

No. 628,988.

Patented July 18, 1899.

W. E. PENN.
COMBINED CHURN AND BUTTER WORKER.

(Application filed Nov. 31, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

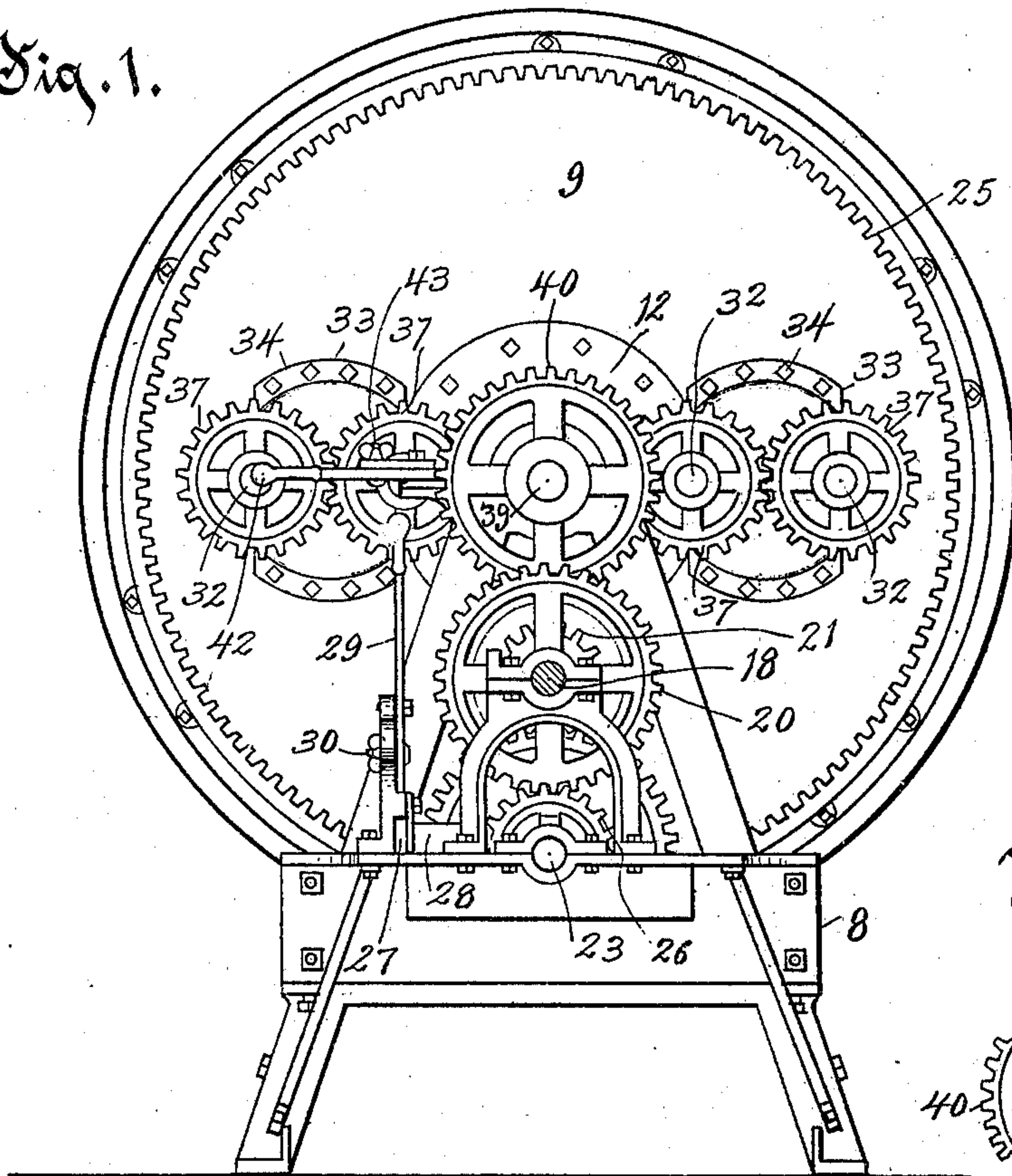


Fig. 6.

