4 Sheets—Sheet 1

H. R. HEIGHT.

Churn.

No. 207,737. Patented Sept. 3, 1878.

Fig. 1.

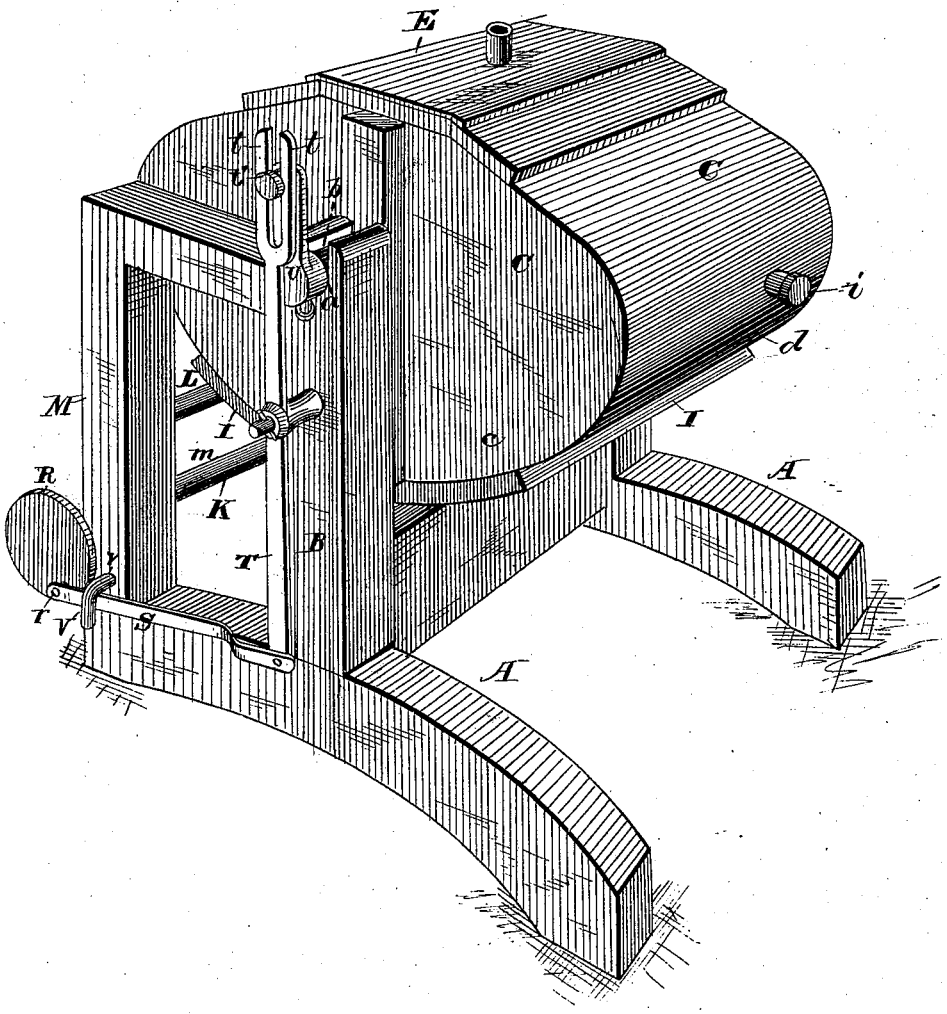

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Fig. 2.

