

W. B. FARRAR.
CHURN.

No. 455,189.

Patented June 30, 1891.

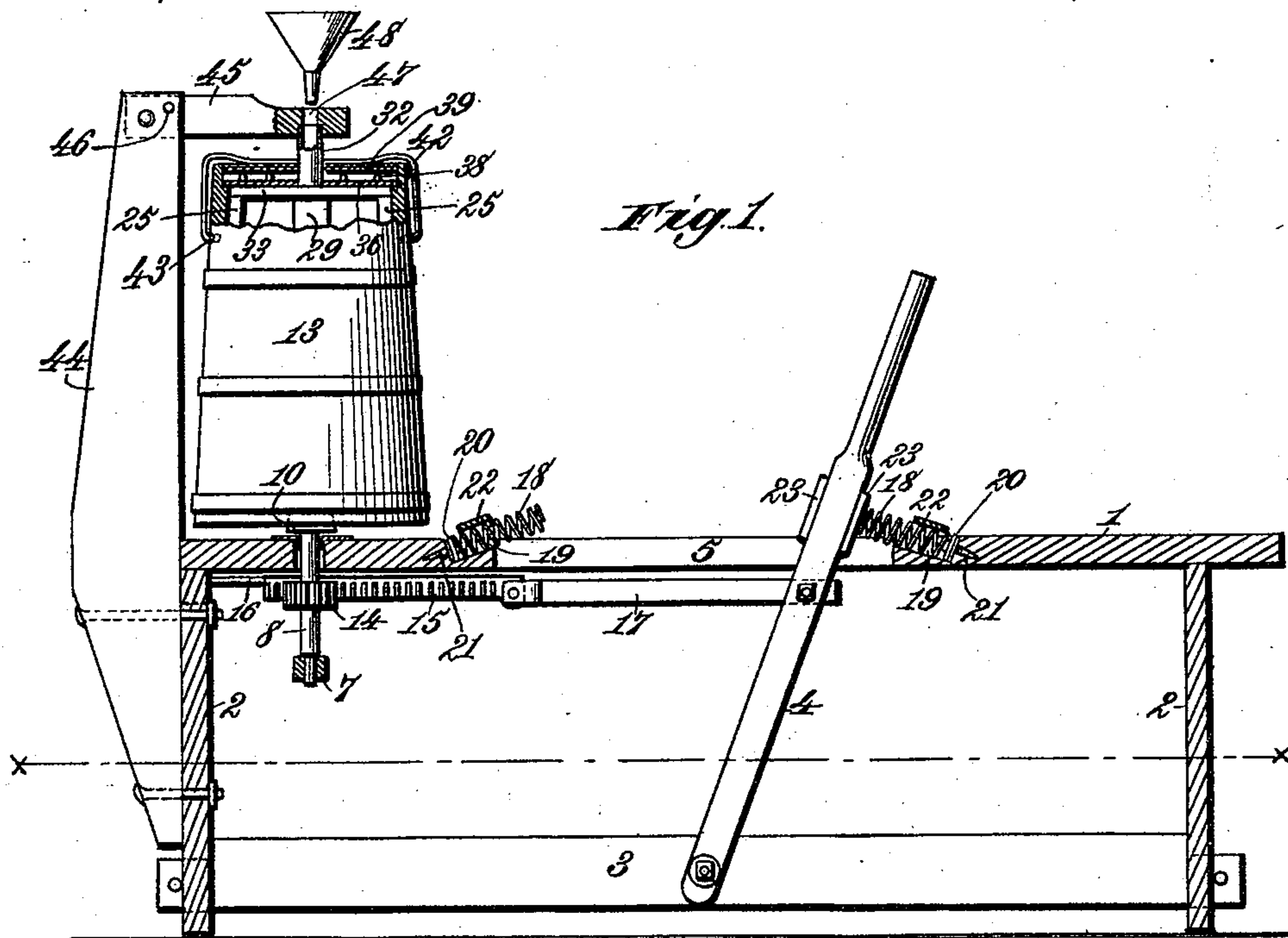


Fig. 2.

