H. ODELL.

MOTORS FOR CHURNS, &c.

No. 184,216. Patented Nov. 7, 1876.

Fig. 1.

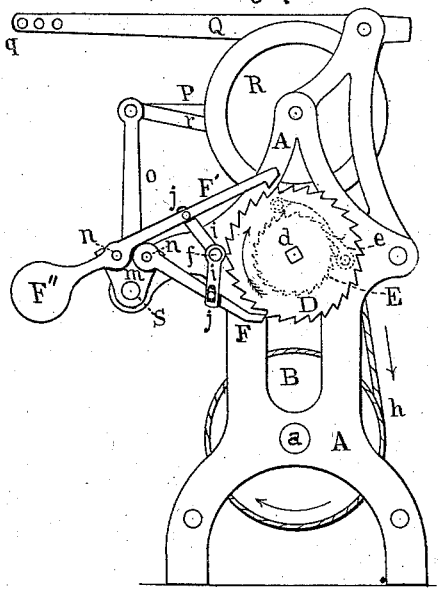


Fig. 2.

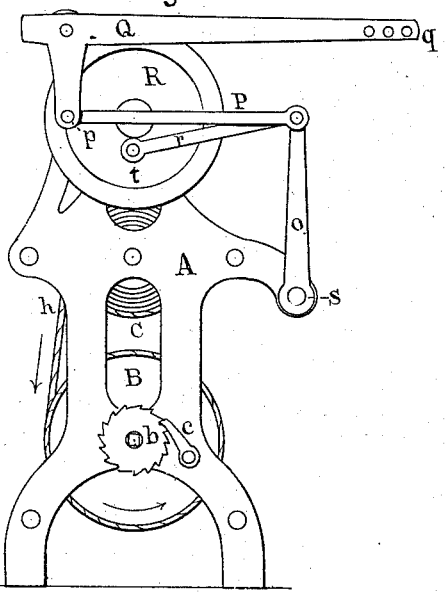
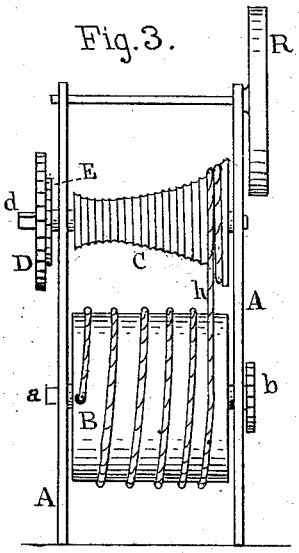


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY ODELL, OF PEEKSKILL, ASSIGNOR TO HIMSELF AND WILLIAM S. SINEY, OF NEW YORK, N. Y.

IMPROVEMENT IN MOTORS FOR CHURNS, &c.

Specification forming part of Letters Patent No. **184,216**, dated November 7, 1876; application filed October 5, 1876.

To all whom it may concern:

Be it known that I, HENRY ODELL, of Peekskill, Westchester county, New York, have invented an Improvement in Motors for Churns or other purposes, of which the following is a specification:

My invention relates to improvements in a machine or motor for which Patent No. 160,460, dated March 2, 1875, was granted to me.

The object of my invention is to render the motor more efficient, and is accomplished mainly by equalizing the power derived from the spring or springs that impart motion to the machine, and also by modifying the escapement and transmitting mechanism, so as to reduce the friction of the same.

In the form of this machine heretofore used the power is communicated to the escapement-wheel direct from the spring-barrel, and, as a consequence, the available power exerted is much greater when the spring is freshly wound up than when it is nearly unwound, and so there is either a waste of power at the start, or else not enough near the close of a winding to do the work desired.

In my present invention the equalization of the power of the springs is attained by adapting to the machine the well-known principle of the barrel and fusee, the manner of applying which is illustrated by the accompanying drawings.

Figures 1 and 2 are elevations of opposite sides of the machine, and Fig. 3 is an elevation of one side in a plane at right angles to that of the other figures.