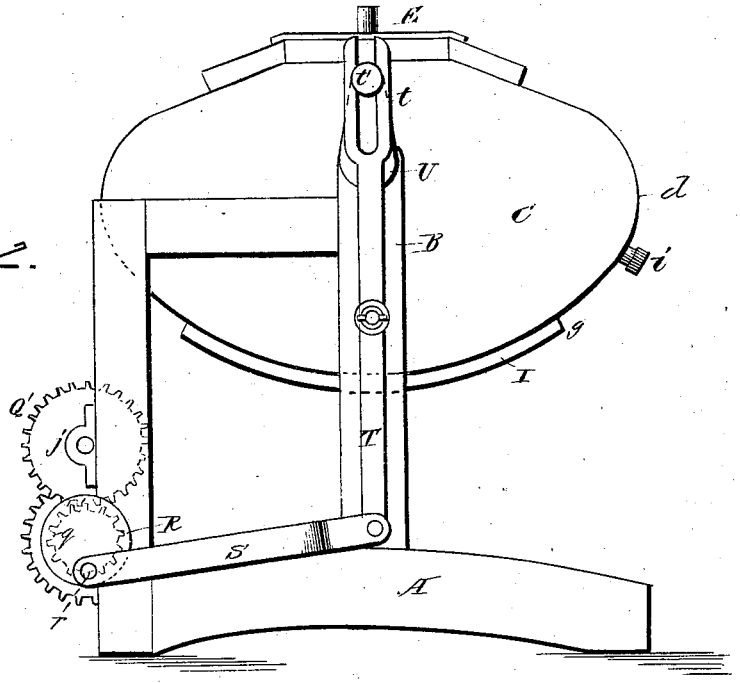
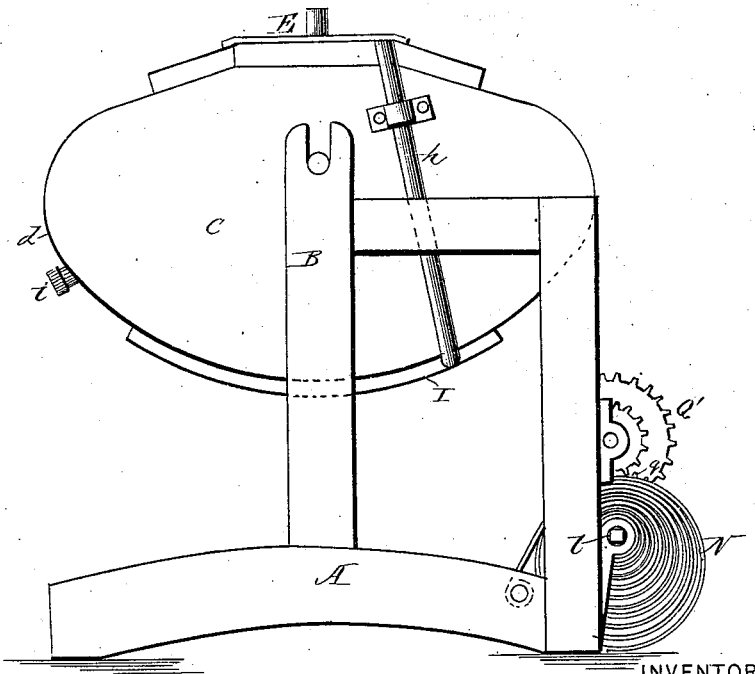


Fig. 3.



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4 Sheets—Sheet 3

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Fig. 4.

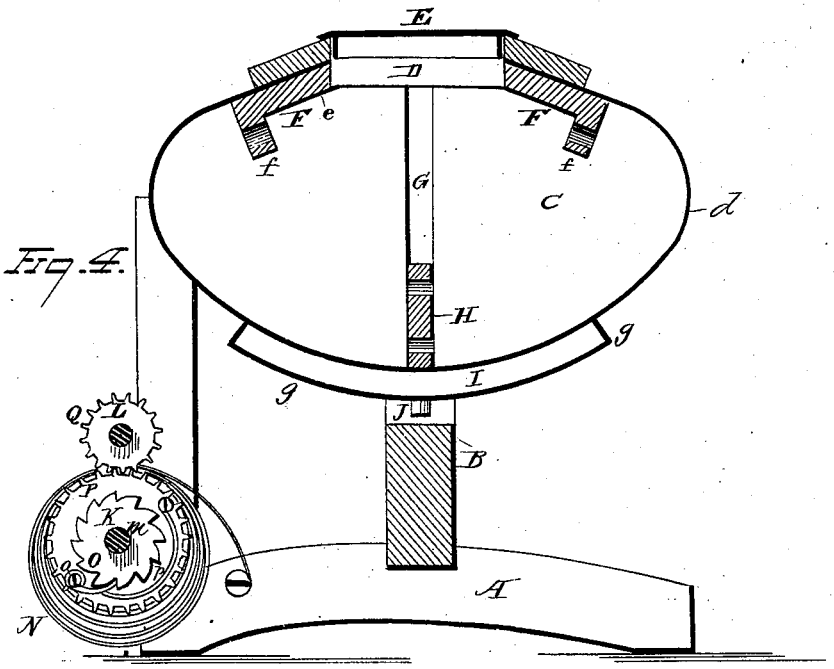
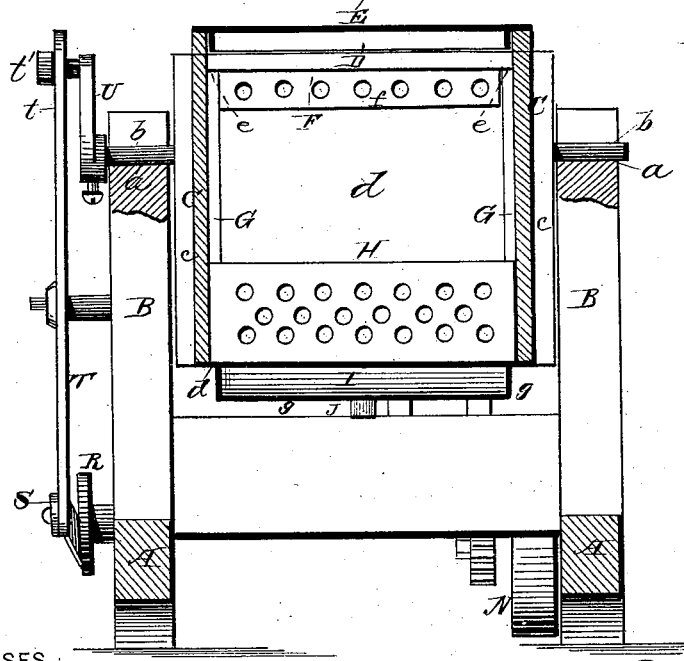