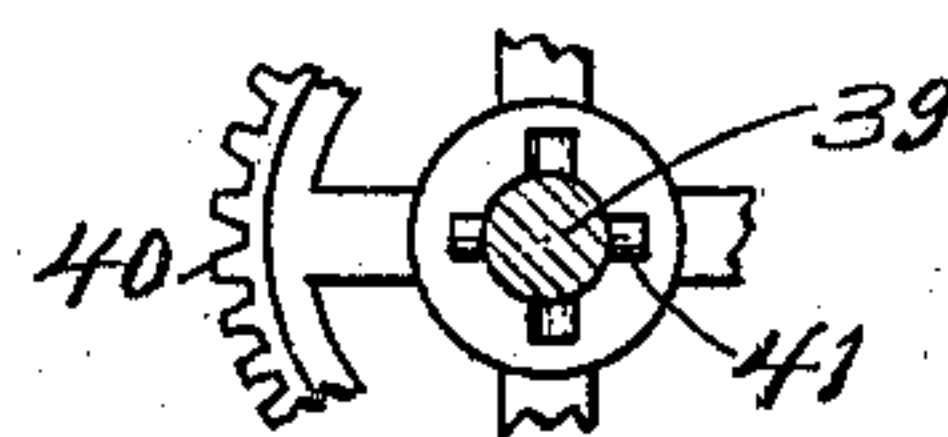


Fig. 5.

