

J. N. NALL.  
 AUTOMATIC CHURN.  
 APPLICATION FILED FEB. 13, 1909.

960,680.

Patented June 7, 1910.

2 SHEETS—SHEET 1.

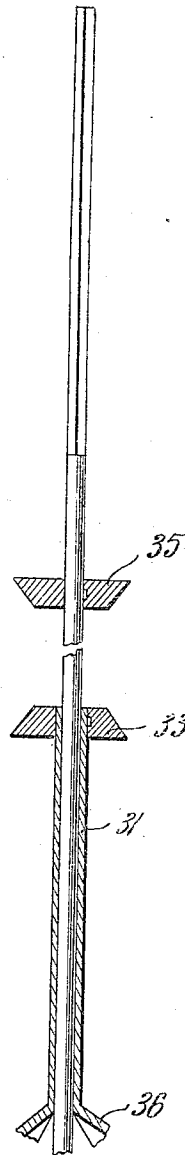
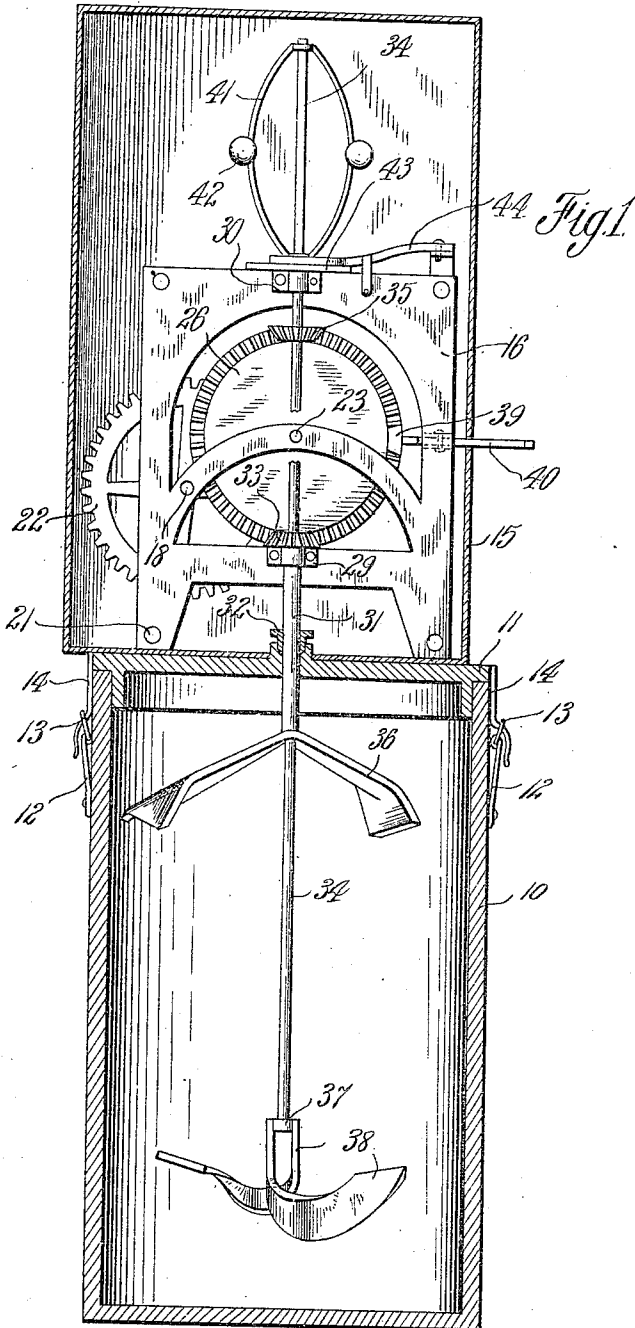


Fig. 4

Witnesses  
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 M. G. Ellis

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 By *[Signature]*  
 Attorneys

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2 SHEETS—SHEET 2.