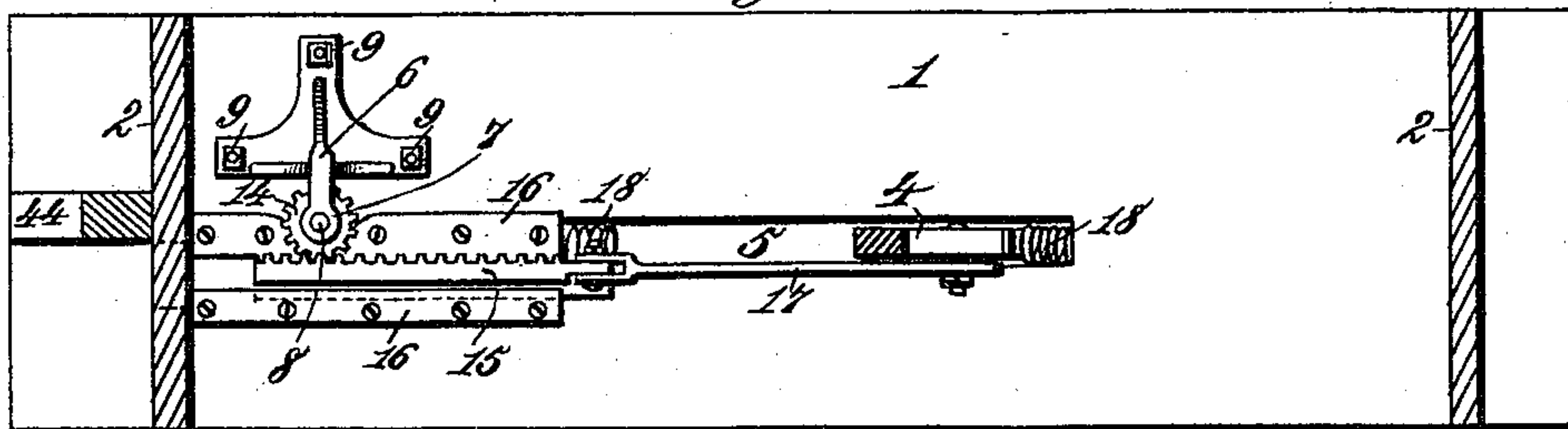


Fig. 3.

