No. 627,805. Patented June 27, 1899.

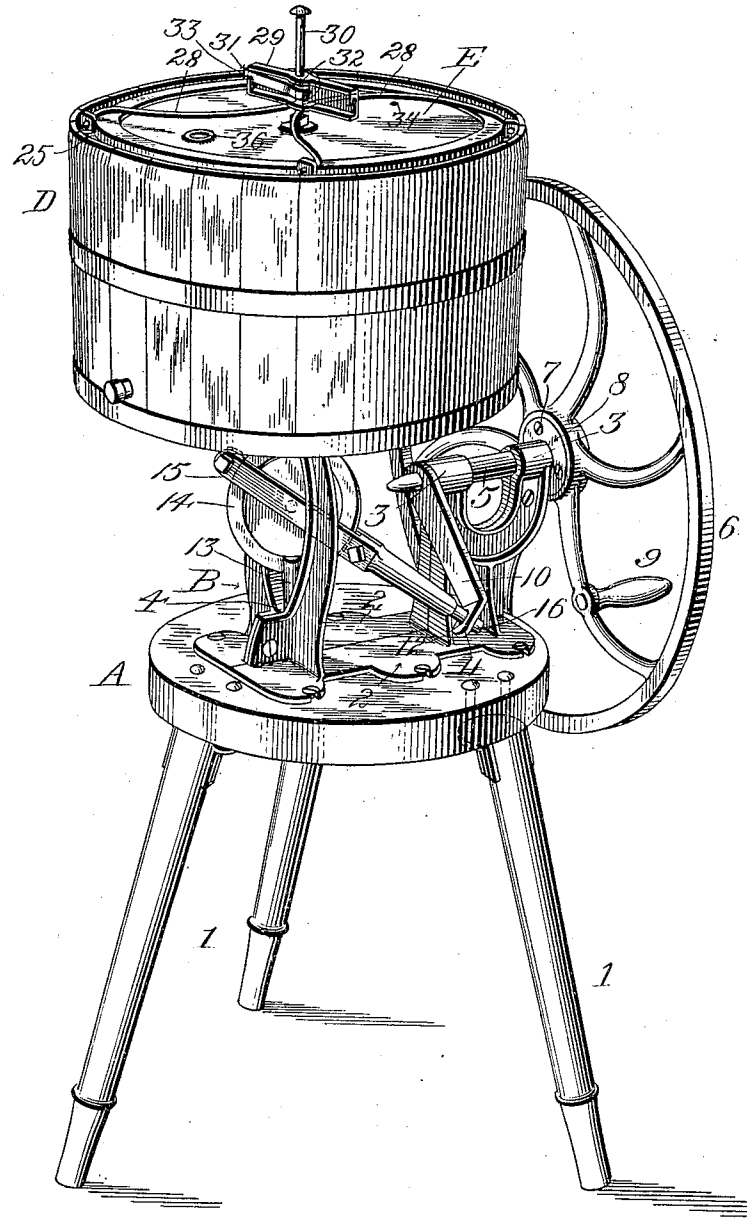
# W. H. COX.

## CHURN.

(Application filed Oct. 6, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.




Attest:
Geo. R. Hamlin
Ralph O. Warfield.

Inventor
William H. Cox
by Rhea & Dewey & Co.
Their Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 627,805. Patented June 27, 1899.

W. H. COX.

CHURN.

(Application filed Oct. 6, 1898.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