Fig. 5.



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4 Sheets—Sheet 4

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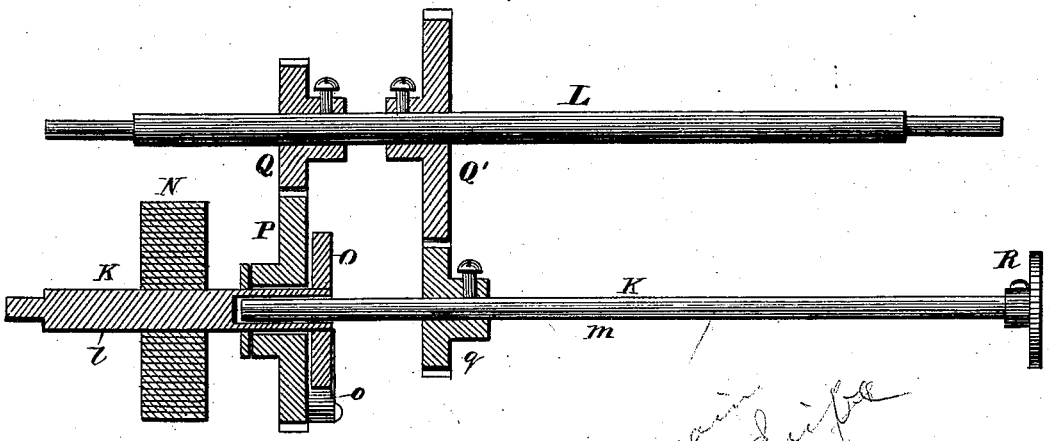
No. 207,737. Patented Sept. 3, 1878.

Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRY R. HEIGHT, OF LEBANON, TENNESSEE.

IMPROVEMENT IN CHURNS.

Specification forming part of Letters Patent No. **207,737**, dated September 3, 1878; application filed. July 9, 1878.

To all whom it may concern:

Be it known that I, HARRY R. HEIGHT, of Lebanon, in the county of Nelson and State of Tennessee, have invented certain new and useful Improvements in Churns; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in churns, the object being to provide a churn of such construction that the body of the churn may be oscillated by a spring or other motor, and thus enable the operation of churning to be carried on without the constant attendance of an operator; and to this end my invention consists in certain details of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view, in perspective, of my improved churn. Fig. 2 is a side elevation of the same. Fig. 3 shows the opposite side of the churn. Fig. 4 is a longitudinal vertical section of the churn-body. Fig. 5 is a transverse vertical section of the same. Fig. 6 represents a longitudinal vertical section taken through the two shafts, their gear-wheels, and clutch mechanism.

A represent the frame sills or supports, having uprights or posts B attached thereto, which latter are provided at their upper ends with open slotted bearings *a* for the reception of the journals *b*, secured to the sides of the churn-body C at a point above its center. Churn-body C is of nearly elliptical form, and may be made of wooden sides *c* and sheet-metal periphery *d*, as illustrated in the drawings, or the body may be entirely composed of either sheet metal or of wood, as may be desired.

The upper side of body C is provided with an opening, D, through which the cream is inserted and the butter extracted, said opening being closed when the churn is in operation by a removable cover, E.

The sides *c* are provided with grooves *e*, within which are placed the removable slides F, having depending perforated flanges *f* attached thereto.

As the body of the churn is rocked to and fro and the contents thereof thrown to the opposite ends of the same, the perforated flanges *f* serve to partially check or arrest the movement of the current, and thus break the flow of cream, thereby serving a double purpose—namely, to assist in separating the constituent parts of the milk or cream, and also to prevent the cream or milk from dashing against the cover and leaking through the joints between the cover and body of the churn. By removing the cover the slides and perforated flanges may be readily removed for cleansing or other purpose.

