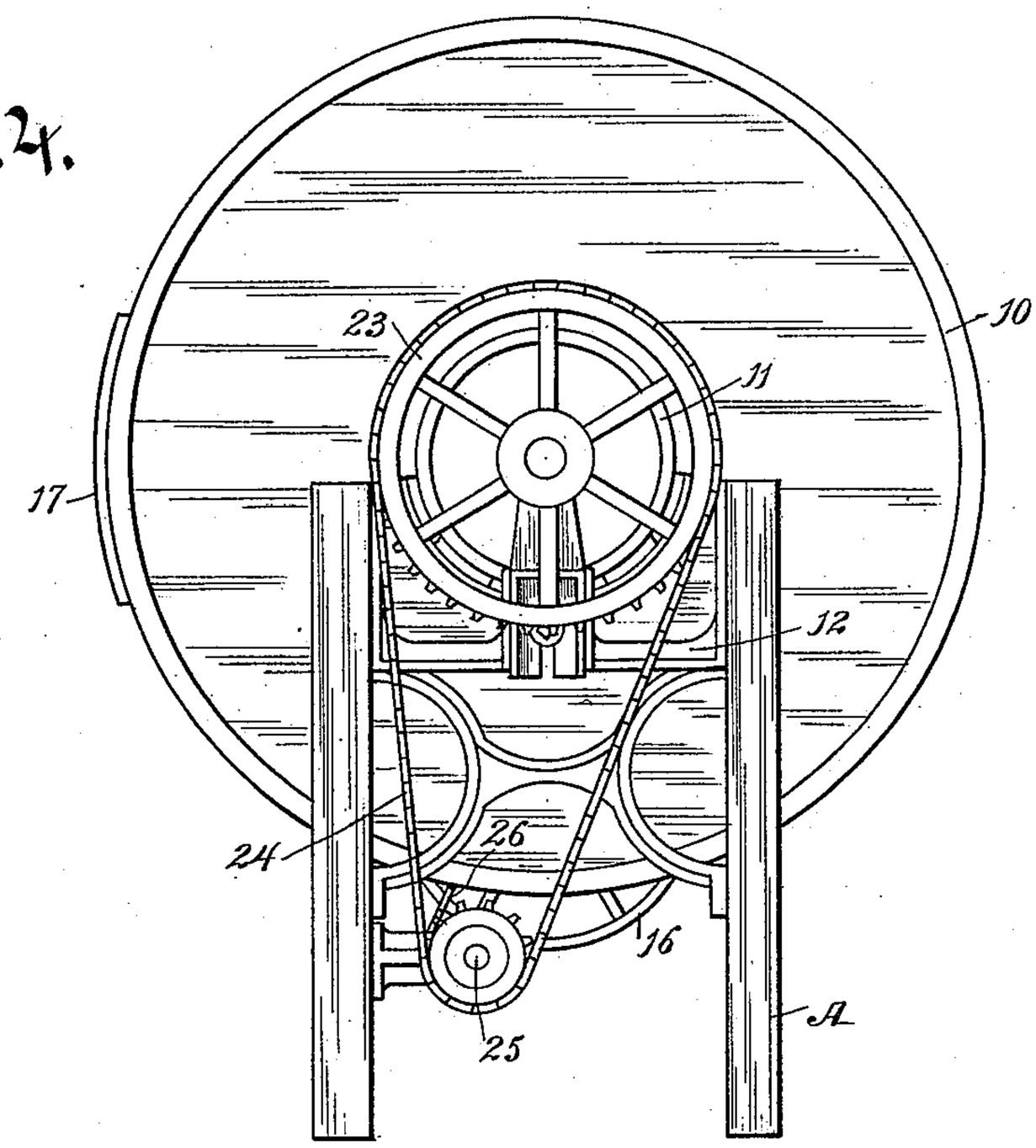
