

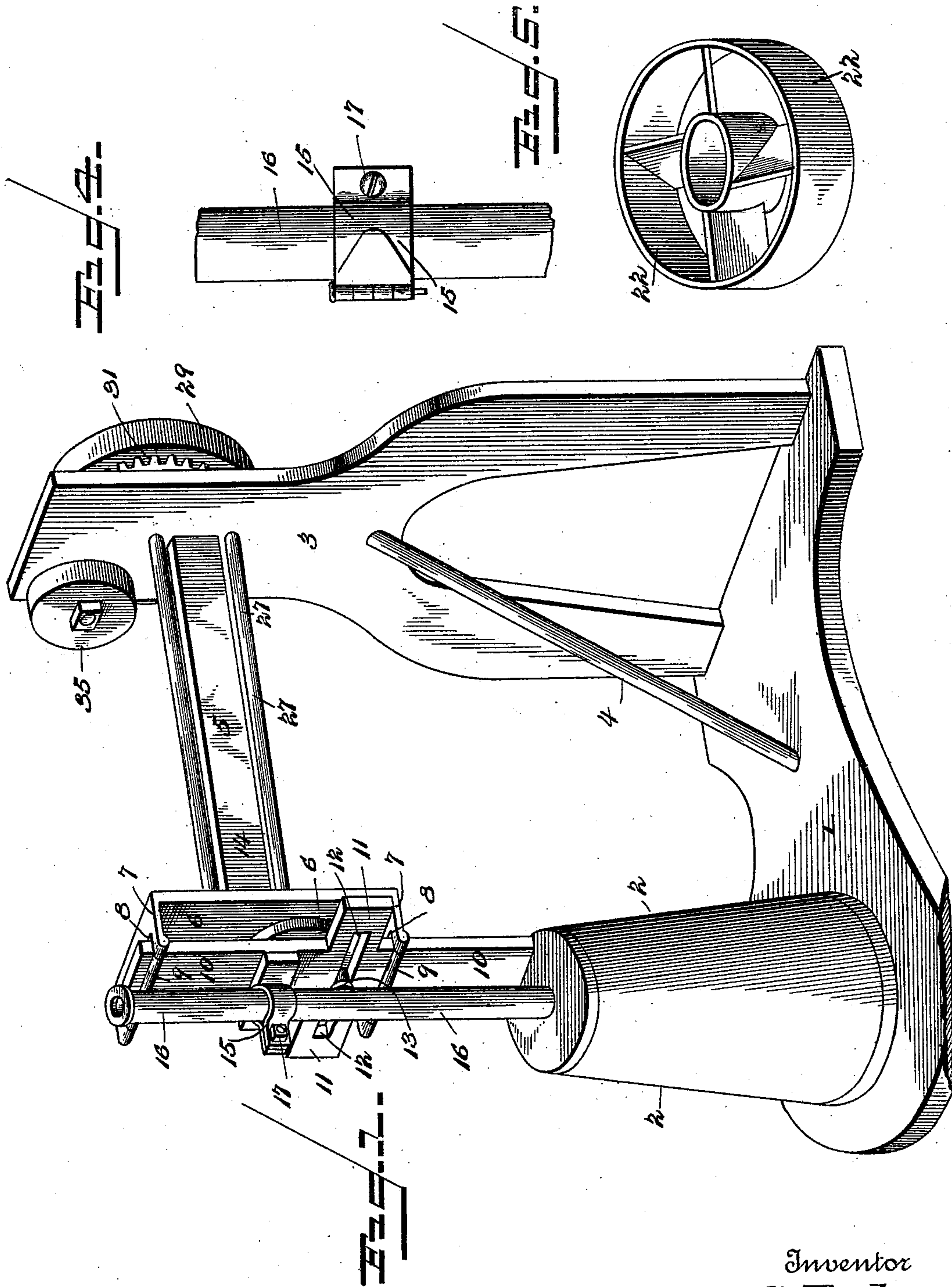
(No Model.)