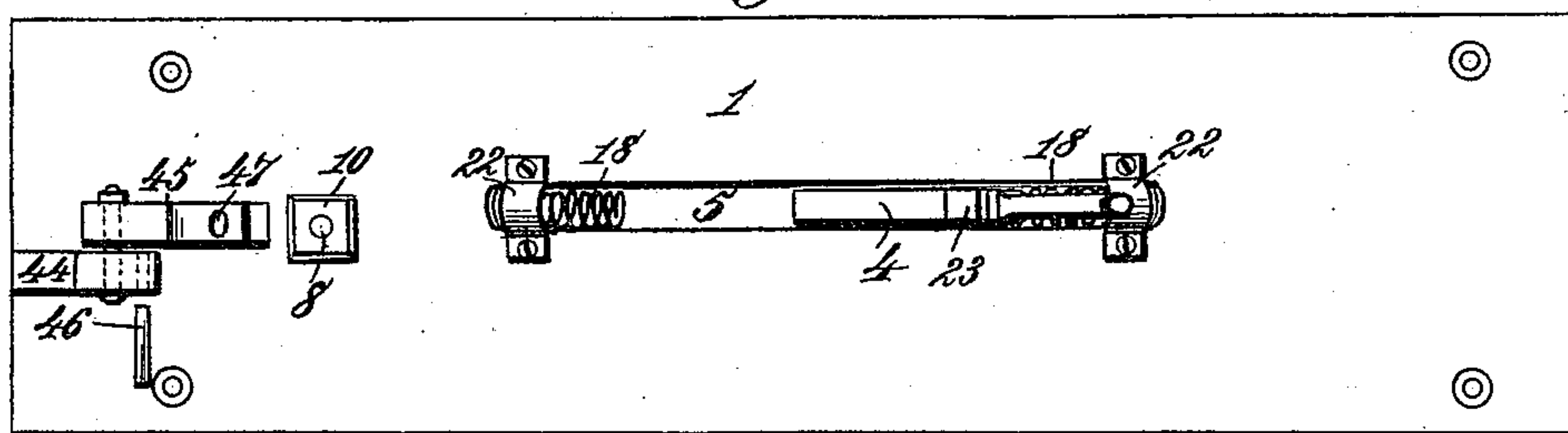
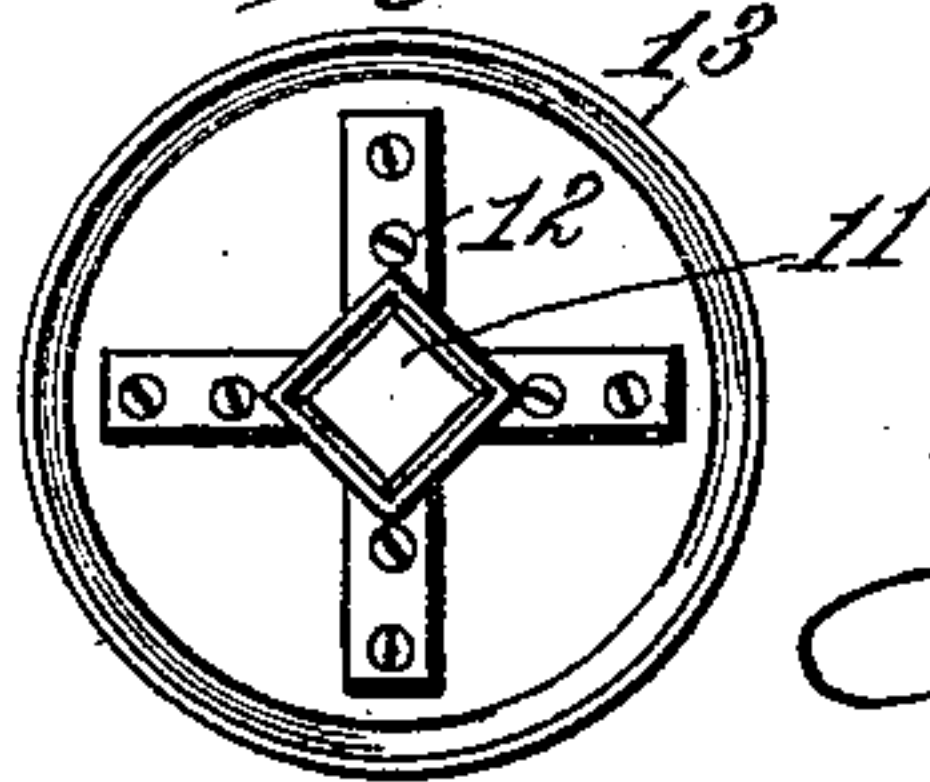


Fig. 4.



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Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