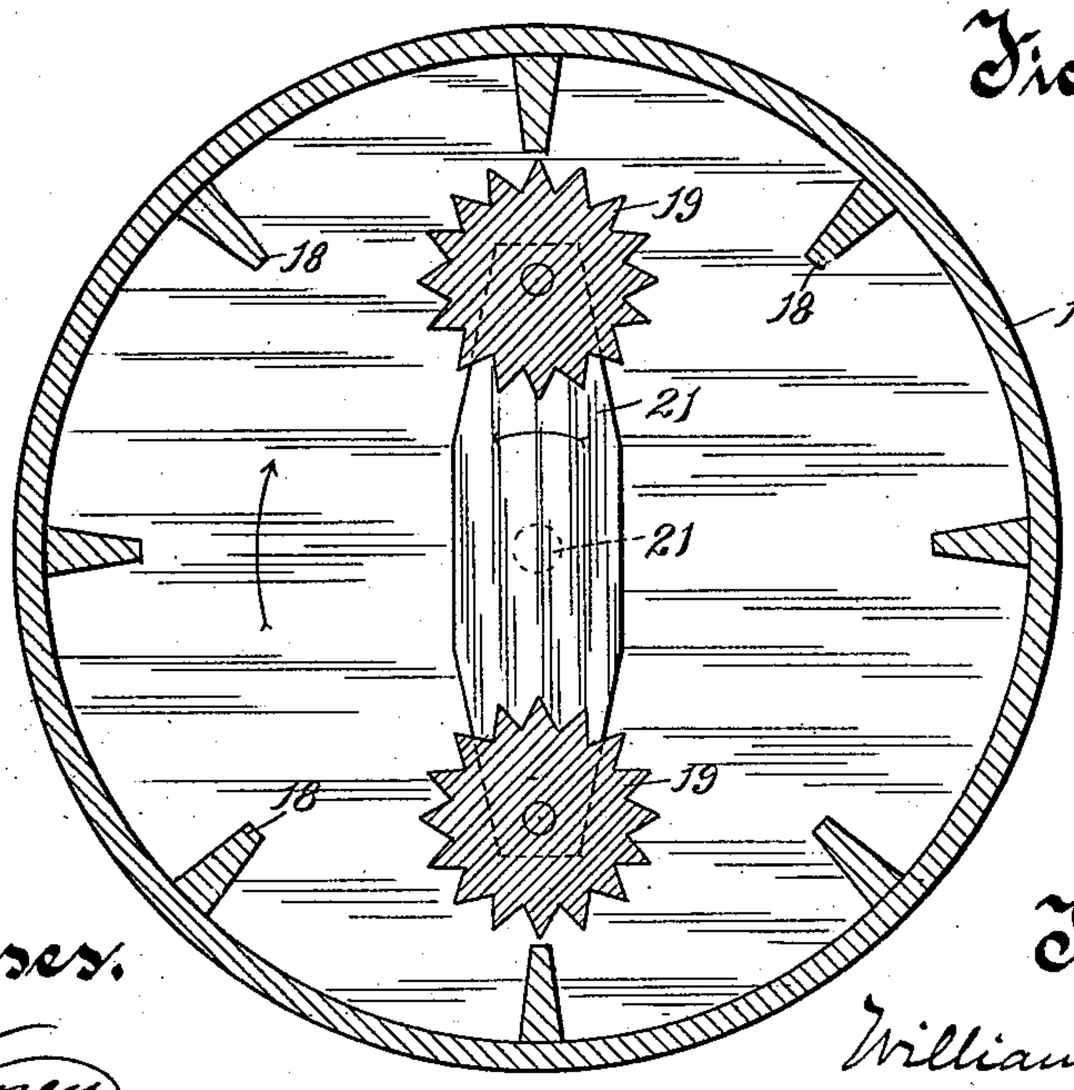