In each of the figures, A is the frame which furnishes bearings for the different parts of the machine. B is the drum or barrel, containing the coiled spring or springs, which are used in the usual way—namely, with the outer end of the coil attached to the circumference of the barrel, and the inner end attached to the arbor *a*, a ratchet-wheel, *b*, on the latter, together with the pawl *c*, serving both to hold the arbor from turning, and to adjust the tension of the springs. It also serves to save the spring from damage in case the barrel, through accident, should be suddenly liberated. C, Figs. 2 and 3, is a conical pulley or fusee, having its axis parallel to that of the drum B. The fusee has a spiral groove traversing it, as shown in Fig. 3, which guides and retains in place the cord or chain wound upon it, and with which it is connected to the spring-barrel. The cord *h* (which may be of wire or a chain, but preferably of wire-rope for large motors) is so arranged, with reference to the fusee and spring-barrel, that when the latter exerts the most strain the cord is on the smallest diameter of the fusee, and when the barrel is nearly unwound, or exerting the least power, the cord is on the largest diameter of the fusee. The smallest diameter of fusee, it will be observed, is not at the extremity, but near it, as the greatest power of a coiled spring is not availably exerted when it is wound the closest, on account of the great increase of friction in the coil itself when so wound. The end *d* of fusee-shaft is squared to receive a key or crank for winding the machine. The shaft of fusee also carries the two ratchet-wheels D and E, (shown in Figs. 1 and 3,) one of the wheels, E, being rigidly secured to the shaft, and the other lying against E, but not fastened to it or the shaft, it being free to turn about the latter. The wheel D, which acts as an escapement-wheel, carries a pawl, *e*, which engages with the ratchet E, so that the fusee can be turned in a direction to wind it up without turning D, but cannot turn back to unwind without moving the wheel D.

The circular motion of the escapement-wheel is converted into oscillatory movement in rock-shaft S by means of the pawls F F′, which engage at one end with the escapement-wheel, and at the other are pivoted to the plate *m*, which is rigidly secured to the rock-shaft S. In the old form of this machine the pawls are placed near together on one side of escapement-wheel, and are caused to engage alternately with the teeth of the wheel by means of stationary studs or pins, over which they would slide with considerable friction and noise. I overcome these objections in a great measure by placing, midway of the length of the pawls F F′, pins *j j*, which engage in slots in the links *i i*, which are pivoted to the stationary stud *f*. The reciprocating motion of the pawls F F′ vibrates the links *i i*, and there-

by causes the pawls to be presented in proper position to the teeth of the escapement-wheel. As soon as the upper pawl F′ is liberated for its return movement, it is lifted up to pass the tooth by its weighted extremity F″, or it may be operated by a spring. The lower pawl has weight enough in itself to cause it to fall while passing a tooth. The links *i i* are slotted where they engage with the pins *j j*, to allow of play of pawl while engaged with a tooth.

Thus arranged, the friction caused by the pins that guide the pawls in the old machine is reduced to the insignificant amount caused by the swinging of the links *i* on the stud *f*, and the noise is also reduced to a like extent.

To the rock-shaft S is attached the arm O, and its vibratory motion is converted into rotary motion by the rod *r*, which connects with the fly-wheel R at the crank-pin *t*. This wheel serves to give steadiness and regularity to the movement of the machine, and by placing a pulley on its shaft the power or motion may be readily transmitted to other points.

If the work to be done requires a reciprocating movement, such as churning, &c., the bell-crank lever Q is used. This lever is pivoted to a projecting part of the frame A, and is connected with the arm O by the rod P. Connection with a churn may be made at *q*.

I claim as my invention—

1. The pawls F F′, in combination with the slotted pivoted links *i i*, substantially as described.

2. The pawls F F′, pivoted slotted links *i i*, and wheel D, in combination with the rock-shaft S and plate *m*, all arranged to operate substantially as set forth.

3. The spring-barrel B, fusee C, and escape-wheel D, in combination with the pawls F F′, rock-shaft S, plate *m*, and slotted links *i i*, all arranged to operate substantially as described.

HENRY ODELL.

Witnesses:
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