2 Sheets—Sheet 1.

O. C. BYLER.  
CHURN.

No. 517,431.

Patented Apr. 3, 1894.



Witnesses

*E. H. Stewart*  
*J. W. Piley*

Inventor  
*Oliver C. Byler,*

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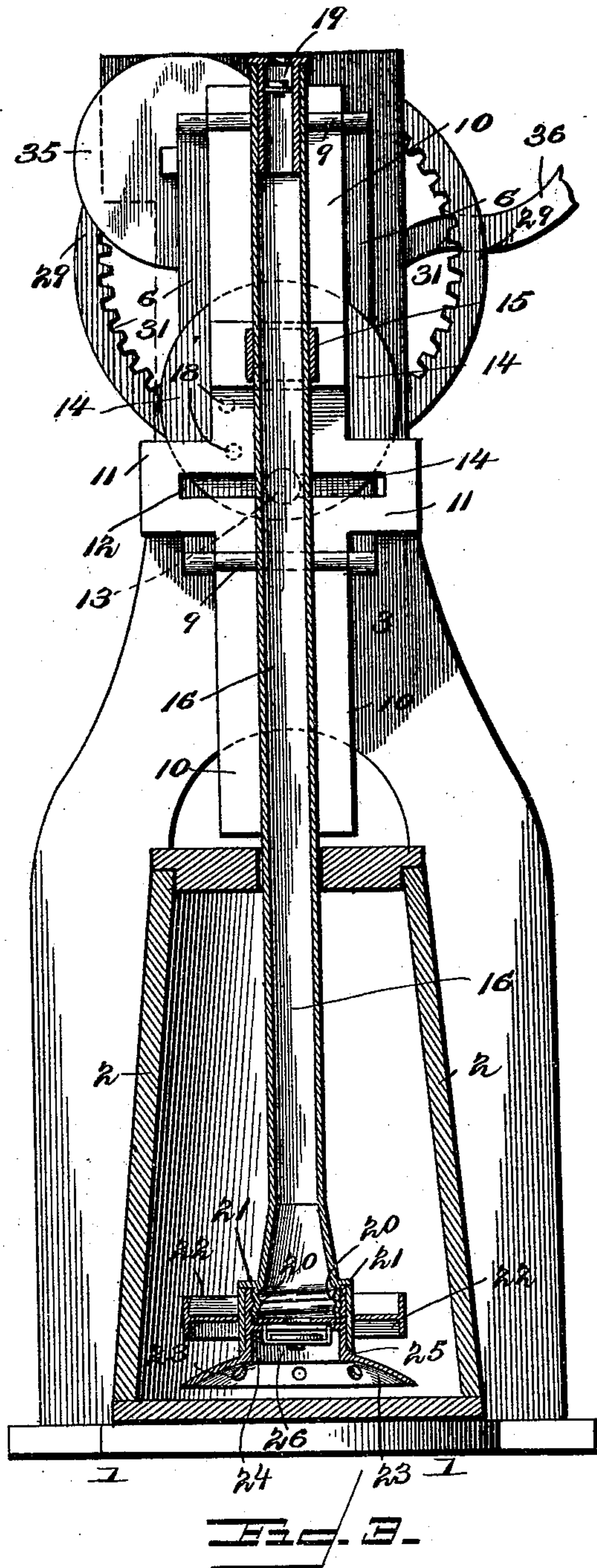
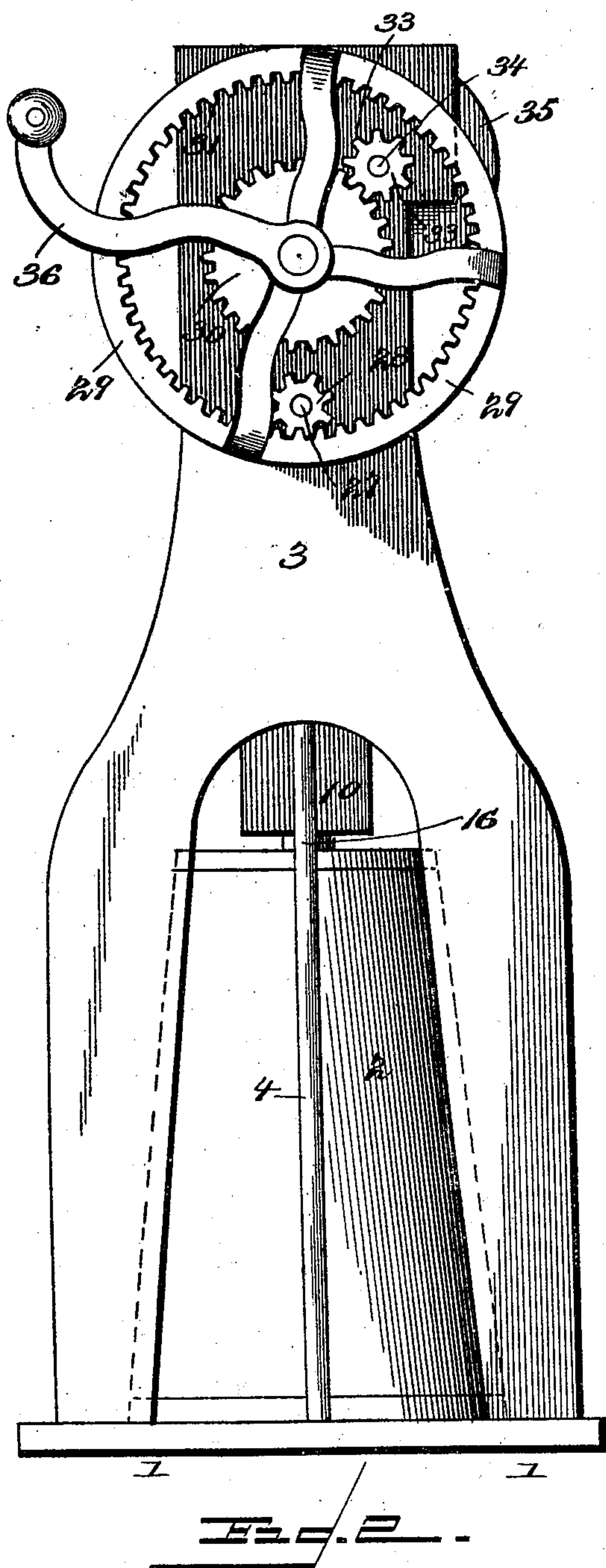
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*Oliver C. Byler*