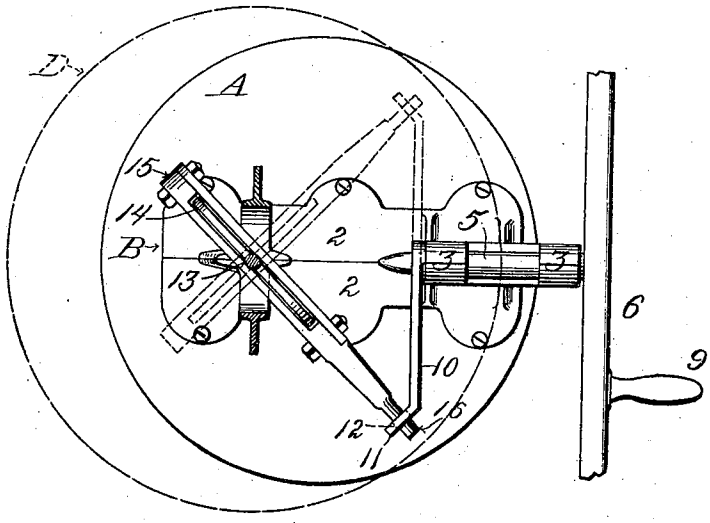
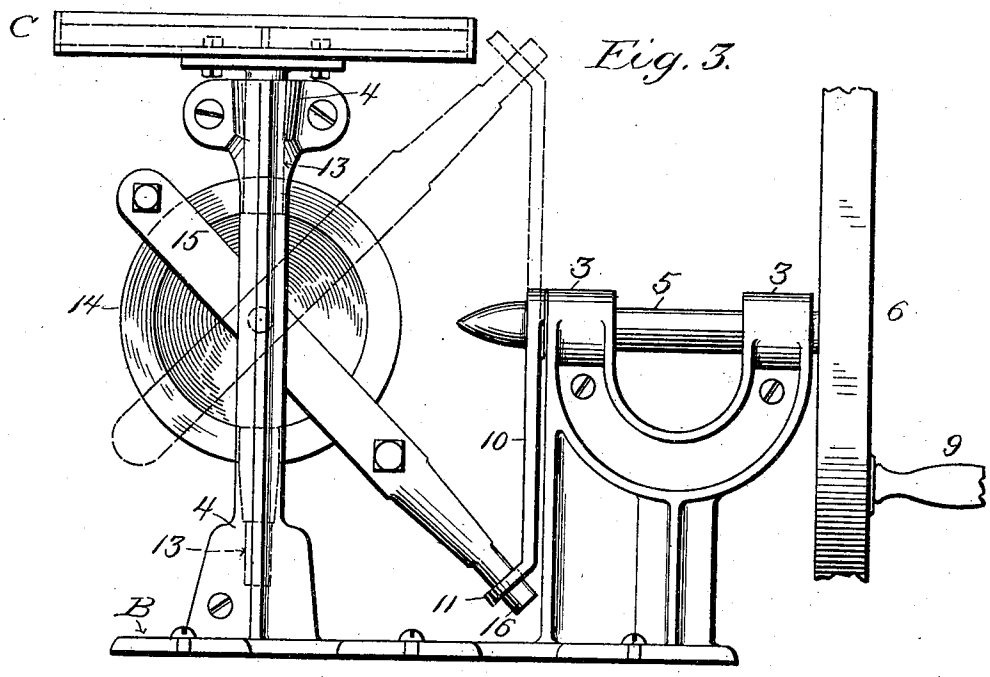



Fig. 3.




Attest:
Ralph S. Warfield.
Geo. R. Hamelin

Inventor:
William H. Cox
By Rhea G. D. Bois & Co.
his Att'ys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 627,805. Patented June 27, 1899.

W. H. COX.

CHURN.

(Application filed Oct. 6, 1898.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 4.

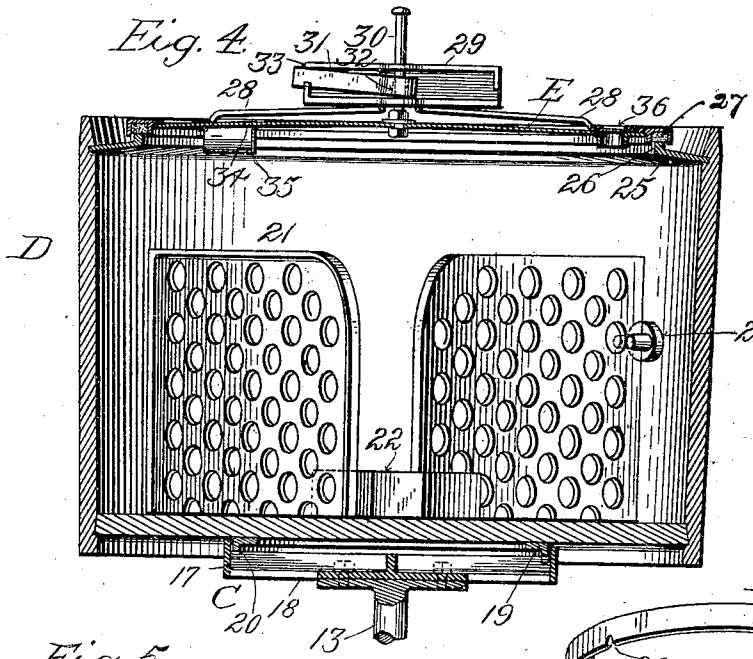



Fig. 5.

