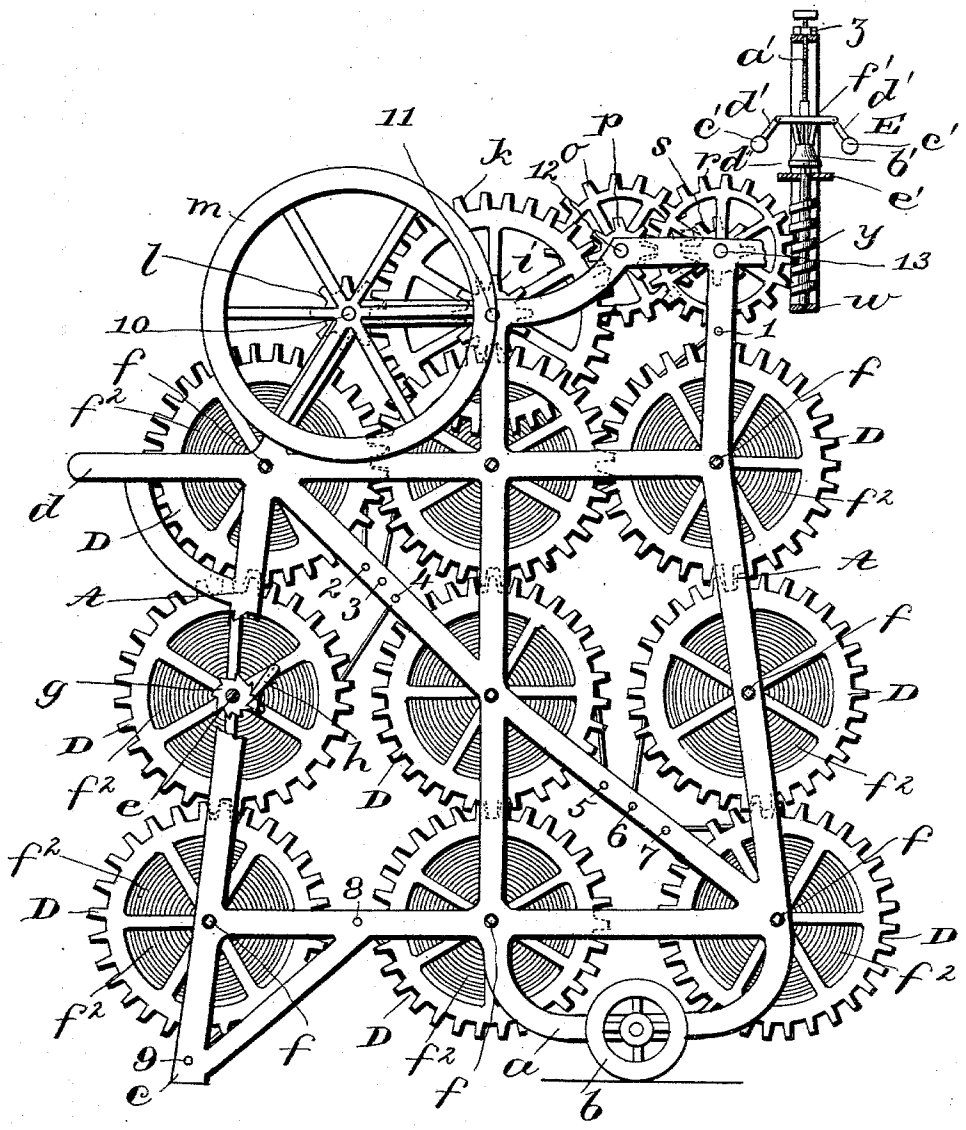
(No Model.) 2 Sheets—Sheet 1.

R. I. BROWN.

SPRING MOTOR.

No. 563,909. Patented July 14, 1896.

Fig. 1.



Witnesses.

G. A. Tauberschmidt.

D. Weimer Reinohl.

Inventor.

