

(No Model.)

I. JOHNSON.
MECHANICAL MOTOR.

No. 568,853.

Patented Oct. 6, 1896.

Fig. 1.

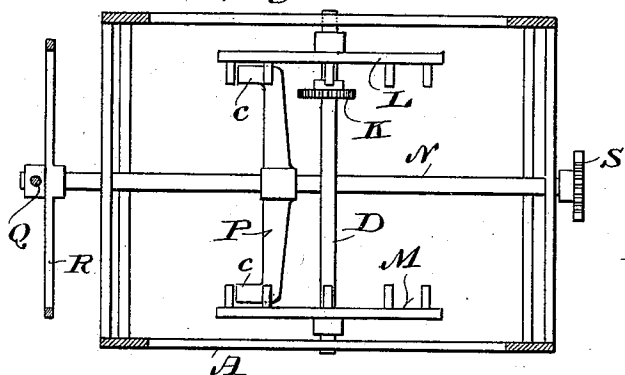


Fig. 2.

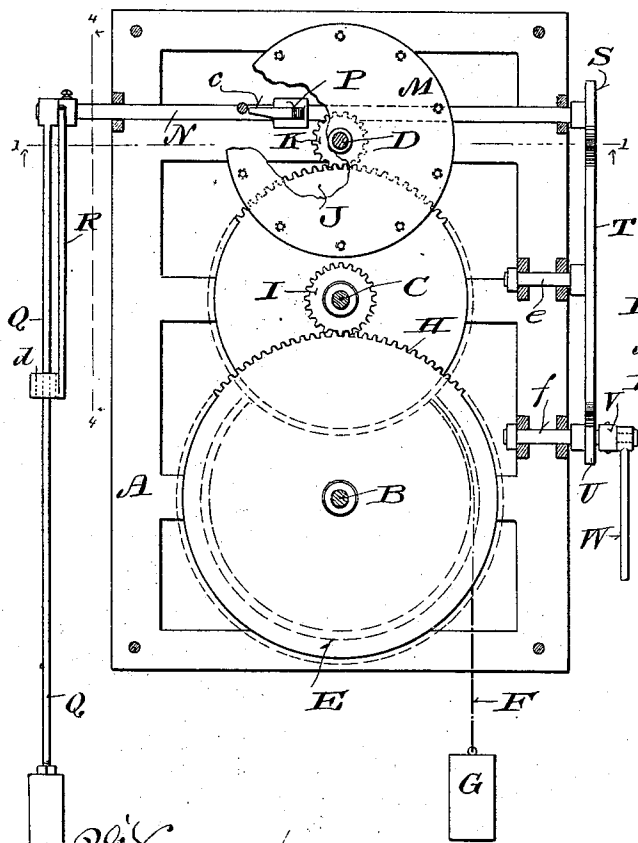


Fig. 4.

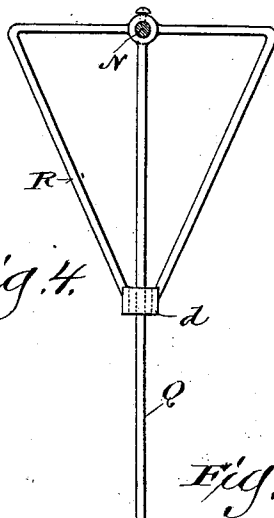
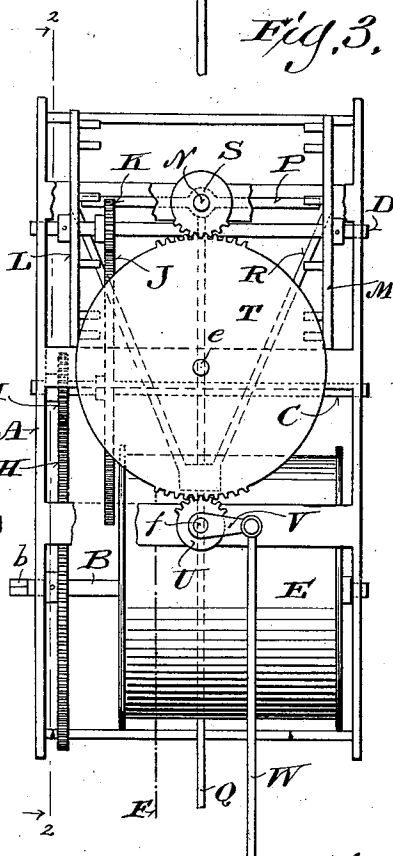


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

ISAK JOHNSON, OF MILWAUKEE, WISCONSIN.