G represents vertical grooves formed in the sides C, which serve as guides for the perforated partition H, which subdivides the interior of the churn into two compartments. As the body of the churn is oscillated the milk or cream is broken up and the oily globules separated therefrom by the perforated partition H.

When the partition needs cleansing it may be readily removed by removing the cover E and extracting the partition through the opening D.

To the under side of the body C is secured a water-chamber, I, having close sides and ends *g*. A pipe, *h*, connects with chamber I, and extends upwardly to the top of the churn-body. This pipe is used for filling the chamber with water, which operation is easily accomplished by seating the tip of a funnel into the open end of the pipe and pouring water into the funnel. To the bottom of chamber I is secured a nipple or short pipe, J, for drawing off the water from the chamber. Pipe J may be closed by a cork stopper or screw-threaded cap. If desired, a constant stream of cold water may be maintained in chamber I by maintaining a free end exit through the nipple or pipe J and supplying a stream of water to the pipe *h* through a flexible or rubber hose connected with any suitable head of water. An eduction-opening, *i*, is formed in the end of the body C, which may be closed by any suitable stopper for the purpose of drawing off the buttermilk after the completion of a churning.

Having described the construction of the churn-body, I will now describe the mechanism employed for actuating the same.

K represents the main driving-shaft, and L

a counter-shaft, both of which are supported at their ends in bearings *j* attached to an upright, M, constituting a portion of the churn-frame. The driving-shaft K is composed of two sections, *l* and *m*. Section *l* has a square arbor formed on its outer end, whereby it may be turned by a key or crank. Its opposite end is provided with a socket-bearing, into which projects the inner end of shaft-section *m*. A spring, N, has one end attached to section *l*, and its other end is secured to the churn-frame. O is a ratchet-wheel, which is keyed or otherwise rigidly secured to the shaft-section *m*. P is a cog-wheel, which is placed loosely on section *m*, and is provided with a pawl, *o*, which is kept in engagement with ratchet O by means of the spring *p*. When the spring N is being wound the cog-wheel is idle, and does not revolve with the shaft; but the spring in unwinding turns the shaft in the opposite direction, carrying with it the ratchet-wheel and cog-wheel P, which is locked thereto. On the counter-shaft L are rigidly secured the pinion Q, which meshes with the cog-wheel P on the main shaft, and a cog-wheel, Q′, which gears with a pinion, *q*, rigidly secured to section *m* of the driving-shaft.

It will thus be observed that the power of the spring imparts movement to the shaft-section *m* through the intervention of the cog-gearing, as above described.

To the outer end of shaft-section *m* is secured a crank or disk, R, provided with a wrist-pin, *r*, to which is attached one end of a connecting-rod, S, the other end being attached to the lower end of a lever, T. The upper end of lever T is bifurcated, the jaws *t* of which embrace a wrist-pin, *t′*, secured to a crank, U, which is rigidly secured to one of the journal-bearings of the churn.

V is a lock-pin, and is placed in a hole, *v*, in the frame when it is desired to stop the movement of the churn.

As the disk or crank R revolves it operates to impart a vibratory movement to the lever and oscillate the body of the churn.

I do not confine myself to the use of a spring for actuating the churn, as the same result may be accomplished by a weight. In such case one end of the cord is secured to shaft-section *l* and the opposite end passed through a sheave or over a pulley attached to the ceiling or wall above the churn. To the depending end of the cord is attached a weight. By winding the cord about the shaft on a suitable drum attached thereto the churn can be run for a length of time dependent on the space allowed for the fall of the weight.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A churn-body provided with a removable cover, E, and the sides of the churn-body provided with grooves *e* on opposite sides of the cover, in combination with the slides F, having perforated flanges *f* projecting downward at right angles therefrom, substantially as set forth.

2. The combination, with the body of a churn having a crank rigidly secured to one of its journals, of a lever constructed with a bifurcated end, which embraces a wrist-pin secured to the crank, and suitable mechanism for vibrating the lever, substantially as set forth.

3. The driving-shaft consisting of sections *l* and *m*, section *l* being provided with a spring and a ratchet keyed or otherwise rigidly secured thereto and a cog-wheel loosely journaled thereon, said cog-wheel having a pawl pivoted thereto, which engages with the ratchet-wheel, while section *m* is provided with a pinion which is driven by a cog-wheel on the counter-shaft, to which motion is communicated by gearing from section *l* of the main shaft, all combined and operating substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of June, 1878.

HARRY R. HEIGHT.

Witnesses:
J. IRBY BENNETT,
W. W. WHITSON.