(No Model.)

E. B. EVANS.

MOTOR.

No. 354,829. Patented Dec. 21, 1886.

Fig. 1.

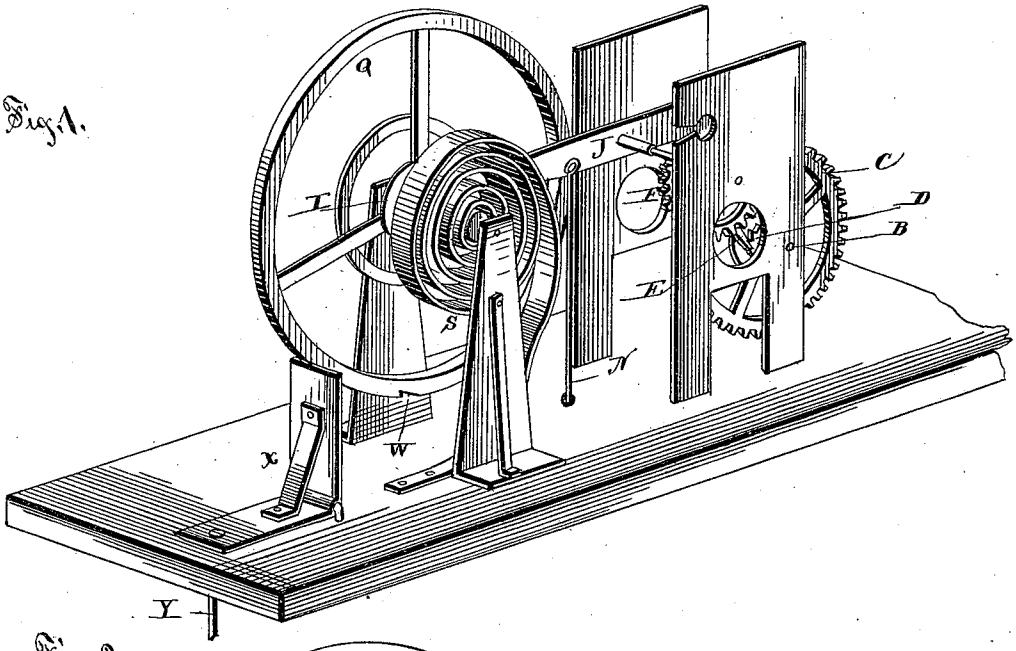
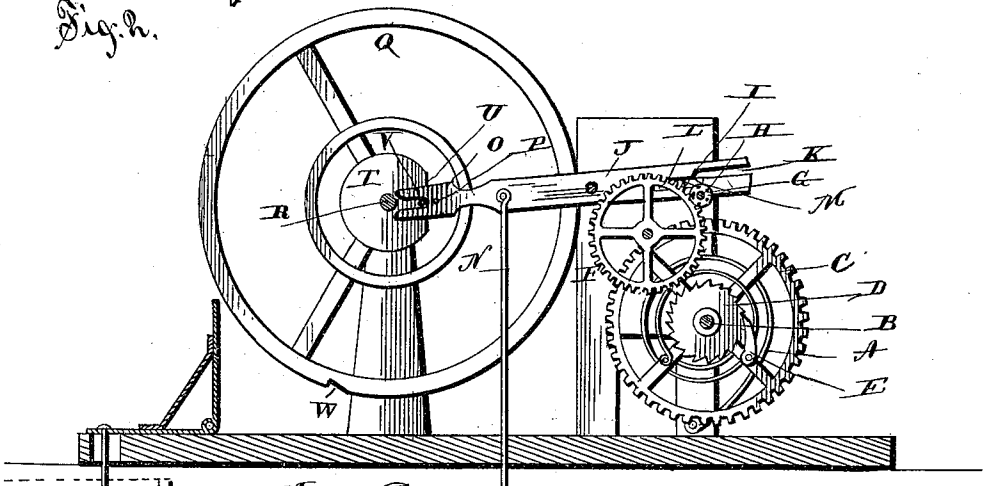


Fig. 2.



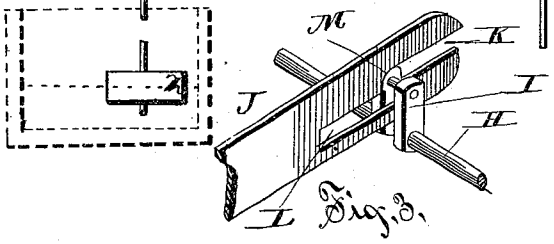
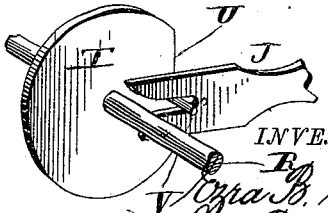


Fig. 3.

Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

EZRA BENNETT EVANS, OF EAST RINGGOLD, OHIO.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 354,829, dated December 21, 1886.

Application filed August 18, 1886. Serial No. 211,202. (No model.)