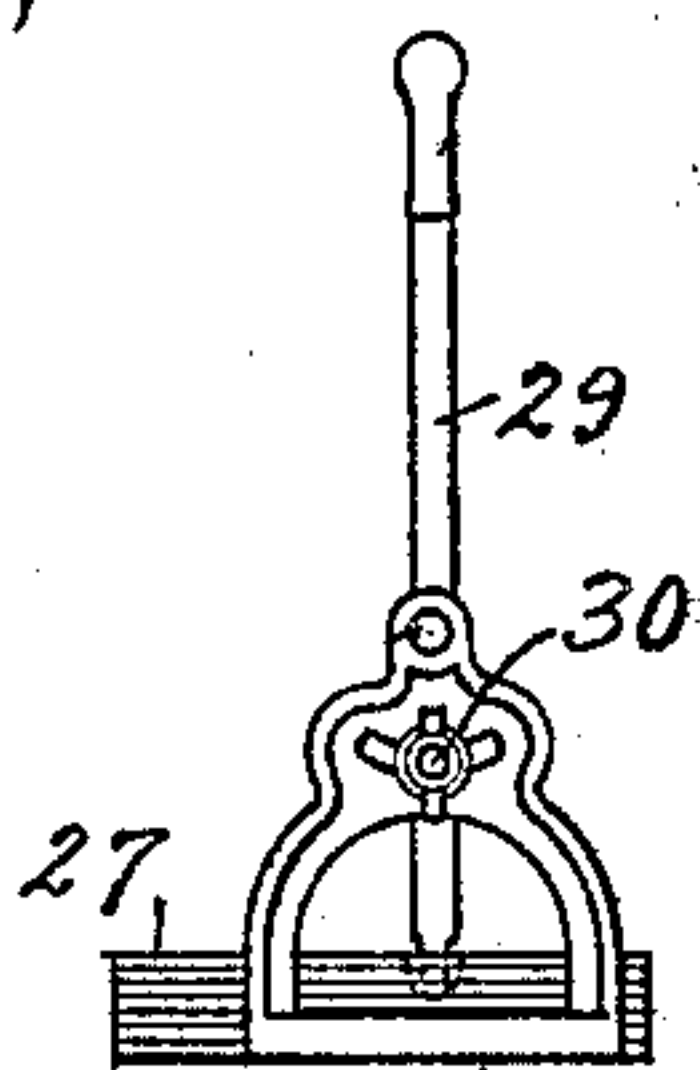
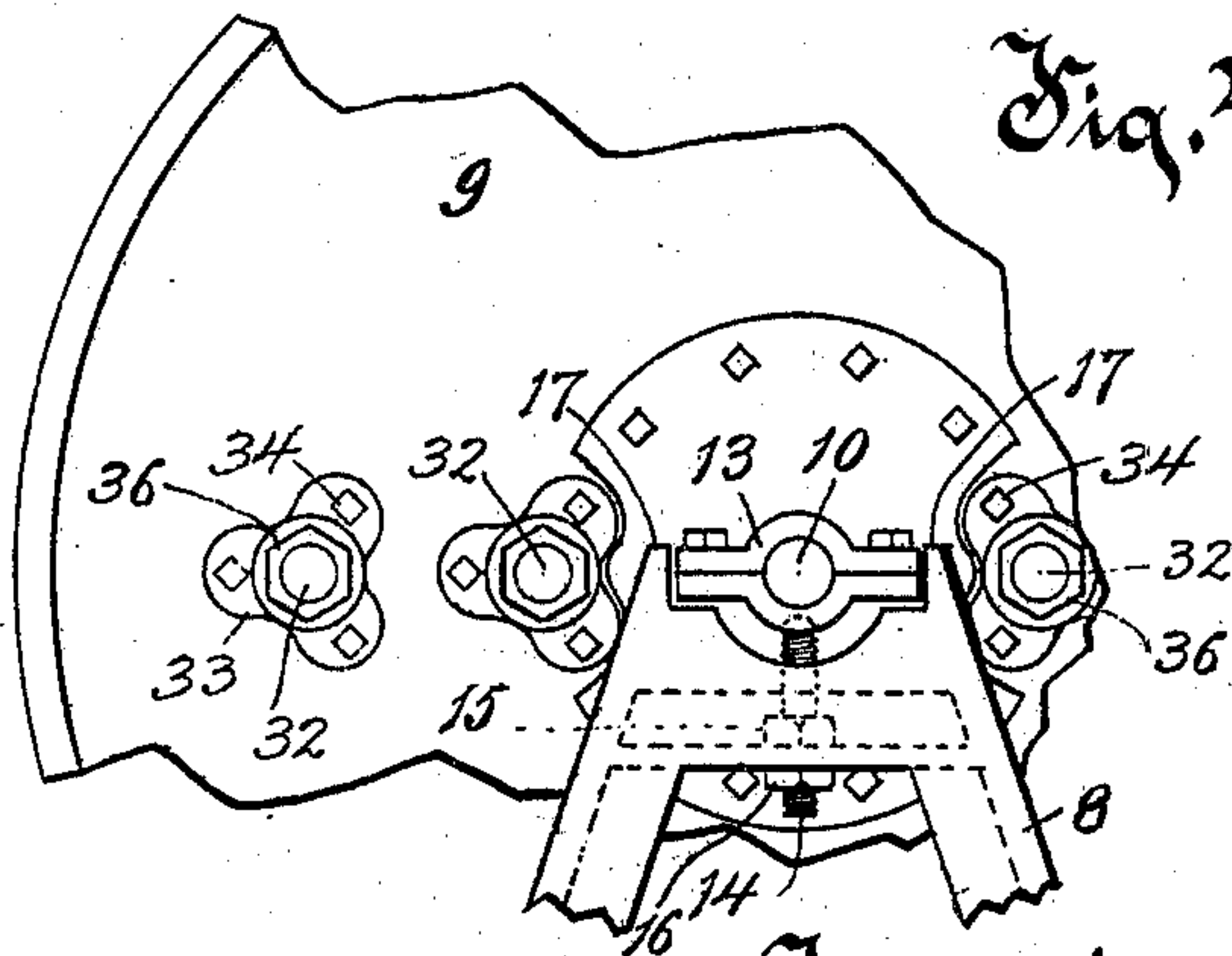


Fig. 4.