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By D. W. Reinohl

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

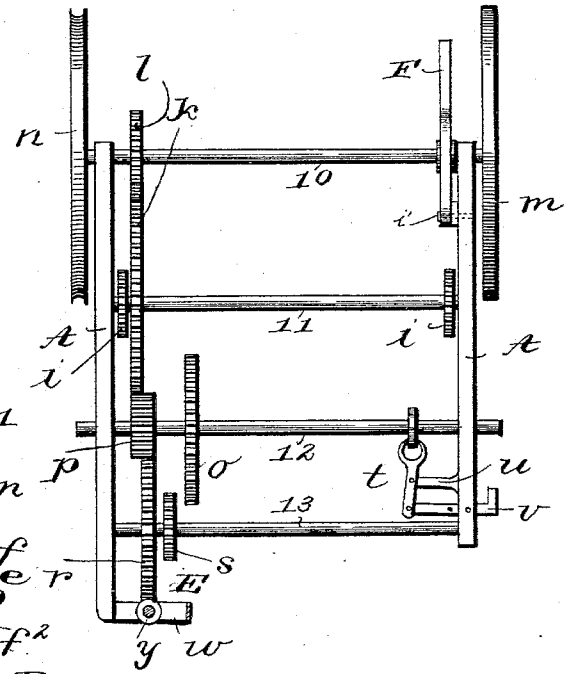


Fig. 2.

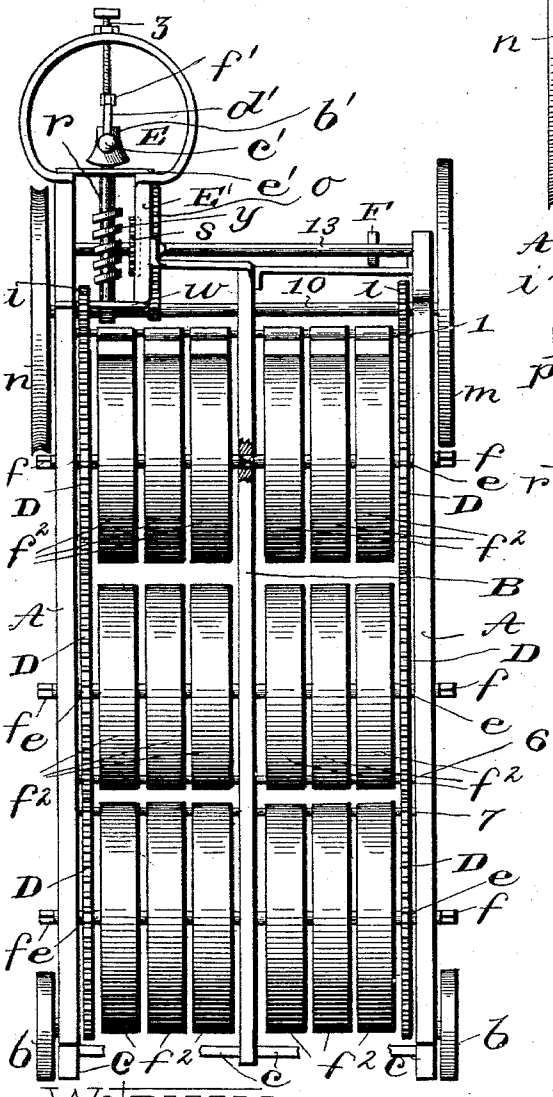
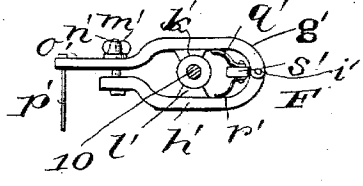


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT I. BROWN, OF ALTOONA, PENNSYLVANIA.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 563,909, dated July 14, 1896.

Application filed December 3, 1895. Serial No. 570,934. (No model.)

To all whom it may concern:

Be it known that I, ROBERT I. BROWN, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Spring-Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to motors and has especial reference to that class of motors in which power is stored in springs and subsequently utilized to do work of various kinds; and the invention consists in certain improvements in construction, which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a side elevation of my improved motor; Fig. 2, an end view; Fig. 3, a top plan view, and Fig. 4 a side view of the brake detached.

Reference being had to the drawings and the letters thereon, A A indicate the sides of the frame; B, the partition, middle, or center piece, and C C the transverse pieces which connect the sides A A and sustain the center piece in proper position. The sides are provided with extensions *a*, to which are secured wheels *b*, upon which the motor may be rolled to change its position, extensions *c*, which form feet for the motor to rest upon, and with handles *d*, by which it may be readily moved. The frame is also provided with an extension at its upper end in which a governor is supported, as will hereinafter more fully appear.

