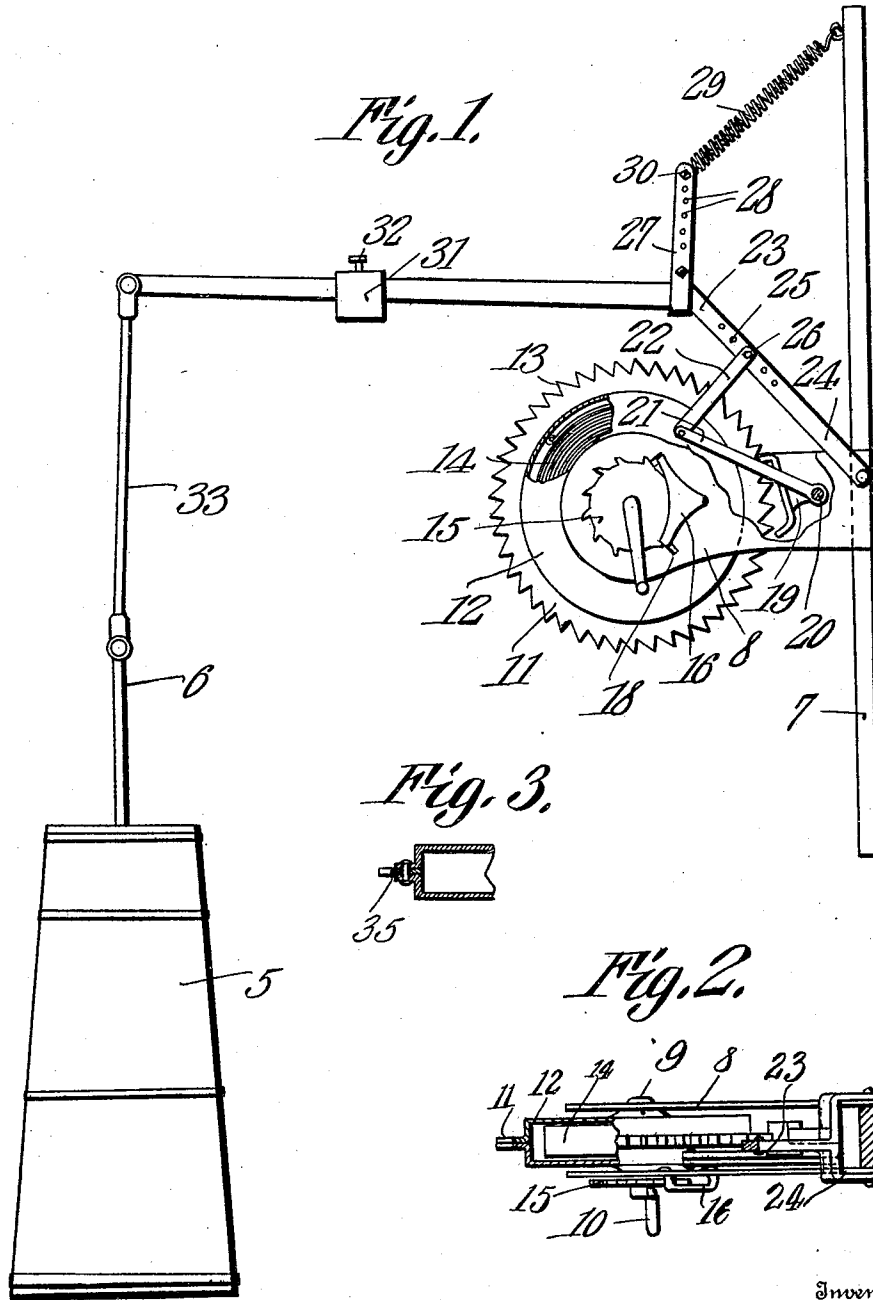


M. E. TYNES.
CHURN.

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CHURN.

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To all whom it may concern:

Be it known that I, MINOR E. TYNES, a citizen of the United States, residing at Gloster, in the county of Amite and State of Mississippi, have invented a new and useful Churn, of which the following is a specification.

It is the object of the present invention to provide an improved construction of spring motor, and the invention aims, more particularly, to provide an improved construction of spring motor, such as are employed in connection with churns.

One of the novel features of the invention resides in the provision of a spring-driven wheel which is toothed and with which co-operates an escapement having a rigid arm, which is rocked or oscillated upon movement of the escapement and which has connected to it power-transmitting means.

Another novel feature of the invention resides in providing for an adjustment of the parts, so that the churn may be either partly or substantially filled with milk.

A still further feature of the invention resides in the peculiar construction of a pawl and ratchet device employed in connection with the spring-driven wheel and the winding shaft about which the spring for driving the wheel is coiled.

In the accompanying drawings:—Figure 1 is a view in side elevation, parts being broken away, of the motor embodying the present invention, and illustrating also a churn, in connection with which the motor is employed. Fig. 2 is a view, partly in horizontal section, and partly in plan, of the motor. Fig. 3 is a detail sectional view showing a certain modified form of wheel.

In the drawings there is shown a churn 5, of the ordinary construction, and the numeral 6 designates the dasher of the churn, this dasher being also of the ordinary construction.

