

E. R. JOHNSON.
GOVERNOR FOR SPRING MOTORS.

(Application filed Aug. 8, 1900.)

(No Model.)

Fig. 1.

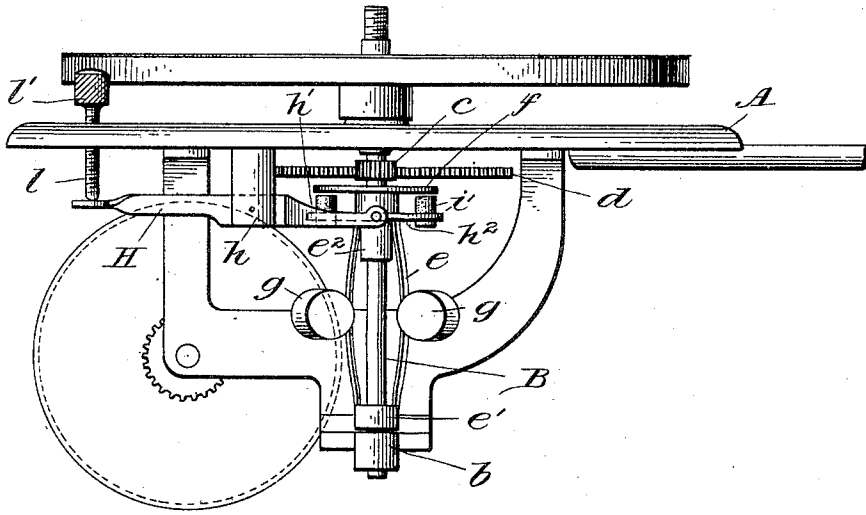


Fig. 2.

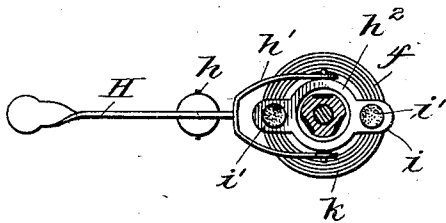


Fig. 3.

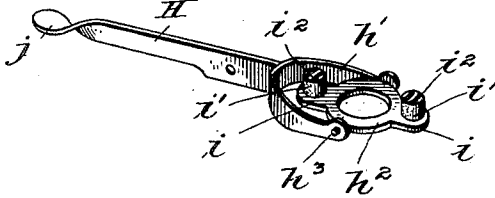
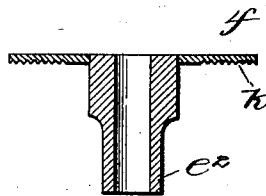


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

ELDRIDGE R. JOHNSON, OF PHILADELPHIA, PENNSYLVANIA.

GOVERNOR FOR SPRING-MOTORS.

SPECIFICATION forming part of Letters Patent No. 689,885, dated December 31, 1901.

Application filed August 8, 1900. Serial No. 26,277. (No model.)

To all whom it may concern:

Be it known that I, ELDRIDGE R. JOHNSON, a citizen of the United States, and a resident of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Governors for Spring-Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improved governor mechanism for spring-motors, and is particularly adapted to gramophones and other sound-reproducing machines.

The principal object of this invention is to provide a simple and efficient braking device for the governor mechanism in order that the speed of the motor may readily be controlled by the operator, which is of great importance in sound-reproducing machines, for which this invention is particularly designed.

The invention consists in the construction, combination, and arrangement of the parts, substantially as hereinafter set forth, and specifically pointed out in the claims made hereto.

In the accompanying drawings, which form part of this specification, and in which similar letters are used to indicate similar parts, Figure 1 is an elevation of a portion of the motor mechanism, showing my improved governor applied thereto. Fig. 2 is a plan view of the governor-brake, the governor-spindle being shown in section. Fig. 3 is a detail perspective view of the brake-lever and its pivoted shoe. Fig. 4 is a sectional elevation of the disk carried on the governor-spindle.

In the said drawings, A designates the top plate of a spring-motor casing, on the under side of which is suspended, by means of suitable frames, the motor mechanism. The governor-spindle B has a bearing at its lower end in an arm *b*, formed on the supporting-frame of the motor, while its upper end is journaled in the bearing formed in the top plate A. A pinion *c* is rigidly secured on the upper end of the governor-spindle, which meshes with a gear *d*, which is geared to the spring-motor mechanism. The governor-arms *e* are preferably made of flat steel strips, secured at their lower ends to a collar *e'*, which is rigidly secured on the spindle B. The upper ends of

the arms *e'* are secured to the sleeve *e²*, which is loosely mounted on the upper end of the governor-spindle and is rigidly secured to the disk *f*. The governor-balls *g* are secured to the central portions of the arms *e*, as clearly illustrated in Fig. 1 of the drawings.

A brake-lever H is provided and is fulcrumed at *h* to a boss or projection carried by the top plate of the frame, and the inner end of this lever is provided with a stirrup *h'*, in which is pivotally mounted a brake-shoe *h²*, as most clearly illustrated in Fig. 3 of the drawings. This brake-shoe is provided with trunnions or pivots *h³* on each side of its center, which are adapted to apertures in the stirrup *h'*. The central portion of the shoe is provided with an aperture large enough to surround the sleeve *e²* of the disk F, also to permit the said shoe to swing slightly without coming in contact with the said sleeve. On each side of the central portion of the shoe *h²*, in a diametrical line with the lever H, are two projecting arms or lugs *i*, having apertures into which are fitted the friction-teats *i'*, which are made of leather or other suitable material.