To all whom it may concern:

Be it known that I, EZRA BENNETT EVANS, a citizen of the United States, and a resident of East Ringgold, in the county of Pickaway and State of Ohio, have invented certain new and useful Improvements in Motors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my improved spring-motor. Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a perspective detail view of the crank-escapement, and Fig. 4 is a similar view of the end of the escapement-lever and the disk upon the axle of the fly-wheel.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to that class of spring-motors in which a rocking motion is communicated to a lever, from which the motion may be conveyed and converted to any point and in any form desired; and it consists in the improved construction and combination of parts of such a motor, which is principally intended for pumping purposes, although it may be used for any other purposes where a regular motion is desired, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates the spring, which is secured to the shaft B of a large cog-wheel, C, and which is provided with the usual means for winding it, the shaft having a ratchet-wheel, D, which is engaged by a spring-pawl, E, and the large cog-wheel meshes with a suitable wheel-train, F, which may consist of as many cog-wheels and pinions as desired, according to the speed desired at the rocking lever and the amount of power created by the spring and desired to be exerted by the lever. The last cog-wheel in the train meshes with a pinion, G, upon a shaft, H, having a double crank, I, and the pin of this crank slides and revolves within a slot in the end of the power-lever J, which slot consists of two longitudinal portions, K and L, connected by means of a transverse portion or shoulder, M, the outer slot portion being preferably open at the outer end, and as much above the inner portion as the width of the slot.

The power-lever is suitably pivoted at its middle upon the supporting-frame, rocking in a vertical plane, and the reciprocating rod N, which operates the pump or other mechanism to be operated, is pivoted to the arm of the lever opposite to the arm having the bent or shouldered slot. The other end of the lever is formed with a longitudinal slot, O, having a beveled or diverging open end, and a pin, P, projects to one side from the end of the lever at the inner end of the slot.

A balance-wheel or fly-wheel, Q, has its shaft R journaled in suitable bearings at the end of the lever, and is provided with a balance-spring, S, secured to the frame and to the shaft, and a disk, T, is secured upon the shaft of the balance-wheel, and has a portion of its periphery cut away, as shown at U, and has a pin, V, projecting to the side at the center of the straight edge of the cut away portion.

The pin upon the disk projects into the slot of the lever, and the pin upon the lever projects into the cut-away portion of the disk, and it will be seen that as the train of wheels revolves by the force of the spring the crank will be revolved, sliding in the portions of the slot, and at each half of a revolution the pin will strike a shoulder at the transverse portion of the slot and be stopped, the lever being rocked as the crank revolves by the crank bearing against the edges of the slot.

As the lever is rocked the pin upon the disk of the balance-wheel will enter the slot in the end of the lever, tilt the end of the lever down by its momentum, and again leave it, whereupon it again will return and enter the slot, tilt the end upward, and again leave the slot, the helical spring balancing this motion, and the straight portion of the edge of the disk will strike the pin upon the lever, and serve, together with the pin upon the disk, to rock the lever and to stop it at the end of each stroke, and again start it in the opposite direction, the balance-wheel and the lever thus regulating the rocking of the lever.

The edge of the balance-wheel is formed

with a notch, W, having a downwardly-facing shoulder, and a bell-crank, X, is pivoted upon the base of the frame, and may engage the edge of the wheel when tilted toward it.

A rod, Y, is suitably attached to the other arm of the bell-crank, and has suitable connection with a float, Z, so that when the reservoir or tank into which the water is pumped is filled to a certain depth the bell-crank may be tilted so as to engage the edge of the balance-wheel and stop the pumping, while when the water in said tank has been drawn off or lowered in any manner and the float has descended with it the bell-crank is again tilted away from the wheel, allowing the motion to be resumed and water to be pumped into the tank until the desired depth is again reached, this device being especially applied when the motor is used for pumping water into cattle-troughs or railroad-tanks.

The escapement may be employed in watches or clocks as well as in a larger motor, and other power besides spring-power may be used, and the automatic stop may be connected in other suitable manner to the object affected by the motor, regulating the motion according to the amount desired, when the motor is used for other purposes than pumping.

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

1. In a motor, the combination, with a revolving crank receiving its motion substantially as described, of a lever having a slot at one end formed by two longitudinal slot portions formed one above the other and connecting at their meeting ends with a transverse portion, and a balance-wheel engaging with the other end of said lever, as and for the purpose shown and set forth.

2. In a motor, the combination, with a balance-wheel having a helical balance-spring secured to its shaft, and provided at its shaft with a disk having a straight portion cut away at its periphery, and having a laterally-projecting pin at the middle of the said straight portion, of a rocking lever having a slot with widened outer end for the reception of the pin of the disk, and having a laterally-projecting pin at the inner end of the slot for engaging the straight edge of the disk, as and for the purpose shown and set forth.

3. In a motor, the combination of a rocking balance-wheel having a notch in its periphery, a bell-crank pivoted with one arm within reach of the notched rim of the wheel, and a float having suitable connection with the bell-crank, tilting it toward the wheel when the float rises, as and for the purpose shown and set forth.

4. In a motor, the combination of a train of wheels having a double crank at the last shaft, a lever pivoted at its middle and having the reciprocating power-rod pivoted to one arm, and formed at one end with a slot having two longitudinal portions connected by a transverse portion, and having the crank-pin sliding in it, and formed with a slot at the other end widening toward its end, and having a laterally-projecting pin at the inner end of the slot, and a balance-wheel having a balance-spring secured to its shaft, a disk formed with a straight portion at the edge secured upon said shaft, and having a laterally-projecting stud at the center of the straight edge, the said stud projecting into the slot of the lever and the pin of the lever projecting into the cut-away portion of the disk having the straight edge, as and for the purpose shown and set forth.

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

EZRA BENNETT EVANS.

Witnesses:
A. R. BOLIN,
JOHN SCHLOSER.