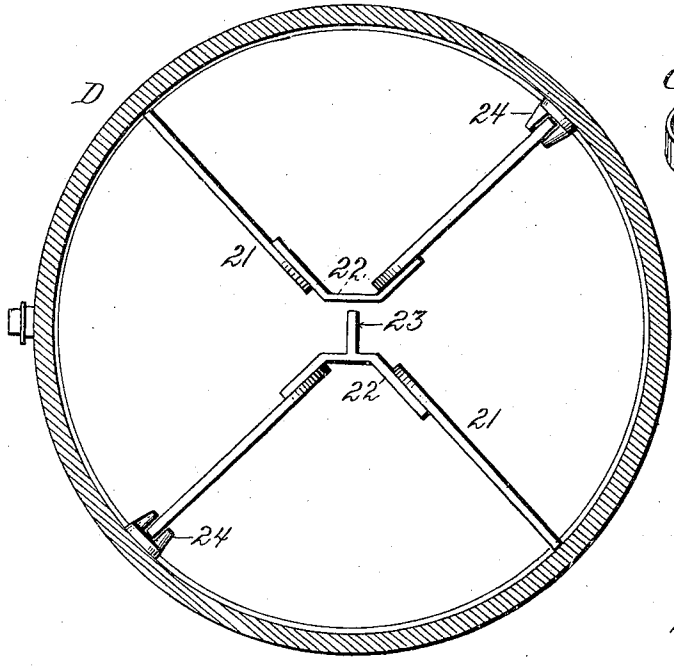
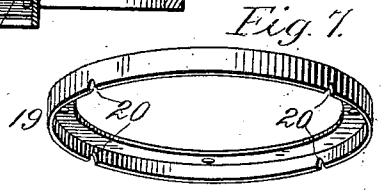



Fig. 7.



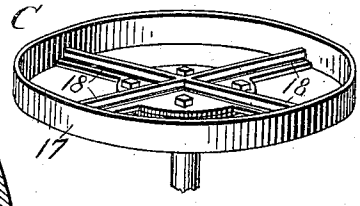
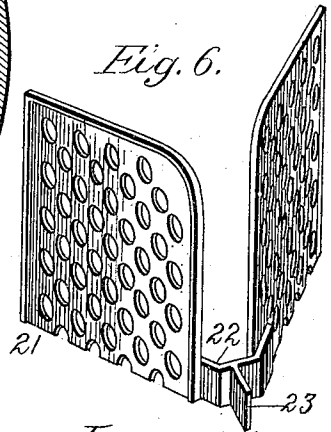




Fig. 6.




Attest:
Geo. R. Hamlin
Ralph S. Warfield.

Inventor:
William H. Cox
by Rhea G. D. Bois & Co.
his Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

WILLIAM H. COX, OF VIRDEN, ILLINOIS.

## CHURN.

SPECIFICATION forming part of Letters Patent No. 627,805, dated June 27, 1899.

Application filed October 6, 1898. Serial No. 692,813. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. COX, a citizen of the United States, residing at Virden, in the county of Macoupin and State of Illinois, have invented certain new and useful Improvements in Churns, of which the following is a specification.

My invention relates to an improvement in churns; and it has several objects, prominent among which are the following:

First. Complete protection to the cream from dust and insects and the prevention of the escape of particles of the liquid during the churning operation, which in many churns causes incessant spattering upon the churns, floor, and the clothing of the operator.

Second. The convenience of handling the butter when formed is another object of the present invention, as it is greater than in any other churn now upon the market, provision being made for the easy removal of the dasher and, in fact, all the interior mechanism of the churn, so that the butter can be worked with a ladle while still in the churn-body after the buttermilk and water shall have been decanted.

The third object is to provide a mechanical movement which in connection with a stationary dasher will be most effectual in creating the necessary friction and commotion to the cream in the churning process.

Fourth. I have in view the object of cleanliness and accomplish this by making the churn-body readily detachable and the dasher removable, so that the vessel may be hung up to dry, and thus be kept perfectly sweet and pure.

Still another object is to provide mechanism which will operate with perfect ease and will be free from noise and of such construction that it will last indefinitely.