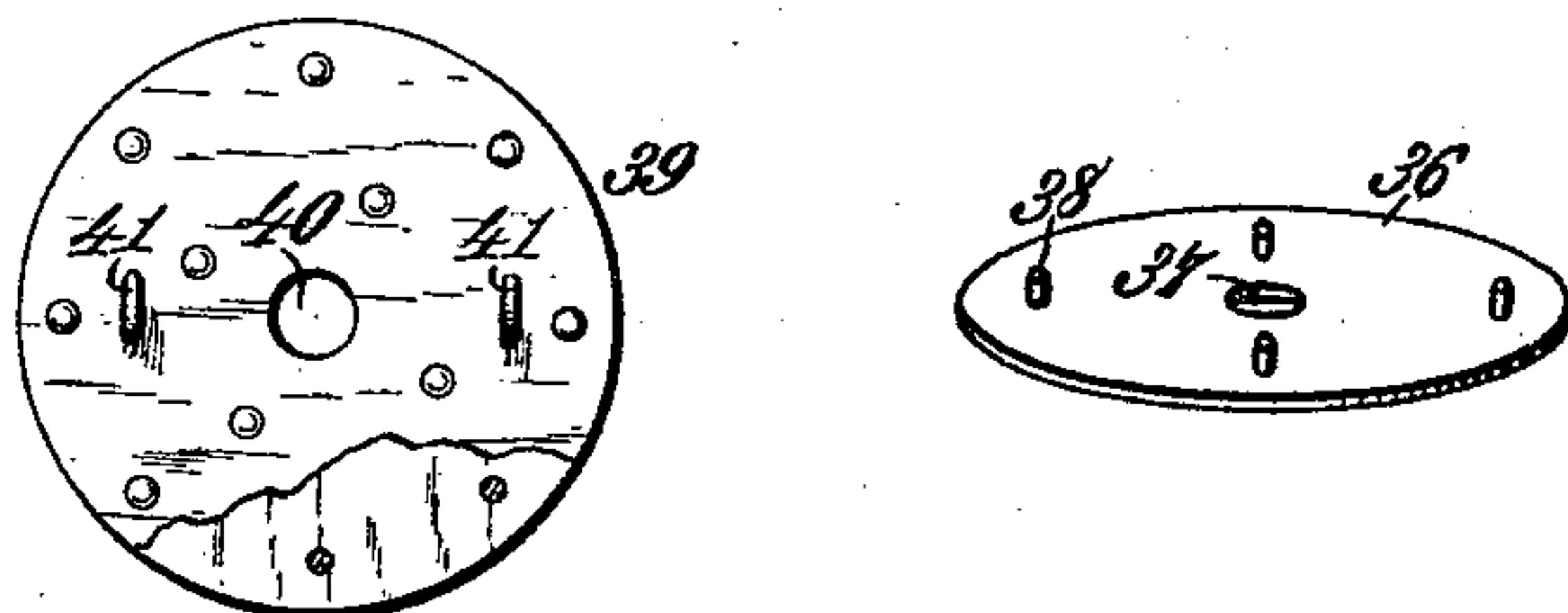


Fig. 6.

