(No Model.)

D. H. SMITH.

SPRING MOTOR.

No. 491,140. Patented Feb. 7, 1893.

Fig. 1.

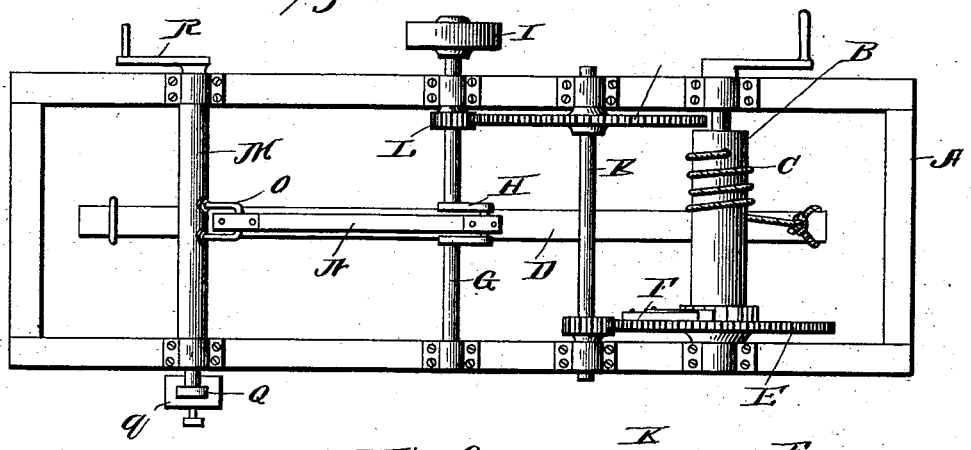
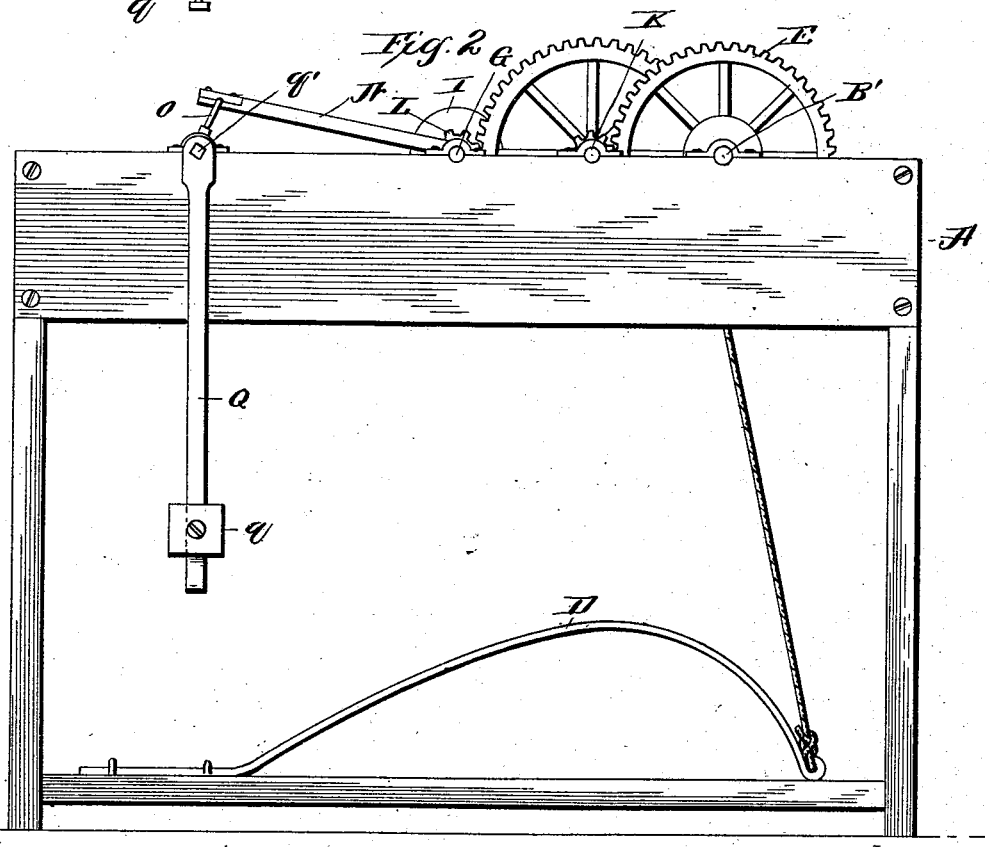


Fig. 2.