Still further objects, and by no means the least important, are the rapidity with which the churning process can be completed in consequence of the peculiar motion derived from the mechanism employed, the great simplicity and fewness of parts and the ease with which access is had to the interior, and the absence of the necessity of opening the churn until it is certain that the butter has formed.

With the foregoing objects in view my invention consists in certain novel features and combinations of parts, which will be more fully described hereinafter and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective. Fig. 2 is a horizontal section. Fig. 3 is a view of the operating mechanism in side elevation and enlarged. Fig. 4 is a vertical sectional view of the churn-body. Fig. 5 is a horizontal section. Fig. 6 is a detached view of one of the dashers, and Fig. 7 is a view showing seat C and flange 19.

A represents the stool or support upon which the churn and operating mechanism are supported. This stool or support may have removable legs 1 1 for convenience in shipping. Mounted on the stool is the main casting B, which is preferably formed in two similar sections 2 2, held together by screws or bolts, or both, and fastened securely to the body of the stool or support. The casting is so constructed that it affords two sets of bearings—namely, the horizontal bearing 3 3 and the vertical bearing 4 4—these bearings being formed equally in the two sections of the casting.

The main drive-shaft 5 is journaled in the horizontal bearings 3 3, and on the outer end of this shaft the fly-wheel 6 is removably secured by bolts or other means 7 7 to a head 8 on the shaft. On this fly-wheel the handle 9 is placed. Of course in lieu of the fly-wheel an ordinary crank can be employed; but the fly-wheel is preferred, because it has the function of all fly-wheels, which is to offer facility and ease in operation and to balance the movement of the drive-shaft. Crank 10 is secured to the inner end of the main drive-shaft 5, its outer end 11 having a hole 12 formed therein.

In the vertical bearings 4 4 an upright oscillatory shaft 13 is journaled, this shaft being extended between its ends in the form of a disk 14. A lever 15, made in sections or split axially to straddle this discal section of the oscillatory shaft, is pivoted centrally on the disk, so that it oscillates upon the disk as a guide. The outer end 16 of this lever enters and plays freely in the hole 12 in the outer end of the crank 10, which end is set at an an-

gle to accommodate this shaft and also retain a position at approximately right angles thereto.

The foregoing constitutes a mechanical movement which might be applied to any apparatus in which it is desired to transform a rotary into an oscillatory motion, and it will be seen that each revolution of the main drive-shaft 5 has the effect of swinging the lever in an orbital path around the two axes at right angles to each, one of which is the axis of the oscillatory shaft 13 and the other the pivot of the lever upon said shaft. This motion of the lever communicates lateral oscillatory movement to the shaft 13. When this mechanical movement is applied to the operation of a churn, as in the present instance, it is provided with a seat C, secured at its upper end. This seat consists, preferably, of a rim 17 and spokes 18 18.

D represents the churn body or vessel, which in operation is placed on the seat just described. As a means for imparting the motion of the seat to the churn body or vessel the latter has the ring or annular flange 19 secured to the bottom, which rests within the rim 17, and said flange 19 is provided with notches 20, which receive the upper edges of the spokes of the seat, thereby causing the churn body or vessel to turn or oscillate with the seat.

Stationary dashers are employed in the churn. There are preferably two of these dashers, as indicated at 21 21. They conveniently constitute each of a pair of perforated plates connected together at their ends in pairs by a strip of metal 22, the four lying approximately equidistant from each other, so that the churn is divided into four compartments, the stationary dashers creating all the agitation and commotion required with the cooperation of the motion of the churn-body. A lug 23, extending from one of the strips 22 in the direction of the other, forms a spacing-block to hold the dashers apart, and guides 24 24 on the sides of the churn also receive and assist in holding the dashers removably in place, the object of this construction being to leave an unbroken and unobstructed interior, the dashers being removable, so that the butter may be worked while still in the churn-body, the necessity for shifting it to a butter-worker or elsewhere being thus obviated.

Different forms of dashers may of course be used; but what I have described is in a general way the most desirable, so far as I have yet discovered from my experiments. At the upper end of the churn body or vessel an inwardly-projecting annular rim 25 is secured, and this is provided on its inner edge with an upwardly-projecting flange 26.