Fig. 2

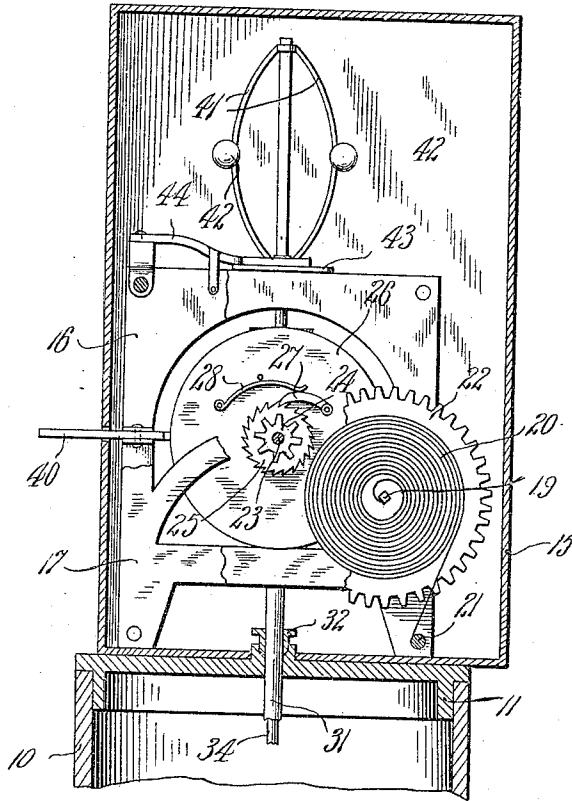


Fig. 5

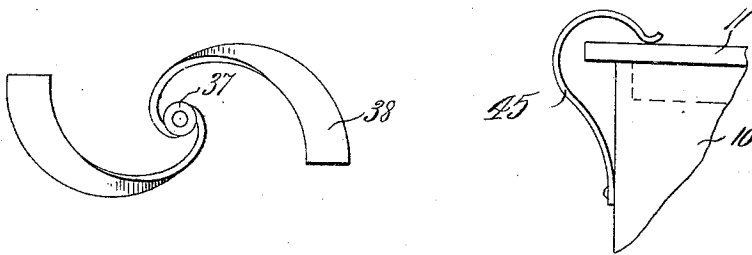


Fig. 3

Witnesses  
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# UNITED STATES PATENT OFFICE.

JAMES NATHAN NALL, OF HORNBECK, LOUISIANA.

## AUTOMATIC CHURN.

960,680.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed February 13, 1909. Serial No. 477,537.

*To all whom it may concern:*

Be it known that I, JAMES NATHAN NALL, a citizen of the United States, residing at Hornbeck, in the county of Vernon, State of Louisiana, have invented certain new and useful Improvements in Automatic 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 appertains to make and use the same.

This invention relates to a churn and has a special reference to churns operated by clock work mechanism so that they may be said to be automatic in operation.

The principal object of the invention is to improve the general structure of a mechanically operated churn.

Another object of the invention is to provide an improved form of mechanical motors, of the spring actuated type, to operate such a churn.

A still further object of the invention is to provide an improved form of churning element, said element having a novel movement in connection with the improved form.

With the above and other objects in view the invention consists in general of an improved form of spring motor mounted on a churn top, and improved churning elements held within the churn and connected to said spring motors to be actuated thereby.

The invention further consists in certain novel details of arrangement and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and Figure 1 is a side elevation of the improved form of churn motor and churn, the casing of the motor being shown in sections in order to show the operating part and the churn being broken away to show the actuating element. Fig. 2 is a similar view from the opposite side. Fig. 3 is a bottom or plan view of the churning element. Fig. 4 is an enlarged detail showing the shaft for the churning element. Fig. 5 is a view showing a modified form of closure for the churn.

The numeral 10 indicates the body of the churn which may be of any preferred type. Upon this churn body is mounted a top 11. A plurality of straps 12 are secured to the

churn body and are preferably provided at their upper ends with buckles 13. Similar straps 14 are secured to the head 11 and are provided each with a plurality of spaced perforations to engage the tongues of the 60 buckles.

On the churn top 11 is mounted a casing 15 adapted to receive certain clockwork mechanism which will now be described. This mechanism is provided with a pair of 65 frames 16 and 17 whereof 16 is what is termed the front frame and 17 the back frame. A spring axle 18 provided with a squared end 19 for the reception of a key is held to rotate between the frames 16 and 17. A spiral spring 20 is secured to this axle at one end and to a stud 21 attached to the frames at the other end. Upon the spring shaft 18 is mounted also a main gear 22 rigidly attached to the shaft and rotating 75 therewith. A secondary shaft 23 is also carried in the frames 16 and 17 and upon this secondary shaft is mounted a pinion 24 which meshes with the main gear 22. Attached to this pinion and rotating therewith 80 is a ratchet wheel 25. Mounted for free rotation on the shaft 23 is a large gear 26, preferably a bevel gear. Upon the secondary gear 26 is pivotally mounted a pawl 27 which is pressed against the ratchet wheel 85 25 by means of a spring 28. These gears and the pawl are so arranged that the device may be wound without rotating the secondary gear 26.

Upon the front frame 16 are formed bearings 29 and 30 of which 29 is what is known as the lower bearing and 30 the upper bearing. In the lower bearing 29 is mounted a hollow shaft 31 which passes through a stuffing box 32 in the churn head or top 11. 95 Upon the upper end of this shaft 31 is a gear 33, preferably a bevel gear, which meshes with the gear 26 at its lowermost point.