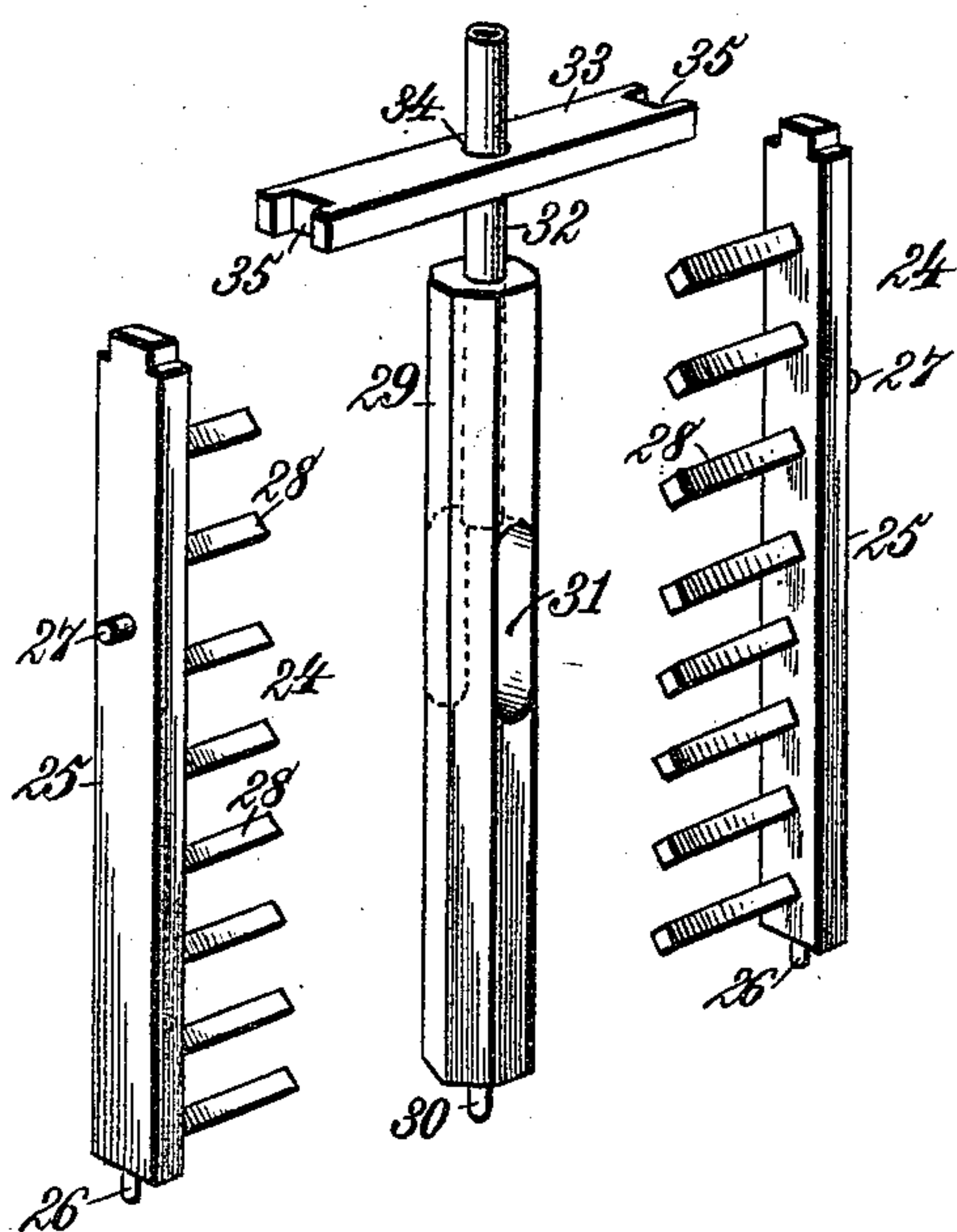


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM B. FARRAR, OF GREENSBOROUGH, NORTH CAROLINA.

CHURN.

SPECIFICATION forming part of Letters Patent No. 455,189, dated June 30, 1891.

Application filed March 16, 1891. Serial No. 385,258. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. FARRAR, a citizen of the United States, residing at Greensborough, in the county of Guilford and State of North Carolina, have invented new and useful Improvements in Churns, of which the following is a specification.

The object of my invention is to provide an improved vibratory churn that will be capable of being easily operated and not liable to get out of order; and to this end the invention consists in the construction and combination of parts in a churn, as hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a vertical longitudinal section of my improved churn. Fig. 2 is a section on the line $x x$ of Fig. 1, looking upward. Fig. 3 is a plan of the bench. Fig. 4 is a bottom plan of the churn-body. Fig. 5 is a view of the outer and inner covers. Fig. 6 is a view of the cross-bar, the breakers, and the central shaft, the parts being separated from each other; and Fig. 7 is a view of a notched stick for trying the butter.

Referring to the drawings, the numeral 1 designates a bench having legs or supports 2, connected by a longitudinal bar 3, to which is pivoted the lower end of a lever 4, that is extended up through a longitudinal slot 5, formed in said bench. To the under side of the bench, near one end, is secured a depending bracket 6, having at its lower end a socket or step bearing 7, in which is supported the lower end of a vertical shaft 8, that is extended through the bench. The bracket 6 is firmly attached to the bench 1 by screw-bolts 9 or otherwise. On the upper end of the vertical shaft 8 above the bench is rigidly secured an angular somewhat tapering block or lug 10, that is adapted to closely engage an angular tapering socket 11 in a casting 12, secured to the under side of the churn-body 13, which may be of any suitable form. On the vertical shaft 8 is secured a pinion 14, that is engaged with the teeth or cogs of a rack-bar 15, supported horizontally in suitable guides 16, secured to the under side of the bench. This rack-bar 15 is connected with the lever 4 by means of a pitman or connecting-rod 17, and the parts are so arranged that at each throw of the lever the churn is vibrated or rocked

on its vertical axis to the extent of about a turn and a half, so as to start the cream in opposite directions at each stroke of the lever and effect its agitation with the requisite degree of force and suddenness. The churn-socket 11 and the block or lug 10 engaged therein, being both tapered, as above mentioned, have a tight fit that will at all times withstand the strain of the vibrations to which the churn is subjected, and yet afford a detachable connection that readily permits the removal of the churn-body for cleansing and other purposes.