Within the frame and on each side of the partition B are a series of shafts *e*, upon which are wound springs f^2, one end of which is secured to the shaft and the opposite end to rods 1 2 3 4 5 6 7 8 9, supported in the frame. The shafts *e* are supported at each end in suitable bearings in the sides A A and in the center piece or partition B of the frame, with one end of said shafts extending through the side frames and squared to receive a suitable key or wrench to wind the springs separately, or the shafts may be connected by applying gear-wheels to said ends *f* of the shafts, and the whole train of shafts turned synchronously, and the springs wound in the same manner.

Each of the shafts *e* is provided with a gear-wheel D, which intermeshes with the adjacent wheel, as shown in Fig. 1, so that the power of all the springs is transmitted to the driving-shaft 10, and on each shaft is secured a ratchet-wheel *g*, with which a pawl *h*, secured to one of the arms of the wheel D, engages. The power of the train of spring-actuated shafts is transmitted from the center shaft of the upper tier of shafts on each side of the motor by its gear-wheel D to a pinion *i* on each end of the shaft 11, and from shaft 11 power is transmitted to shaft 10 by a master gear-wheel *k*, which engages a pinion *l* on said shaft. The shaft 10 is provided with driving-wheels *m n*, from which power is transmitted by a suitable belt engaging said driving-wheels.

On shaft 12, supported by the frame, is a master-wheel *o* and a pinion *p*, the working face of which pinion is equal to the width of the master-wheel *q* on shaft 11, and a like wheel *r* on shaft 13, and said shaft 12 is laterally movable in its bearings to vary the speed of the motor by transmitting the power through pinion *p* on shaft 12 and master-wheel *r* on shaft 13, or through master-wheel *o* on shaft 12 and pinion *s* on shaft 13. The shaft 12 is moved by a lever *t*, attached to the shaft and fulcrumed to a bracket *u* on the frame and connected to a shifting-rod *v*.

E indicates the governor, supported in the extension E′ of the frame of the motor, which extension is provided with a step *w* to support the lower end of a spiral shaft or worm-gear *y*, which engages the gear-wheel *r*, and with a bar *z*, through which a screw *a′* passes and engages the upper end of the worm-gear *y* to center the governor in the extension of the frame and compensate wear on the worm-gear. On the upper end of the worm-gear is a sleeve *b′*, which slides vertically on a squared portion of the worm as the balls *c′* and arm *d′* of the governor rise and fall, and the lower end of said sleeve is provided with or forms a brake-shoe *d″*, which engages the plate *e′* and forms a brake to vary the speed of the

motor by frictional contact of the shoe and the plate. Should part of the load be taken off the machine, the increased speed of the motor communicated to the governor will cause the arms and balls of the governor to rise by centrifugal force, and they will depress the sleeve b', to which the inner ends of the arms d' are pivotally secured and fulcrumed in a disk f' on the shaft of the worm-gear.

F indicates a brake, whose arms g' h' are pivotally connected to the frame at i, and on the inside of each arm is a block or shoe k' l', which engages the shaft 10 to stop the motor. Pressure is applied to the shaft by a screw-nut m', which engages a bolt n', connected to the lower end of the arm h' and extends through the extension o' of the arm g', and upon which the nut m' bears.

The extension o' of the arm g' may be connected by a rod or cord p' to the machine being operated, so that the brake may be applied without going from the machine to the motor.

The arms of the brake are separated and the brake released by springs q' r', connected to a lug s', projecting from the frame, the spring q' being the stronger of the two to raise the upper and long arm g', while the spring r' counterbalances the action of the spring q' to prevent the block l' on the arm h' engaging the shaft.

Having thus fully described my invention, what I claim is—

1. A motor-frame provided with an extension having a step or shaft bearing therein, a governor supported in said extension and consisting of a vertical spiral shaft or worm-gear resting in said step, a vertically-movable sleeve on said shaft having a brake-shoe at its lower end, a fixed friction-disk below said sleeve and an adjusting-screw engaging the upper end of the shaft, in combination with spring-actuated shafts connected by suitable gearing, a power-shaft and a laterally-movable shaft connected to the governor.

2. A motor having a plurality of spring-actuated shafts and a power-transmitting shaft, in combination with a brake comprising a pair of arms pivotally connected at one end and provided with brake-shoes, means for drawing said arms toward the shaft and springs of different tension to separate the arms and release the brake.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT I. BROWN.

Witnesses:
D. C. REINOHL,
D. WEIMER REINOHL.