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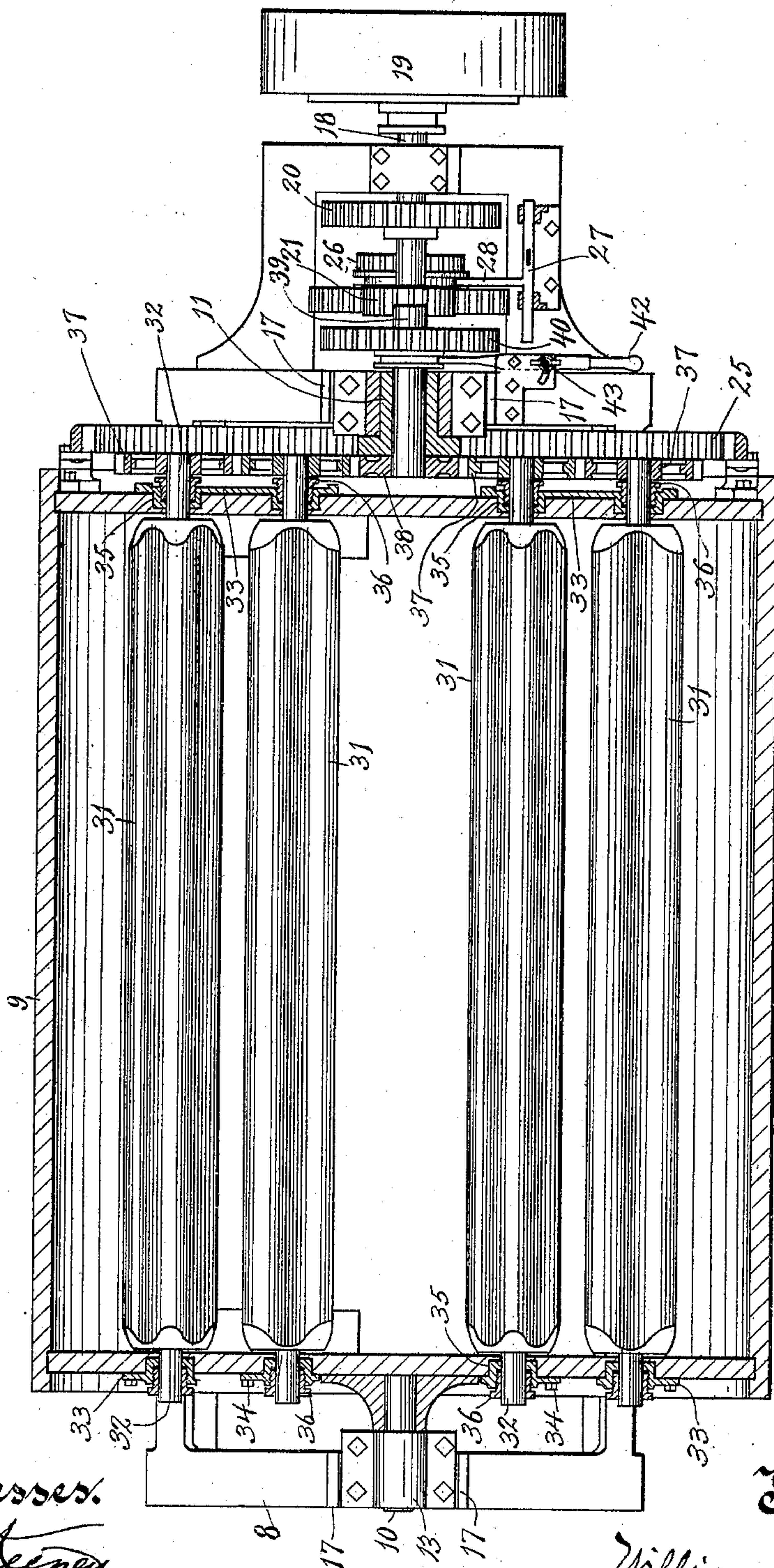
W. E. PENN.
COMBINED CHURN AND BUTTER WORKER.

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(No Model.)

3 Sheets—Sheet 2.

Fig. 2.