In order to cushion the vibrations of the lever 4 and lessen the labor of the operator, a reacting coiled spring 18 is arranged diagonally or in a vertical inclined position at each end of the slot 5, in which said lever works. These coiled springs 18 may be supported in sockets or recesses 19 at each end of the slot 5 and be secured therein by disks or washers 20 placed between two end coils of the spring and fastened by screws 21, or otherwise, and by semicircular caps 22 placed over the attached ends of the springs and secured to the bench. On the opposite sides of the lever 4 are secured pads 23, of leather or other suitable material, that strike against the reacting springs 18 at the end of each forward and back movement of the lever, and so obviate jar or strain and lessen the labor of the operator.

Within the churn-body 13, on opposite sides, are breakers 24, which consist of vertical bars 25, having at their lower ends studs or tenons 26, that fit into recesses or sockets in the bottom of the churn and provided on their outer sides with similar studs or tenons 27, that enter recesses or sockets in the sides of the churn. These breakers are each provided with a series of horizontal arms or pins 28, that are rectangular, or approximately so, in cross-section and so arranged that their corners or edges will split the cream both ways.

In the center of the churn is a shaft 29, having at its lower end a stud or tenon 30, that enters a socket or recess in the inside of the churn-bottom. About the center of this shaft 29 is a slot 31, and above this slot the shaft 29 is bored longitudinally to receive a tube 32, which is open at both ends and projects above said shaft and beyond the churn-body,

as shown. As this tube 32 communicates at its lower end with the shaft 31 and extends at its other end beyond the churn-body, it serves to give ventilation to the churn-contents and permits warm and cold water to be added to the cream or milk at any time while churning is going on and without requiring removal of the churn-cover. After the breakers 24 and shaft 29 have been placed in position they are further secured by a cross-bar 33, having a central opening 34, which passes over the tube 32 and provided at its ends with notches 35, that engage the upper ends of the breakers 24, so that by removing said cross-bar the breakers and shaft 29 can be withdrawn whenever required. On the cross-bar 33 is supported an inner tin cover 36, having a central opening 37 to pass over the tube 32 and provided on top with lugs 38 about one-half inch in height. Above this inner cover and resting on the lugs 38 is an outer wooden cover 39, which is also provided with a central opening 40 for the passage of the tube 32, and being separated from the inner cover by a suitable space equal to the height of the lugs 38, any splash of milk is prevented from striking the said outer cover, thus obviating liability to leaks and assisting in keeping the outer top or cover clean. The outer top or cover 39 is preferably made of two pieces of wood, grain-crossed and securely riveted together, so as to prevent warping. On the top of this cover are two staples 41, to assist in lifting the cover out by a suitable prying implement when necessary. When the outer cover 39 is in place it is secured by a spring-clamp 42, preferably formed of a bail-shaped piece of wire bent to rest on the cover near its center, and its ends then turned down and forced into recesses 43 in the outer sides of the churn-body. This clamp will hold the cover 39 securely, and can readily be removed by bearing down on its top portion near the rim of the churn-body and then prying out its ends from the recesses 43 by means of a suitable tool.