MECHANICAL MOTOR.

SPECIFICATION forming part of Letters Patent No. 568,853, dated October 6, 1896.

Application filed March 28, 1896. Serial No. 585,179. (No model.)

To all whom it may concern:

Be it known that I, ISAK JOHNSON, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Mechanical Motors; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a simple, economical, and automatic mechanical motor organized for conversion of oscillative motion into longitudinally-reciprocative motion, being especially designed for use in connection with the piston-rod of a pump; and it consists in certain peculiarities of construction and combination of parts hereinafter set forth with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a horizontal section viewed on the plane indicated by line 1 1 in Fig. 2; Fig. 2, a vertical section viewed on the plane indicated by line 2 2 in Fig. 3; Fig. 3, an end view of the motor having parts of its framing broken away; and Fig. 4, a detail of a portion of a pendulum that constitutes part of the motor, the view being on the plane indicated by line 4 4 in Fig. 2.

Referring by letter to the drawings, A represents a frame of any suitable material and construction, and arranged to rotate in the frame are a series of arbors B C D, parallel to each other. The arbor B carries a drum E, on which to wind a cable F or its flexible equivalent, and a weight G is attached to the outer end of said cable, the descent of the weight operating to cause automatic rotation of the drum. In order to wind the weighted cable on the drum, one end *b* of arbor B is squared for the engagement of a crank-key.

A spur-wheel H, carried by arbor B, meshes with a pinion I, carried by arbor C, and a spur-wheel J, also carried by the latter arbor, is in mesh with a pinion K on the arbor D, this train of gearing being clearly illustrated in Figs. 2 and 3. A pair of escape-wheels L M are also carried by arbor D, and another arbor N, rotative in frame A at a right angle to said arbor D, carries a bar P, having the extremities thereof in the form of pallets *c*, co-operative with the teeth of said escape-wheels.

A pendulum Q is hung on one end of arbor

N and a triangular brace R, sleeved on the pendulum-rod, is made fast to said arbor. Hence it will be seen that the leverage on said pendulum-rod is exerted at the point where it engages the brace-sleeve *d*, as clearly shown in Figs. 2 and 3.

That end of the arbor N farthest from the pendulum is shown provided with a disk S, having a series of teeth on its periphery in mesh with another series of teeth on the periphery of a disk T, fast upon a spindle *e*, loose in bearings on the frame A and diametrically opposite the aforesaid teeth. The latter disk is provided with other peripheral teeth in mesh with those on still another disk U, the latter being fast upon a spindle *f*, loose in bearings on said frame parallel to the former spindle and pendulum-arbor. A crank V is fast to the spindle *f* and a rod W is connected to the crank, as clearly illustrated in Figs. 2 and 3. The part W may constitute the piston-rod of a pump or it may serve to connect the crank with a longitudinally-reciprocative element of various machines.

The power is derived by the descent of the weight, but it is practical to connect arbor B and drum E by a suitable coil-spring as a substitute for said weight and its cable. The pendulum governs the speed of the motor and the escapement operates to convert the continuous rotary motion of arbor D into an oscillative motion of arbor N. This latter motion, being conveyed by the train of toothed disks to the spindle *f*, is then converted into longitudinally-reciprocative motion by the connection of crank V with the rod W, the operation of the latter continuing as long as the pendulum is permitted to swing while the weight or its equivalent spring is effective.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a suitable frame, a gear-train in the frame, suitable means for automatically driving the gear-train, a pair of escape-wheels carried by an arbor of the gear-train, another arbor between the escape-wheels provided with a bar mounted at right angles to the escapement-wheels and having the extremities thereof in the form of pallets engageable with said wheels, a pendulum hung on the pallet-bar arbor, a crank in gear

with the latter arbor, and a longitudinally-reciprocative rod connected to the crank.

2. The combination of a suitable frame, a series of arbors rotative in the frame and in
5 gear with each other, a drum carried on one of the arbors, a weight in flexible connection with the drum, a pair of escape-wheels carried by another of said arbors, a pallet-bar carried by an arbor rotative in the frame at a
10 right angle to those aforesaid, this pallet-bar being engageable with said escape-wheels, a pendulum hung from the latter arbor, a crank

in gear with the pendulum-arbor, and a longitudinally-reciprocative rod connected to the crank.

In testimony that I claim the foregoing I
have hereunto set my hand, at Milwaukee, in
the county of Milwaukee and State of Wisconsin, in the presence of two witnesses. 15

ISAK JOHNSON.

Witnesses:

JOHAN PETER HAGLUND,
N. E. OLIPHANT.