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# UNITED STATES PATENT OFFICE.

OLIVER C. BYLER, OF HOLDEN, MISSOURI.

## CHURN.

SPECIFICATION forming part of Letters Patent No. 517,431, dated April 3, 1894.

Application filed April 27, 1893. Serial No. 472,039. (No model.)

*To all whom it may concern:*

Be it known that I, OLIVER C. BYLER, a citizen of the United States, residing at Holden, in the county of Johnson and State of Missouri, have invented a new and useful Improvement in Churns, of which the following is a specification.

The invention relates to improvements in churns.

The object of the present invention is to improve the construction of churns, and to provide a simple and efficient one, which will enable butter to be rapidly produced.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended.

In the drawings—Figure 1 is a perspective view of a churn embodying the invention. Fig. 2 is an end elevation. Fig. 3 is a vertical transverse sectional view. Fig. 4 is a detail view of the dasher-rod clamp. Fig. 5 is a detail perspective view of the revolving dasher.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a base supporting a churn body 2 at one end and having rising from its other end a standard 3, having its lower portion forked and supported by an inclined brace 4, and extending from the upper portion of the standard is a flat horizontal arm 5 arranged edgewise. The arm 5 has secured to its outer end a broad vertically disposed guide 6, which is provided at its ends with horizontal flanges 7, having recesses 8 at their outer edges. The recesses are closed at the edges of the flanges by anti-friction rollers 9, and receive a broad flat vertically reciprocating slide 10, which is provided with an intermediate slotted enlargement 11. The slot 12 of the enlargement 11 is horizontally disposed and receives a wrist-pin 13 of a crank disk 14, the wrist-pin being provided with an anti-friction sleeve or roller. The crank-disk vertically reciprocates the slide, which is provided with a clamp 15 having a cylindrical opening and receiving a hollow dasher-rod 16. The clamp is composed of a rigid section and a hinged section; the sections have their outer ends

