(No Model.)

G. OTTO.

SPRING MOTOR FOR MUSIC BOXES.

No. 525,717. Patented Sept. 11, 1894.

Fig. 1.

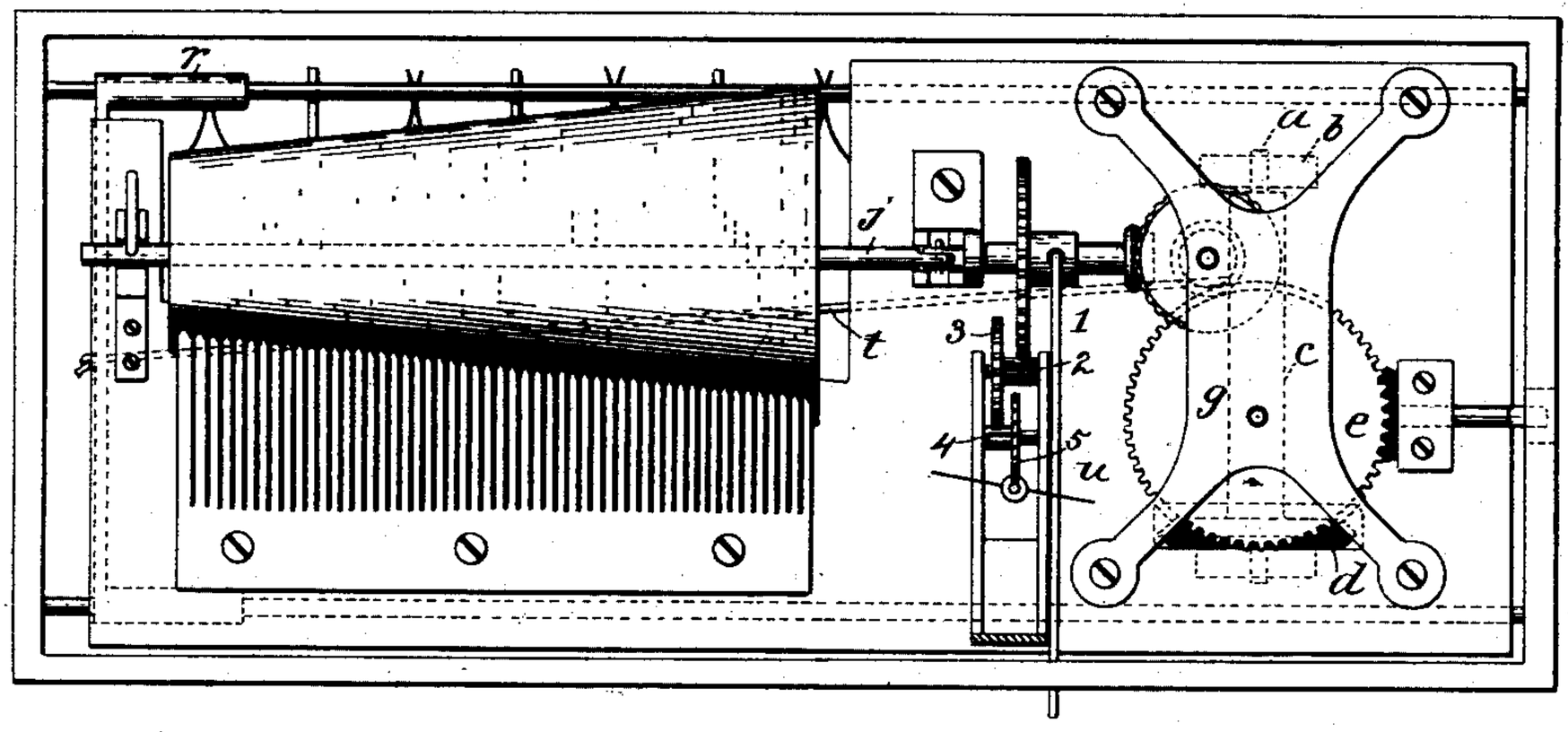


Fig. 4.