Fig. 5.



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(No Model.) 4 Sheets—Sheet 4.

W. E. PENN & C. S. BROWN.

COMBINED Cchurn AND BUTTER WORKER.

No. 583,862. Patented June 1, 1897.

Fig. 8.

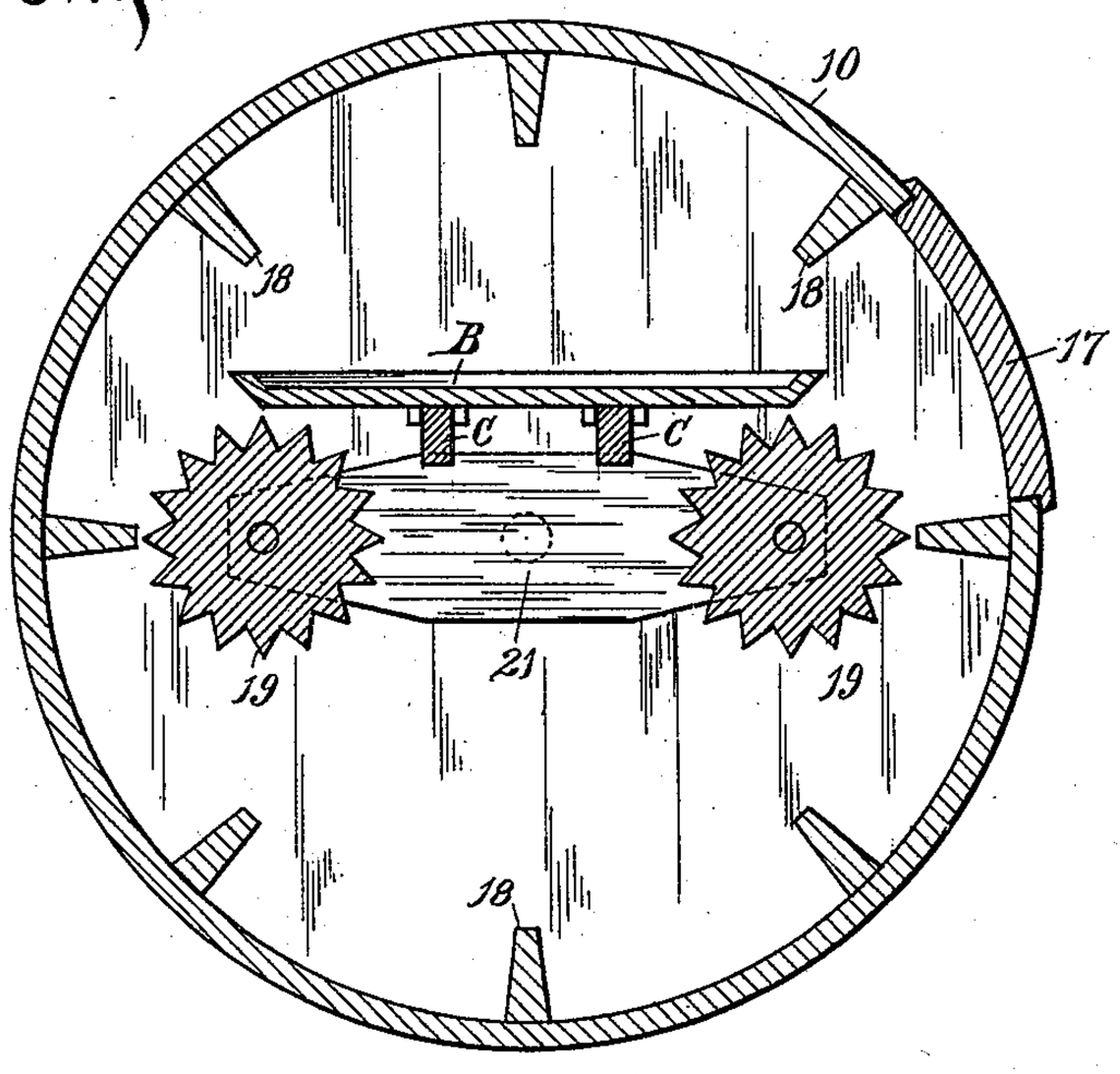
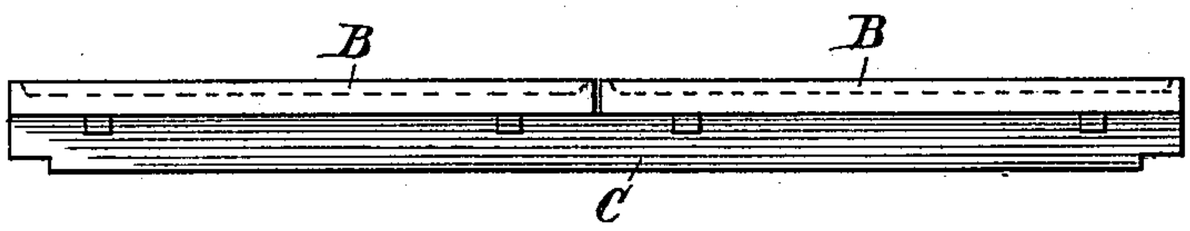


Fig. 9.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM E. PENN AND CHARLES S. BROWN, OF LAKE MILLS, WISCONSIN, ASSIGNORS TO THE F. B. FARGO & COMPANY, OF SAME PLACE.

COMBINED CHURN AND BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 583,862, dated June 1, 1897.