extended and perforated to form ears; and they are connected by a bolt 17. The dasher rod is capable of vertical adjustment to suit the quantity of cream to be churned; and the crank disk is provided with adjusting perforations 18 to enable the length of the stroke to be varied to adapt the churn to the contents of the churn body.

The dasher-rod is tubular and is provided at its upper end with a valve 19, and has its lower end exteriorly threaded at 20 and provided with an annular flange 21. At the lower end of the dasher rod are arranged a rotary dasher 22 and a concavo-convex dasher 23, which is arranged below the rotary dasher, and is provided on its upper face with a cylindrical socket 24, having its base surrounding a central opening of the concavo-convex dasher. The socket 24 is interiorly threaded to screw on the lower end of the dasher-rod, and its exterior forms a bearing for the rotary dasher, and is provided with an exterior annular shoulder 25. The interior of the socket is provided with a valve seat, on which is arranged a valve 26. The valves operate to force air through the cream on the down stroke, and open on the up-stroke to permit a fresh supply to enter the dasher-rod. The concavo-convex dasher is provided with openings, and presents a lower concaved face to the contents of the churn body. The rotary dasher consists of inner and outer rings, and inclined connecting blades, which cause the dasher to rotate in one direction on the down-stroke, owing to the pressure exerted on them in passing through the cream, and to reversely rotate on the upstroke.

The crank-disk is secured to one end of a lower horizontal shaft 27, which is arranged below the horizontal arm 5, and is journaled in bearing openings of the guides 6 and the standard 3, and carries at its other end a pinion 28. The pinion meshes with an internal gear wheel 29, which has inner and outer gears 30 and 31 of different diameters, and which is mounted on an upper horizontal shaft 32, journaled in the guide and the standard, and arranged above the horizontal arm 5. The outer gear 31 meshes with the pinion 28 and rapidly rotates the same; and the inner gear meshes with a pinion 33 of a short shaft 34, which carries a balance wheel 35. The



internal gear wheel is provided with a crank handle 36, but may be run by a belt (not shown) or any other suitable motive power.

It will be seen that the churn is simple and inexpensive in construction, that it is efficient in operation and may be readily adjusted to the contents of the churn body, and that it is capable of effecting a rapid production of butter.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

1. In a churn, the combination of a vertically reciprocating dasher-rod, a concavo-convex dasher secured to the lower end of the dasher rod and provided with perforations, and a rotary dasher arranged above the concavo-convex dasher and provided with inclined dasher blades, substantially as described.

2. In a churn, the combination of a tubular dasher-rod having a threaded lower end, a concavo-convex dasher having perforations and provided on its upper face with a cylindrical interiorly threaded socket provided on its interior with a valve seat and having an exterior shoulder and forming a bearing, a valve arranged within the socket and a ro-

tary dasher composed of inner and outer rings, the inner one being arranged on the socket, and inclined propelling blades connecting the rings, substantially as described.

3. In a churn, the combination of a standard having a horizontal arm, a vertically disposed guide arranged at the outer end of the arm, a horizontal shaft arranged below the arm and journaled in the guide and the standard, a crank disk arranged in the guide and mounted on the shaft, a pinion mounted on the shaft and arranged adjacent to the standard, a vertically reciprocating slide provided with a dasher-rod clamp and having a horizontal slot receiving the wrist-pin of the crank-disk, a short shaft, a pinion mounted on one end of the short shaft, a balance wheel arranged on the other end of the short shaft, and an internal gear-wheel mounted on the standard and having inner and outer gears receiving and meshing with the pinions and provided with a crank-handle, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

OLIVER C. BYLER.

Witnesses:

T. H. MILLER,  
L. B. CRAIG.