E is the lid or cover, it being provided with an elastic gasket 27, which rests upon and receives the flange 26, so as to form a tight joint when the cover is clamped in place. The cover is held fast by a pair of bails 28 28, pivoted to lugs on the rim 25. These bails swing over the cover toward its center when the cover is to be secured in place. A locking clamp or button located at the center of the lid or cover is employed for securing these bails over the edges of the cover. This locking clamp or button is constructed substantially as follows: It consists of a block 29, pivoted to a vertical pin 30 in the center of the lid or cover. Inside of this block is a lever 31, which has a hole 32 to receive the vertical pin and at its outer end extends into a notch or slot 33 in the outer end of the block. Sufficient space inside the block is allowed to offer play for this lever, and the construction is such that when the inner end of the lever is raised the locking button or clamp may be easily slid up or down upon the pin, so that the lever automatically locks itself by friction upon the pin at every point to which the button may be depressed and is only unlocked by the raising of the inner end of the lever. In operating the button the bails are swung over the cover and the button turned to a position so that each end is over a bail, and then the button is forcibly depressed until the bails are held as tightly as may be desired against the resistance of the elastic gasket, thus securely holding the cover. To release the cover, the button may be swung around at right angles or to a point between the bails, when the latter will rise of their own accord. Then to again lift the button, as previously described, the lever is raised to its highest point, when the button may be freely raised. A gas and air vent 34 is formed in the cover, and beneath this a shield 35 is formed to prevent the contents of the churn from splashing through the vent. This shield has an opening outward, and being radial in its location the centrifugal force displaces any cream or buttermilk entering it which might otherwise accumulate therein. Also in this cover a glass window or port-hole 36 is placed, by means of which may be determined at a glance the condition of the contents. The churn-body is provided with an outlet-opening for drawing off the buttermilk and water used in separating the butter from the buttermilk.

The operation is easily understood, and the construction is such that the crank or fly-wheel can be turned with ease, and this transmits a sudden jerking motion to the churn and creates, by the united action of the mechanical movement described and the fixed relation of the dashers in the churn, all the necessary friction and commotion in the liquid and results in a more speedy completion of the churning process. When the churning is completed, (which is known by the clearing of the glass in the top,) the lid is removed, the buttermilk turned off, and the butter settles in the four compartments formed by the dashers. Then a proper amount of cold water is put in, the lid is refastened, and the churn is operated for a brief time in

the usual manner. Upon removing the cover the butter will be found gathered in four balls, one in each compartment.

It is evident that slight changes might be resorted to in the form and arrangement of the several details described without departing from the spirit and scope of my invention, and hence I do not limit myself to the exact construction herein set forth; but,

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

1. The combination with a horizontal and vertical shaft, one shaft having a crank thereon and the other a widened and flattened center, of a lever having pivotal connection with the crank of one shaft and the flattened portion of the other, said lever operating at all times parallel with the flattened portion of the shaft whereby to have lateral bearing thereon.

2. The combination with two shafts, one having a crank thereon and the other a discal center, and bearings for the latter shaft, of a lever pivoted at the axial center of the disk and connected with the crank for transmitting motion from one to the other.

3. The combination with a pair of shafts, one having a crank and the other a discal center, and bearings for the upper and lower ends of the latter, of a lever straddling the disk and pivoted to the radial center thereof and to the crank whereby to transmit motion from one shaft to the other.

4. The combination in a churn, of a churn-body, and a pair of dashers comprising each a pair of plates set at an angle to each other, guides on the interior of the churn to receive these dashers and a spacing-block between their adjacent ends for holding them stationary and yet admitting of their removal from the churn-body.

5. The combination with a churn-body and bails connected therewith, of a removable top having a button pivoted thereon and a lock connected with said button for locking it over the bails.

6. The combination with a churn-body and bails connected therewith, of a cover having a pin extending upwardly therefrom and a button having a pivotal and sliding connection with said pin, and a clamping-lever connected with the button and the pin for automatically locking the button to the pin.

7. The combination with a churn-body having an annular, upwardly-extending flange, and bails connected to the body, of a cover provided with an elastic gasket adapted to receive the flange, said cover having an upwardly-extending pin thereon, of a button which coöperates with the gasket and bails to secure the cover upon the body with a tight joint, and a button having means for locking it in its secure position.

WILLIAM H. COX.

In presence of—
JOSEPH W. EVERTS,
GEO. H. HILL.