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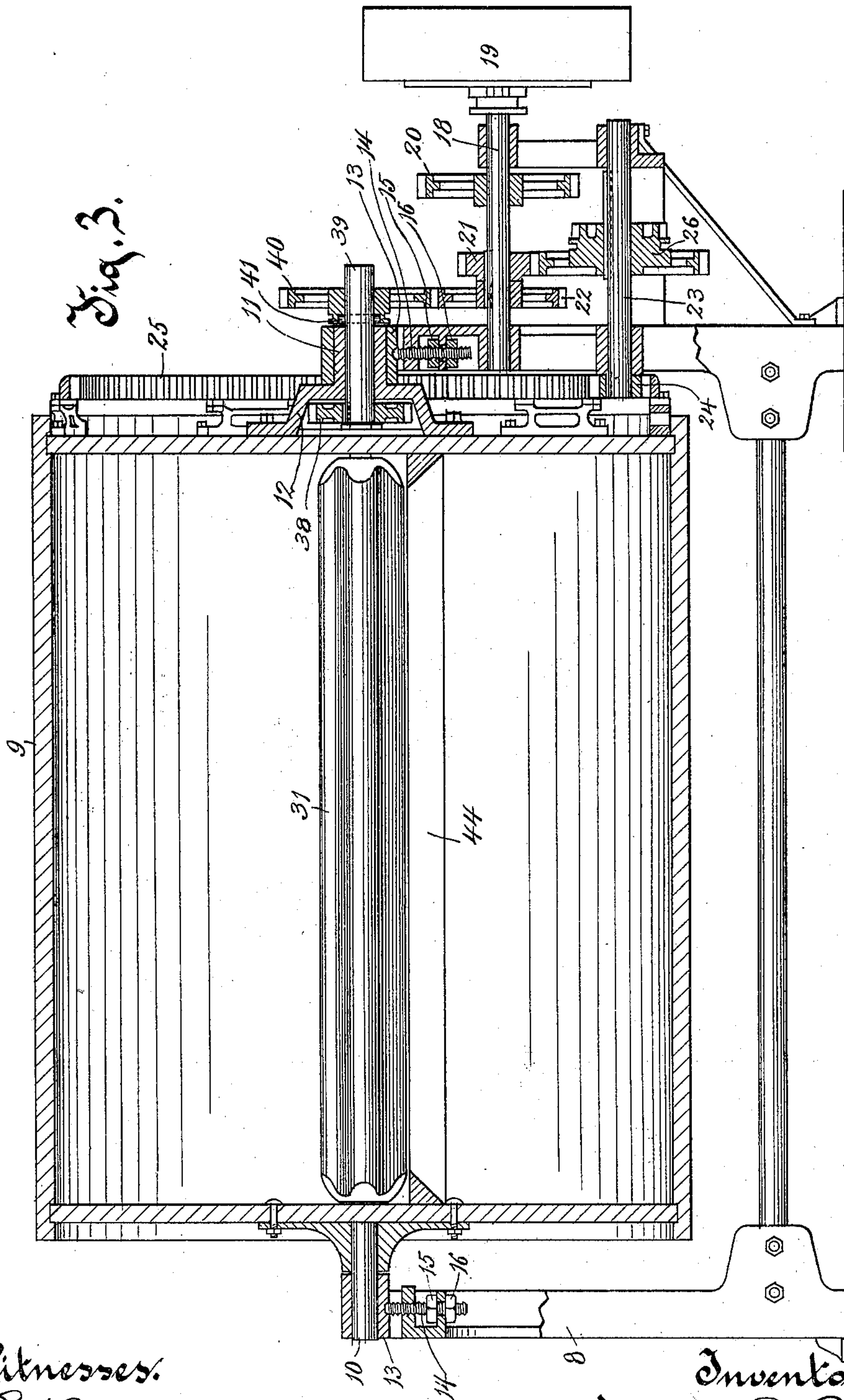
Patented July 18, 1899

W. E. PENN.
COMBINED CHURN AND BUTTER WORKER.

Application filed Nov. 21, 1898.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

WILLIAM E. PENN, OF LAKE MILLS, WISCONSIN, ASSIGNOR TO THE F. B. FARGO & COMPANY, OF SAME PLACE.

COMBINED CHURN AND BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 628,988, dated July 18, 1899.

Application filed November 21, 1898. Serial No. 697,011. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. PENN, 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.