Witnesses

E. C. Wedderburn

O. E. Doyle

Inventor

Daniel H. Smith

By his Attorneys,

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UNITED STATES PATENT OFFICE.

DANIEL H. SMITH, OF MORRISDALE, PENNSYLVANIA, ASSIGNOR OF ONE-FOURTH TO AARON C. FLEGAL, OF SAME PLACE.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 491,140, dated February 7, 1893.

Application filed June 30, 1892. Serial No. 438,609. (No model.)

To all whom it may concern:

Be it known that I, DANIEL H. SMITH, a citizen of the United States, residing at Morrisdale, in the county of Clearfield and State of Pennsylvania, have invented a new and useful Motor, of which the following is a specification.

My invention relates to an improved motor, designed for use in operating churns, either rotary or oscillating, and other light machinery, my object being to provide a device combining the advantages of lightness, cheapness, durability and effectiveness.

In the drawings, Figure 1 is a plan view of a motor embodying my invention. Fig. 2 is a side view of same.

A represents the frame of the motor, upon which, near one end is mounted the drum, B, upon which is adapted to be reeled the cord, C. The lower end of said cord is attached to the free end of a strong leaf spring, D, the shape of the spring being that of a compound curve with the free end turned downwardly.

The shaft, B′, of the drum, carries a loose gear wheel, E, provided with a pawl, F, to engage the ratchet on the adjacent end of the drum.

The main shaft, G, is provided with a crank, H, and carries a pulley, I, suitable for a belt to convey the power to a pulley on the machine to be driven. An intermediate shaft K, is arranged between the drum and the main shaft, one end of said intermediate shaft being equipped with a pinion to mesh with the loose gear-wheel on the drum shaft, and the other end of said shaft being provided with a gear to engage a pinion L on the main shaft.

M represents a rock shaft, disposed near one end of the frame, and provided with a looped arm (or a crank as preferred) which is connected by means of the pitman, N, to the crank, H, in the main shaft. The looped arm O on the rock-shaft is longer than the crank of the main-shaft and therefore has a greater throw which prevents it from making a complete revolution. To one end of the rock shaft is affixed a pendulum, Q; the weight, *q*, being adjustable upon the pendulum rod, *q′*, to enable the speed of the motor to be regulated.

The pawl and ratchet connection between the drum and the gear E allows the former to be rotated, (independent of the latter) by means of the crank to wind the cord C and elevate the free end of the spring D, (the latter being depressed or in a state of rest as shown in Fig. 2.) When the crank is released the pawl and ratchet connection locks the gear E to the drum, and the downward tendency of the spring, operating through the reeled cord turns the drum. The power, derived from the spring, above described, and communicated by the cord to the drum, is thence conveyed through the intermediate shaft to the main shaft, causing the latter to rotate. The pendulem, rock-shaft, and pitman govern the speed of rotation of the main shaft and enable the same to be regulated. By adjusting the weight *q* upon the shaft of the pendulum the period of oscillation of the latter may be varied at will to cause the main shaft to rotate at any desired rate of speed.

The rock-shaft is provided with an arm or crank, R, to which, by means of a pitman, an oscillating churn may be attached.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is;—

In a churn motor, the combination of a rock-shaft, M, provided with a loop O and a crank R, a pendulum Q attached to the rock-shaft and provided with an adjustable weight, *q*, a crank-shaft G carrying a pulley I and provided with a crank H, a pitman connecting said crank to the loop O, a drum C, gearing between the crank shaft and the drum, and means to rotate the latter, substantially as specified.

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

DANIEL H. SMITH.

Witnesses:

FRANK WASHBURN,

JOHN MYMER.