A shaft 34 is held for rotation in the 100 upper bearings 30 and the hollow shaft 31 and extends downward therethrough. Upon the upper end of this shaft is a gear 35, preferably a bevel gear, which meshes with the secondary gear 26. This gear is located 105 at the uppermost point of the gear 26 and the result of the position of the gears 35 and 33 is that when the gear 26 is rotated the hollow shaft will rotate in one direction and the inner shaft in the opposite direction. 110

Upon the lower end of the hollow shaft 31 is carried a blade 36. This blade is of such form as to cause, when the shaft is rotated, the material to be churned to move inward to the center and downward away from the blade and at the same time rotate in the direction in which the blade rotates. Upon the lower end of the shaft 34 is mounted a yoke 37 which has a blade 38 attached at each end thereof. These blades 38 are so arranged as to cause, when the shaft 34 is rotated, the material to be churned to flow downwardly to the bottom of the churn and up along the sides to the blades 36 and at the same time rotate in the direction in which the shaft rotates. By reason of this peculiar arrangement of the blades and their opposite rotation the material to be churned is first forced inward toward the central blade by the outside blade and then is rotated in the direction opposite to which it previously rotated and is forced downward toward the bottom of the churn. In this manner a continuous circulation and agitation of the material is kept up during the running of the churn. As a consequence of this, the churning is accomplished in a very rapid and efficient manner.

In order to operate this device it is simply necessary to fill the churn with the sour cream and place the top in position. This is then secured with the straps and the motor wound by means of an ordinary key, preferably of crank form. When the motor is thus wound it is held from unwinding by means of a stop 39 pivotally mounted on the frames and provided with a handle 40 which extends through the casing 15, a suitable slot being provided for this purpose. When it is desired to release the motor the stop is moved to position such that it will disengage from the secondary wheel 26 and the motor allowed to revolve. In order to prevent the motor revolving too rapidly and to cause the motion to be uniform there is provided on top of the shaft 34 a pair of outwardly curved spring arms 41 each equipped intermediate its ends with a weight or ball 42. Now when the motor is released as previously described, the balls 42 will fly outward if the same revolves too fast and will thus act as an inertia governor for the movement of the shaft 34 and consequently of the shaft 31. This operates to actuate the churning element in the manner before described and the churning is thus accomplished without the necessity of a person remaining by the churn while the operation is in progress. In order that the churning elements may not revolve too rapidly, there is provided on the shaft 34 a plate 43 and a brake 44 presses upon the plate sufficiently to check the motion without stopping the device.

In the form of closure shown in Fig. 5 in

place of the straps 12 and 14 there is used a plurality of spring clips 45.

There has thus been provided a simple and efficient device of the character described and for the purpose specified.

It is obvious that many minor changes may be made in the form and construction of this invention without departing from the material principles thereof. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope of the invention.

Having thus described the invention, what is claimed as new, is:—

1. In a churn, a centrally disposed downwardly propelling blade, a plurality of inwardly propelling blades located exterior of the path of the first mentioned blade, and mechanism to operate said blades.

2. In a churn, a centrally disposed downwardly propelling and rotating blade, a plurality of inwardly propelling and rotating blades located exterior of the path of the first mentioned blade, and mechanism to operate said blades.

3. In a churn, a centrally disposed downwardly propelling blade, a plurality of inwardly propelling blades located exterior of the path of the first mentioned blades, and mechanism to operate said blades and cause them to rotate in opposite directions.

4. In a churn, a centrally disposed downwardly propelling and rotating blade, a plurality of inwardly propelling and rotating blades located exterior of the path of the first mentioned blades, and mechanism to operate said blades and cause them to rotate in opposite directions.

5. In a churn, a churn body, a removable top therefor, a centrally disposed downwardly propelling blade carried on said top, a plurality of inwardly propelling blades located exterior of the path of the first mentioned blades and supported from said top, and mechanism located on the top to operate said blades.

6. In a churn, a churn body, a removable top therefor, a centrally disposed downwardly propelling and rotating blade, a plurality of inwardly propelling and rotating blades located exterior of the path of the first mentioned blades, said blades being supported from said top, and mechanism carried on the top to operate the said blades.

7. In a churn, a churn body, a removable top therefor, a centrally disposed downwardly propelling and rotating blade supported on said top, a plurality of inwardly propelling and rotating blades supported on said top and located exterior of the path of the first mentioned blades, and mechanism to operate said blades and cause them to revolve in opposite directions.

8. In a churn, a churn body, a removable top therefor, a frame on said top, a hollow shaft extending through said top supported on said frame, a second shaft extending through the hollow shaft, a yoke on the second shaft, a downwardly propelling blade supported on the hollow shaft, a plurality of inwardly propelling blades supported on said yoke exterior of the path of the first mentioned blades, and mechanism to operate said shaft.

9. In a churn, a churn body, a removable top therefor, a frame on said top, a hollow shaft extending through said top, a second shaft extending through the hollow shaft, a yoke on said second shaft, a downwardly propelling and rotating blade carried on the hollow shaft, a pair of inwardly propelling and rotating blades carried at the ends of said yoke exterior of the path of the first

mentioned blades, and mechanism to operate said shaft.

10. In a churn, a churn body, a removable top therefor, a frame on said top, a hollow shaft extending through said top, a second shaft extending through the hollow shaft, a yoke on the second shaft, a downwardly propelling and rotating blade supported on said hollow shaft, a pair of inwardly propelling and rotating blades located at the ends of said yoke exterior of the path of the first mentioned blades, and mechanism to rotate said shaft in opposite directions.

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

JAMES NATHAN NALL.

Witnesses:

W. R. OWERS,  
J. F. OWENS.