This invention relates to improvements in the combined churn and butter-worker for which Letters Patent No. 600,168 were issued to myself and Charles S. Brown on March 8, 1898. The present invention is directed to simplifying the construction, whereby expense in building is lessened, friction is obviated, considerable wear of parts is eliminated, and a saving of power is accomplished that can be utilized to obtain results on material; to supplying devices whereby better adaptation of the structure to its work is secured, resulting in capability of easy adjustment, of ready and sure alinement, of strength and endurance of parts without liability to get out of condition, and of better results on the material operated on.

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

In the drawings, Figure 1 is an elevation of the front end of the machine. Fig. 2 is a longitudinal central section of the drum and related mechanism. Fig. 3 is a vertical longitudinal section of the drum and related mechanism. Fig. 4 is a front view of a fragment of the head of the drum and related parts, showing details of construction. Fig. 5 shows the details of construction of a wheel-shifting lever. Fig. 6 exhibits the details of a clutch device.

In the drawings, 8 is a frame of suitable size and form for supporting the operative mechanism, which is advisably made chiefly of iron and steel.

9 is a cylindrical drum made principally of wood or analogous material, non-corrosive by the action of moisture or of acids. The drum is provided with a suitable door (not shown) for the introduction and removal of the cream, milk, and butter. The drum is supported rotatably on the frame by means of the gud-

geon 10, fixed to the rear head of the drum centrally, and the hollow gudgeon 11, having a spreading or spider-like foot 12 fixed to the front end of the drum centrally, which gudgeons respectively have their bearings in boxes 13, supported centrally, tiltably, and adjustably on the adjusting-screws 14, disposed vertically and held loosely in position by parts of the frame through which they extend and being supported vertically adjustably by the nuts 15 turning thereon and resting on the frame and being locked in place by the lock-nuts 16, also turning thereon against the frame. The boxes 13 are held loosely in place but against lateral movement by the frame immediately beneath them and guards 17 on the frame adjacent to the ends of the boxes. This construction permits of the raising or lowering of either end of the drum, thereby adapting the construction for securing proper alinement of its bearings. This is especially desirable in a machine of this character that is portable in its nature and is liable to be placed on an uneven floor or to get some unusual strain in shipment that will disarrange or twist the frame more or less, and which, by reason of the fact that these machines are frequently set up where the necessary tools for straightening or truing the frame or drum are not at hand, is a most valuable construction for securing readily and completely the proper alinement of the frame, the drum, and operative mechanism.

A driving-shaft 18, mounted in the frame, is provided with a belt-pulley 19 and has fixed thereon a larger cog-wheel 20, a smaller cog-wheel 21 at a little distance from the wheel 20, and a third cog-wheel 22. A counter-shaft 23, having its bearings in the frame, is provided at its inner end with a pinion 24, that meshes with an internal ring-gear 25, fixed on the front end of the drum 9. An integral double wheel 26, splined on the counter-shaft 23, is so disposed that its larger wheel meshes with the small wheel 21 on shaft 18, and by shifting the wheel 26 along on the counter-shaft 23 the larger wheel is put out of mesh with the wheel 21 and the smaller cog-wheel of the wheel 26 is put in mesh with the larger wheel 20 on the shaft 18. By this means the drum can be rotated rapidly for churning by putting the wheel 26 in mesh

with the wheel 20 on the driving-shaft 18 or can be rotated slowly, as is desirable when working butter, by shifting the wheel 26 into mesh with the wheel 21 on the shaft 18. For shifting the wheel 26 on the shaft 23 a bar 27, 5 slidable endwise in ways therefor on the frame, is provided with a finger 28, that projects laterally therefrom and rides in an annular groove therefor in the wheel 26. A 10 shifting-lever 29 is pivoted medially on the frame and its lower extremity enters loosely a socket therefor in the bar 27. A stud-bolt 30, fixed in the lever 29, projects through a curved elongated slot in the frame and is pro- 15 vided with a thumb-nut turning thereon against the frame, whereby the shifting-lever 29 can be locked in position.