The lower surface of the disk *f* is provided with a series of concentric ridges, as *k*, thus forming grooves between said ridges, which grooves are filled with oil or other lubricating substances which will hold thereto by capillary attraction. The friction-teats *i'* are provided with grooves *i²*, which when the brake is in operative position fit into the ridges *k*, formed on the disk *f*, thereby insuring greater frictional contact between the said teats and the disk. The outer end of the lever H is bent over, as illustrated in Figs. 1 and 3, as at *j*, to form a surface against which the lower end of the adjusting-screw *i* bears, the said adjusting-screw being threaded through an aperture formed in the plate A and having an enlarged head *i'* formed on its upper end, by means of which it is adjusted.

In the operation of the machine the governor-spindle is driven by means of its gearing with the motor, and as the speed increases the governor-balls *g* are thrown out by centrifugal force, and the disk *f* will be drawn down by reason of its connection with the governor-arms. In order to regulate the speed of the governor, the set-screw *l* is adjusted to

bring the teats v' , carried by the shoe h^2 , in contact with the revolving disk f . The teats v' being mounted on a centrally-pivoted shoe or support will adjust themselves when in contact with the disk f to any unevenness which might be in the said disk. The concentric ridges formed on the under side of the disk which are adapted to enter the grooves formed in the ends of the teats provide greater frictional surface between the contacting parts, while the lubricant provided in the grooves between the ridges serves to prevent any noise which might otherwise occur when the brake is in contact with the disk f .

I have found that friction-disks, such as f , often become slightly warped or have imperfections in them which render their bearing-surface uneven, and consequently during the revolving of said disks and when the brake is applied they do not always contact with the friction-teat and cause the motor to tremble or run unevenly. By my construction just described of a pivoted brake-shoe having its teats bearing on opposite sides of the disk this objection above mentioned is obviated, because the teats will be in yielding contact with the said disk and accommodate themselves to any unevenness which might occur in the same. By adjusting the screw l the brake-lever H is operated to bring the teats v' either closer to or farther away from the disk f , and therefore increase or decrease the speed of the motor, as may be desired.

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

1. In a governor, the combination with the governor arms and balls of a sliding disk carried by the said governor-arms adapted to revolve therewith, a pivoted lever fulcrumed on the frame of the machine, means for adjusting said lever, and a brake-shoe pivotally mounted in the lever having teats adapted to yieldingly contact with the movable disk, substantially as described.

2. In a governor, the combination with the governor arms and balls, of a movable disk loosely mounted on the governor-spindle and connected to the governor-arms, a brake-lever pivoted to the frame of the machine having a forked end extending below the movable disk, a brake-shoe comprising a ring adapted to surround the governor-spindle, said ring being pivotally mounted in the forked end of the lever, friction-teats carried by the said ring adapted to yieldingly contact with the movable disk, and means for adjusting the lever to bring the teats either closer to or farther away from the movable disk, substantially as described.

3. In a governor-brake, the combination with the governor arms and balls of a mov-

able disk actuated by the centrifugal action of the governor-balls, a brake-shoe arranged below said disk, having friction-teats adapted to bear on opposite sides of the movable disk, a brake-lever pivoted to the frame of the machine, a stirrup formed on the inner end of said brake-lever, the brake-shoe being pivoted in said stirrup and the bearings for said shoe formed on each edge of the brake-shoe transversely to the line of the friction-teats whereby the said teats are caused to bear against the movable disk with yielding contact, substantially as described.

4. The combination with the governor-spindle, arms and balls of a friction-disk loosely mounted and adapted to slide on said spindle under the centrifugal action of the governor-balls, a brake-lever fulcrumed on the frame of the machine, means for operating said brake-lever, a stirrup formed on the inner end of said brake-lever, a brake-shoe having a central opening adapted to surround the governor-spindle, pivotal bearing formed on said brake-shoe adapted to journals in the two arms of the stirrup, a pair of friction-teats carried by the brake-shoe on each side of the governor-spindle transversely to the axis of the said pivoted shoe adapted to contact with the friction-disk, substantially as described.

5. The combination with the governor spindle, arms and balls of a friction-disk loosely mounted thereon actuated by the centrifugal action of the governor-balls and having a series of concentric ridges formed on its under side, forming grooves between them adapted to hold a lubricant, a pivoted brake-lever having arms extending under said disk, and friction-teats carried by said lever adapted to contact with the movable disk, substantially as described.

6. The combination with the governor spindle, arms and balls of a friction-disk loosely mounted thereon adapted to slide on said spindle under the centrifugal action of the governor-balls and having a series of concentric ridges formed on under side, a pivoted brake-shoe arranged under the said disk, a lever for operating said brake-shoe, friction-teats carried by the brake-shoe arranged transversely to the pivotal axis of the shoe and having a series of grooves formed in their ends adapted to engage the ridges formed on the under side of the friction-disk when the same are in contact therewith, substantially as described.

In witness whereof I have hereunto set my hand this 3d day of August, A. D. 1900.

ELDRIDGE R. JOHNSON.

Witnesses:

JNO. T. CROSS,
LEWIS H. VAN DUSEN.