The motor embodying the present invention is preferably mounted upon a base-plate which is indicated by the numeral 7, and which is to be secured upon a wall or other suitable supporting structure, and, in part, the motor comprises a bearing member having spaced, parallel side plates 8, which are secured at their inner ends to the plate 7 and which project forwardly therefrom in the relation stated. In these side-plates 8 of the bearing member, adjacent their outer or for-

ward ends, there is journaled a winding shaft, which is indicated by the numeral 9, said shaft having at one end a crank 10, by means of which it may be rotated. A wheel is mounted upon the shaft 9 and is free to rotate independently of said shaft, and this wheel is made up of two disk-like sections having concave sides disposed at their peripheral edges one against the other whereby to afford a housing or casing in which the spring for driving the wheel is mounted.

The sections comprising the wheel are indicated each by the numeral 11, and their concave portions indicated by the numeral 12, and each wheel section has its peripheral edge formed with teeth 13, which teeth, of the two sections, register when the sections are in proper connected relation. The spring for driving this wheel 11 is indicated by the numeral 14, and is secured at one end to the shaft 9, is coiled about the shaft within the housing or casing afforded by the concave portions of the two wheel sections, and is secured at its other end to the wheel. A ratchet 15 is fixed upon the shaft 9.

It will be understood, from the foregoing, that, upon rotating the shaft 9 in one direction, the spring 14 will be tightly wound and will then act to rotate the wheel 11. In order to hold the shaft 9 against backward rotation, there is provided a pawl which co-operates with the ratchet 15, and this pawl is in the form of a substantially triangular plate, indicated by the numeral 16, the said plate at one corner being pivoted as at 17 to one side plate 8 of the bearing for the wheel, and the other two corners of the plate being bent inwardly toward the side plate and to extend into slots 18 formed therein and in position for coöperation with the teeth of the ratchet 15. The toothed ends of the pawl plate 16 are so spaced that when the upper one of the said ends is riding over one of the upper teeth of the ratchet 15, the other or lower toothed end of the pawl plate will be lifted into position in advance of one of the lower teeth of the ratchet, whereby slipping of the ratchet will be effectually prevented.

In connection with the wheel 11 there is employed an escapement which is indicated by the numeral 19 and is fixed upon a shaft 20, mounted to rock between the two side plates 8 of the bearing for the wheel, and there is also fixed upon this shaft 20 an arm

21, which projects forwardly at a slight upward inclination and has pivoted to its forward end the lower end of a link 22. An arm 23 is formed at one end with a yoke 24, which straddles the attaching plate 7 and also the inner end of the bearing plate 8, and is pivoted to the said attaching plate for vertical rocking movement, and this arm 23 is formed with a plurality of openings 25, through which and the upper end of the link 22 is passed a bolt 26, said bolt serving to pivotally connect the arm and link. That portion of the arm 23 in which the openings 25 are formed extends downwardly at an angle from the major portion of the arm and at or adjacent the angle or bend in the arm there is secured an upstanding arm which is indicated by the numeral 27 and which is formed with a plurality of openings 28. A spring 29 is fixedly connected at its upper end to the upper end of the attaching plate 7, and at its lower forward end is connected to a bolt or similar securing element 30, engaged interchangeably through the openings 28.

A weight 31 is slidably adjustably mounted upon the arm 23 and is held in adjustment thereon through the medium of a set screw 32, and pivoted at its upper end to the forward end of the arm 23, is a connecting rod 33 which, at its lower end, has pivotal connection with the churn-dasher 6. The weight 31 substantially counteracts the lifting force of the spring 29, and the said weight and spring are provided for the purpose of preventing too rapid motion of the arm 23 under working conditions.

It will be understood, from the foregoing description of the invention, that rotation of the wheel 11 will serve to oscillate the escapement 19, and, consequently, the shaft 20, and that such oscillation of the shaft 20 will result in vertical rocking movement of the arm 21, and, by reason of the connection of this arm with the arm 23, the latter arm will also be vertically oscillated, thereby reciprocating the churn-dasher 6 within the churn body.

By varying the location of the point of pivotal connection of the link 22 with the arm 23, the stroke of the dasher 6 may be limited; that is, as regards the location of the points between which it moves, so that the motor may be readily and quickly adapted for employment in connection with

churns of various sizes, and also in churning different quantities of milk.

It will further be understood, from the foregoing description of the invention, and from an inspection of the drawings, that the speed of oscillation of the arm 23 may be varied by adjusting the point of connection of the spring 29 with the arm 27, and adjusting the weight 31 on the arm 23, so that where a large quantity of milk is to be churned at a time, the spring and weight may be so adjusted as to tend to increase the speed of oscillation of the arm, whereupon the resistance offered by such large quantity of milk will be overcome.

Instead of forming the edges of the flanges 11 with teeth, as illustrated in Figs. 1 and 2 of the drawings, the edges of these flanges may be formed plain and an annulus may be disposed between the flanges and have its peripheral edge toothed, such annulus being indicated in Fig. 3 of the drawings by the numeral 35.

What is claimed is:—

In a motor of the class described, a base, a spring-driven power wheel, said wheel being toothed peripherally, an oscillatory shaft, an escapement fixed upon the shaft and cooperating with the toothed periphery of the wheel, an arm fixed upon the shaft for oscillation therewith, an arm mounted to oscillate in a vertical plane, said last mentioned arm being formed with a series of openings, a link pivoted to the first mentioned arm and at its upper end being formed with an opening, a bolt engaged through an opening in the link and interchangeably through the opening in the second mentioned arm, a rigid upstanding arm carried by the second mentioned arm, and formed with a series of openings, a spring connected at its upper end to the base, and at its lower end in the openings interchangeably, the said spring tending to lift said second mentioned arm, and a weight slidably adjustable upon the said second mentioned arm.

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

MINOR EUGENE TYNES.

Witnesses:

W. R. GARRETT,
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