Application filed October 20, 1896. Serial No. 609,464. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM E. PENN and CHARLES S. BROWN, 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 improvements in a class of machines which are adapted both for churning and for working butter, parts of the mechanism being shifted and operated in changed relations for working butter from the relations they had when used for churning.

The object of the invention is to simplify and improve upon the constructions heretofore in use, thus adapting the machine for wider, more convenient, and efficient use.

The invention consists of the machine and its parts and combinations of parts, as hereinafter described and claimed, or their equivalents.

In the drawings, Figure 1 is a longitudinal section of the complete machine. Fig. 2 is an elevation of the front end of the machine. Fig. 3 is a plan view of a fragment of the drum at its front end and of the mechanism in front of the drum. Fig. 4 is an elevation of the rear end of the machine. Fig. 5 is a transverse section on line 5 5 of Fig. 1. Figs. 6 and 7 are details. Fig. 8 is a central transverse section of the drum and rolls therein with a butter-catching tray supported on the cross-heads. Fig. 9 is a longitudinal elevation of the tray in two sections and of a bar on which it is supported.

In the drawings, A is the frame, which is of suitable form and size for the support of the operative mechanism. A cylindrical drum 10, tight at both ends, is provided at each end with an annular or hollow arbor or gudgeon 11, fixed on the head of the drum, which gudgeons have their bearings revolubly in suitable boxes or bearings 12 12 therefor, the gudgeons being provided with annular grooves or channels in which the bearings of the boxes are received, which prevents endwise movement of the drum on the frame. The gudgeon-bearings 12 are secured to the frame. The drum is provided at its front end with a thereto-fixed annular spur-gear 13, which meshes with a pinion 14, fixed on the driving-shaft 15, the driving-shaft being journaled in boxes therefor on the frame and being provided with a loose driving band-pulley 16 thereon. The drum is also provided on its periphery with a door-aperture normally closed by the lid or door 17. The interior of the drum is provided with longitudinal dashboards or buckets 18, secured to the shell of the drum throughout its length at little distance apart.

Within the drum there are longitudinally-disposed rolls 19 19, preferably corrugated or fluted, substantially parallel with the axis of the drum and located near the inner edges of the buckets 18, which rolls at their ends are mounted revolubly in the cross-heads 20 20, the cross-heads being respectively provided with arbors 21 21′, which arbors extend through the heads of the drum and are journaled in boxes therefor on the frame. Glands 22 22 about the arbors 21 21′ are secured to the heads of the drum and therewith form stuffing-boxes, which, being suitably packed, form liquid-tight joints between the arbors and the heads of the drum. The arbors 21 21′ are respectively provided with sprocket-wheels 23 23, which are geared by means of sprocket-chains 24 24 to pinions on the counter-shaft 25, which counter-shaft is journaled in suitable bearings therefor on the frame. The sprocket-gears are of the same size, so as to drive the arbors 21 21′ concurrently and synchronously from the counter-shaft 25, thus revolving the rolls 19 about their common axis by power applied therefor at both extremities. The shaft 25 is geared to the driving-shaft 15 by means of a sprocket-chain 26, running on a sprocket-pinion on the shaft 25 and on a sprocket-wheel 27, loose on the shaft 15, but adapted to be clutched thereto by means of the clutch-collar 28, splined on the shaft 15. A lever-handle 29, pivoted medially on a bracket on the frame, is furcate at its lower extremity and rides in a channel therefor in the clutch-collar 28, the upper extremity of the lever-handle being provided with a spring-actuated catch 30, which takes into a segmental rack-bar 31 and locks the lever-handle, holding the clutch-col-

lar 28 in or out of engagement with the sprocket-wheel 27. The lever-handle 29 is also provided with a finger 29′, that rides in an annular channel therefor in the hub of a stop-block 32, splined on the arbor 21, the handle 29 being adapted also to shift and lock the block 32. A clutch-collar 34, splined on the driving-shaft 15, is adapted to be put in engagement with the hub of the driving-pulley 16 and hold the shaft to rotation with the pulley. A lever-handle 35, pivoted medially in a bracket on the frame, is furcate at its lower extremity and rides in an annular groove therefor in the clutch-collar 34, and is adapted for shifting the collar into and out of engagement with the hub of the pulley 16.