Two sets of parallel and preferably-corrugated wood rollers 31 31, located in the drum 20 and radially distant from the axis thereof, are mounted rotatably in the heads of the drum. Each roller is provided with a journal 32 at its front and at its rear end and has its bearing in a metal plate-like box 33, secured 25 to the exterior surface of the drumhead conveniently by means of heavy wood-screws 34. These plates have laterally-projecting cylindrical parts 35, having an integral bottom or end through which the journal 32 passes 30 and in which it has its bearing and support. These cylindrical parts 35 are somewhat larger in diameter than the diameters of the journals 32, thereby forming about the journals annular chambers adapted to receive pack- 35 ing therein about the journals, and hollow nuts or screw-threaded glands 36 turn into the open ends of the cylindrical parts 35, forming stuffing-boxes for holding lubricating material therein. The cylindrical parts 35 are 40 of such extent laterally as not to extend entirely through the heads of the drum when the plates 33 rest against the outer surface of the drumhead to which they are secured. This leaves an interior portion of the wood 45 drumhead opposite the end of the cylindrical parts 35 and around the journals 32, thus by the complete wood inner surface of the drum protecting the contents thereof from contact with the metal boxes that carry the journals 50 of the rollers.

For rotating the rollers for working butter each of the rollers is provided with a cog-wheel 37, fixed on the journal at its front end, which cog-wheels on each set of rollers 55 mesh with each other, and the inner cog-wheel of each set meshes with a cog-wheel 38, fixed on an arbor 39, having its bearing rotatably in the hollow gudgeon 11, through which it extends axially. A cog-wheel 40, 60 loose on the arbor 39, meshes with the cog-wheel 22 on the driving-shaft 18 and is adapted to be clutched rotatably to the arbor 39 by shifting it thereon into engagement with the transverse and projecting pin 41, fixed in 65 the arbor, which enters a complementary recess therefor in the hub of the wheel. For shifting the wheel 40 on the arbor 39 into or

out of engagement with the pin 41 a shifting-lever 42, pivoted medially on the frame, has one extremity that rides in an annular chan- 70 nel therefor in the hub of the wheel 40. A stud-bolt 43, fixed in the lever 42, projects through a curved elongated slot in the frame and is provided with a thumb-nut turning 75 thereon against the frame, whereby the shifting-lever may be locked in position, securing the wheel 40 out of or in engagement with the pin 41.

A beveled rib 44 on the inner wall of the drum is adapted for carrying butter away 80 from the drum and onto the rollers 31.

What I claim as my invention is—

1. The combination with a horizontally-disposed rotatable drum provided with fixed gudgeons projecting centrally from the heads 85 thereof at both ends, of a frame provided with gudgeon-box sockets having substantially flat vertical end walls, boxes in the sockets supporting said gudgeons and adjustable vertically and tiltable in the sockets to- 90 ward and from the drum, the ends of the boxes abutting against the flat end walls of the sockets, and screws turning in the frame upwardly against and supporting said boxes tiltable thereon. 95

2. In a churn and butter-worker, the combination, with a rotatable cylindrical drum provided with an internal annular rack fixed on the head of the drum, of a counter-shaft provided with a pinion meshing with said 100 rack and with an integral large cog-wheel and small cog-wheel splined on the shaft, a driving-shaft provided with a small cog-wheel and a large cog-wheel fixed thereon at a distance apart, the wheels on the driving-shaft 105 being adapted respectively to mesh with the large and small integral cog-wheels on the counter-shaft severally, and means for shifting the integral wheel on the counter-shaft.

3. In a churn and butter-worker, the combination with a rotatable cylindrical drum provided with an annular rack fixed on the head of the drum, of a counter-shaft provided with a pinion meshing with said rack and with an integral large cog-wheel and 115 small cog-wheel splined on the shaft, a driving-shaft provided with a small cog-wheel and a large cog-wheel fixed thereon at a distance apart the wheels on the driving-shaft being adapted respectively to mesh with the 120 large and small integral cog-wheels on the counter-shaft severally, a third cog-wheel on the driving-shaft, an arbor mounted in and concentric with a gudgeon on the drum provided with a wheel meshing with roller- 125 wheels, a cog-wheel loose on the arbor, and means for clutching this last-mentioned cog-wheel to its arbor.

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

WILLIAM E. PENN.

Witnesses:

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G. E. GREENWOOD.