At the end of the supporting-bench 1, adjacent to the churn-body, is a standard 44, to which is pivoted an arm 45, that may be secured in a horizontal position by a screw bolt or pin 46, so as to project above the churn-body. In the end of this arm 45 is a vertical perforation 47, the lower end of which, for about half the length of said hole or perforation, is reamed out to receive the upper end of the tube 32, thereby forming in said perforation a shoulder that rests on the upper end of the tube, while the remainder of said perforations, or its upper portion, has a diameter that is only equal to the internal diameter of the tube. The standard 44 and the arm 45 when turned to a horizontal position, in which it is engaged with the tubular bearing 32 and secured by the pin 46 thus serve to assist in holding the churn in position while it is being vibrated by the movements of the lever 4 and the connected rack-and-pin-

ion gearing, as before described. The perforation 47 and engaged tube 32, which communicates with the slot 31 of the shaft 29 also serve as a ventilating-passage for the churn, and will permit the insertion of a funnel 48 for the passage of fluid into the churn or the introduction of a cylindrical stick or tryer 49, having notches 50 in its lower portion, whereby to ascertain when the butter has come without requiring removal of the churn-covers. By withdrawing the pin or bolt 46 the arm 45 can be raised and readily disengaged from the tube 32 to permit the opening of the churn and removal of its contents.

In working the churn the operator takes his seat on the bench 1 and grasping the lever 4 pushes and pulls it against the reacting-springs 18, thereby vibrating the churn through the rack-and-pinion gearing until in a short while the operation of making butter will be completed.

What I claim as my invention is—

1. The combination of a bench having a longitudinal slot, a vibratory churn supported on said bench, a bracket secured to the under side of the bench, a vertical shaft stepped in said bracket and extended through the bench and detachably engaged with the bottom of the churn-body, a pinion on said shaft, a rack engaged with said pinion and supported in guides on the under side of the bench, a lever pivoted to the lower part of the bench and extended through the slot in said bench, and a connecting-rod between the rack and lever, substantially as described.

2. The combination of a bench having a longitudinal slot, a vibratory churn-body supported on said bench, a rack-and-pinion gearing for vibrating the churn-body, a lever extended through the slot in the bench and connected with the rack, and reacting springs supported at the opposite ends of the slot in position to be struck by the lever at the end of each stroke, substantially as described.

3. The combination of a bench having a longitudinal slot, a vibratory churn-body supported on said bench, a rack-and-pinion gearing for vibrating the churn-body, a lever extended through the slot in the bench and connected with the rack, pads or cushions on the opposite sides of the lever, and reacting coiled springs supported at the opposite ends of the slot in position to be struck by said pads and react on the lever at the end of each stroke, substantially as described.

4. The combination of the bench 1, the bracket 6, having step-bearing 7, the vertical shaft 8, having a lug 10 on its upper end, the vibratory churn-body 13, having on its lower end a socket 11 to receive the lug 10, the pinion 14 on the shaft 8, the rack 15, supported in horizontal guides 16 on the under side of the bench, the lever 4, and the connecting-rod 17, substantially as described.

5. The combination of the bench 1, having a longitudinal slot 5, the vibratory churn-body 13, the rack-and-pinion gearing, the lever 4,

connected with said gearing, the reacting coiled springs 18, and the washers 20 and caps 22, that secure said springs at opposite ends of the slot 5, substantially as described.

5 6. The combination, with a vibratory churn-body, of breakers 24, secured to opposite sides of the churn-body and having arms 28, the central shaft 29, secured to the churn-body and provided at or near the middle of its
10 length with a transverse slot 31, an air-tube 32, extending axially into the shaft and terminating at the transverse slot, and the cross-bar 33, engaging the air-tube and having its extremities connected with the breakers, sub-
15 stantially as described.

7. The combination, with the vibratory

churn-body 13 and the air-tube bearing 32, of the standard 44, the arm 45, pivoted to the standard to swing in a vertical plane for engaging and disengaging the tube-bearing and 20 provided with a perforation 47, and the detachable transverse bolt 46 for rigidly securing the pivoted arm in a horizontal position, substantially as described.

In testimony whereof I have hereunto set 25 my hand in presence of two subscribing witnesses.

WILLIAM B. FARRAR.

Witnesses:

R. W. MURRAY,
A. H. GALLAWAY.