When this machine is put into use as a butter-worker, the arbors 21 21′ are connected actively through the counter-shaft 25 with the driving-shaft 15 in the manner illustrated in Fig. 1, and both the drum and the rolls are revolved continuously, but in opposite directions. By this action the butter is caught and pressed between the rolls 19 and the buckets 18 or the shell of the drum, and the milk is thereby forced out of it. When the butter has been sufficiently worked, the rolls 19 can by the partial revolution of the arms 20 be brought into a horizontal plane common with the arbors 21 and be locked in position by shifting the block 32 along the arbor 21, bringing the faced portions 32′ of the block into engagement with a correspondingly-faced portion of the bracket 33, forming a part of the frame, and thereupon a tray (preferably in sections B B) can be introduced into the drum and allowed to rest on removable bars C C, supported on the cross-heads 20, into which tray the butter will fall from the buckets 18 as the drum is revolved. The shifting of the block 32 into engagement with the bracket 33 releases the clutch 28 from the wheel 27.

When the machine is to be used as a churn, the block 32 is shifted on the arbor 21 so that the faces 32′ are brought into engagement with correspondingly-faced portions or members 36, constructed on and preferably integral with the gudgeon 11. This situation of the parts locks the cross-heads 20 and rolls 19 in position relative to the drum, and when the drum is revolved the rolls revolve or whirl around synchronously therewith. Should it at any time be desirable to shift the drum or the rolls therein relative to each other, the block 32 can be so shifted on the arbor 21 that the faced portions 32′ will be opposite the space between the gudgeon 11 and the bracket 33, in which position of the parts the shifting of the drum or of the rolls with reference to each other can be readily accomplished by the attendant.

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

1. The combination with a cylindrical drum provided with longitudinally-disposed buckets on the inner surface, annular gudgeons on its ends and means for supporting and rotating the drum, of a plurality of longitudinally-disposed butter-working rolls mounted on radially-extending arms within the drum, the rolls being on different sides of the axis of the drum and at a distance therefrom and from each other and severally near the buckets, arbors secured to and carrying the arms and projecting through the heads of the drum and supported in independent bearings, and means for rotating the arms and the rolls therewith.

2. The combination with a cylindrical drum provided with longitudinally-disposed buckets on the inner surface, annular gudgeons on its ends, and means for supporting and rotating the drum, of a plurality of longitudinally-disposed butter-working rolls mounted on radially-extending arms within the drum, the rolls being on different sides of the axis of the drum and at a distance therefrom and from each other and severally near the buckets, arbors secured to and carrying the arms, said arbors projecting through the heads of the drum and being supported in independent bearings, releasable means for rotating the arms and the rolls therewith, and means for locking the arms in position against revolution when the revolving means are released.

3. The combination with a revoluble cylindrical drum having longitudinal buckets on its inner surface, of a plurality of butter-working rolls mounted on radial arms in the drum, said rolls being disposed parallel with the axis of the drum but on different sides of said axis and at a distance therefrom and from each other and near the buckets, arbors fixed to said arms and extending axially through the heads of the drum and having their bearings on the frame independently of the drum-bearings, and means for rotating the arms and the rolls therewith independently of and in the reverse direction from the rotation of the drum.

4. The combination with a revoluble cylindrical drum having longitudinal buckets on its inner surface, of a plurality of butter-working rolls mounted on radial arms in the drum, said rolls being disposed parallel with the axis of the drum but on different sides of and at a distance from its axis and from each other and severally near the buckets, arbors fixed to said arms and extending axially through the heads of the drum and having their bearings on the frame independently of the drum-bearings, releasable means connected at both ends of the drum for rotating the arms and rolls therewith independently of and in the reverse direction from the rotation of the drum, and means for locking the arms against revolution simultaneously with the releasing of the means for revolving the arms.

5. The combination with a revoluble cylindrical drum and a driving-shaft geared to and rotating the drum, of rolls on radial arms

in the drum, arbors fixed to the arms projecting axially through the heads of the drum and journaled independently of the drum, a counter-shaft driven from the driving-shaft, releasable means for driving the arbors from the counter-shaft, a stop-block splined on one of the arbors, and means for shifting the stop-block into engagement with a fixed bearing whereby the radial arms and rolls are held against revolving in the drum.

6. The combination with a drum mounted and revoluble on a frame, and means for rotating it, of rolls in the drum mounted on cross-heads having arbors extending through the heads of the drum concentric therewith, said arbors being journaled on the frame, a block splined on one of said arbors, a fixed bearing, and means for shifting the block on the arbor into engagement with the fixed bearing or with the drum.

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

WILLIAM E. PENN.
CHARLES S. BROWN.

Witnesses:
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