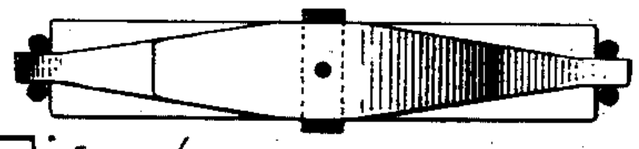
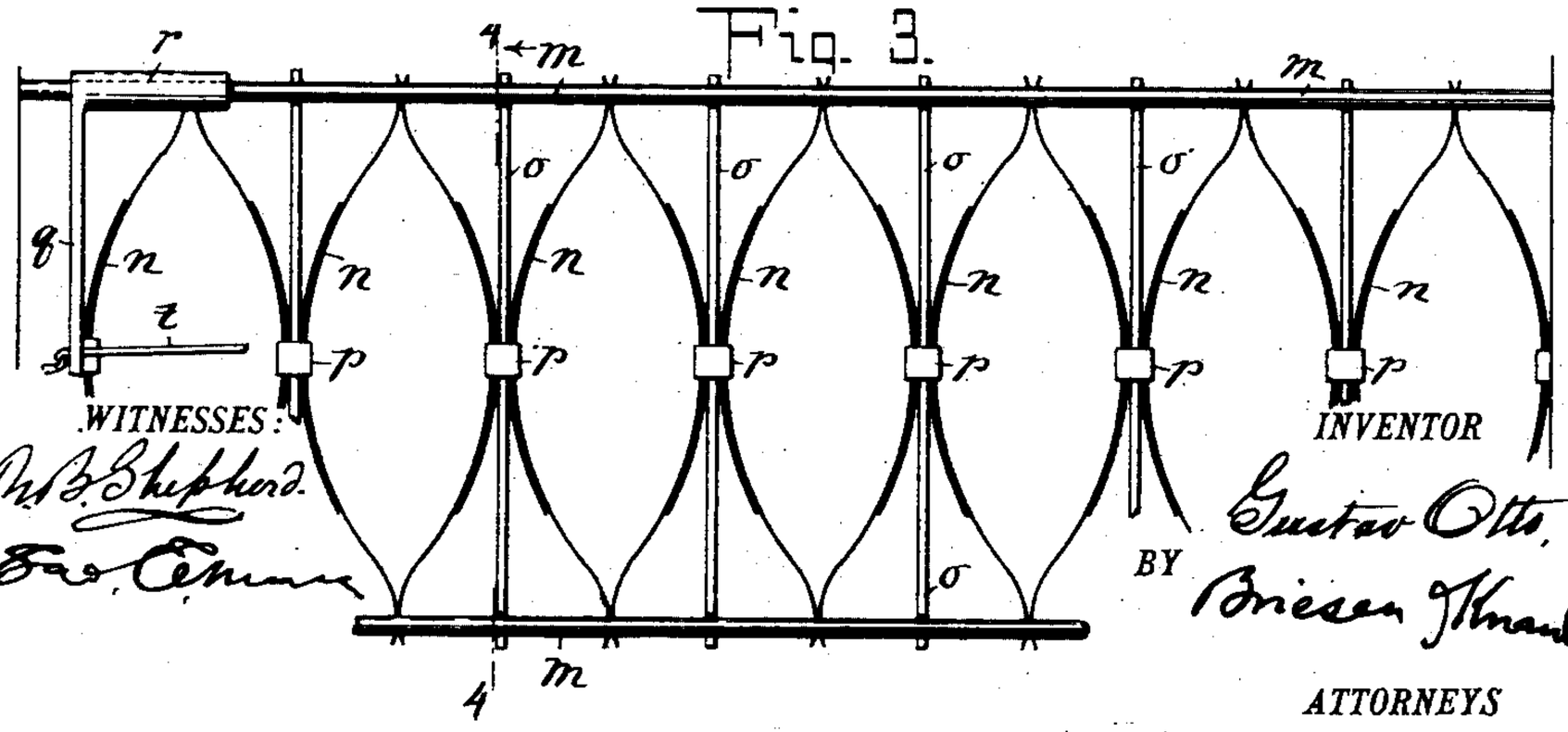


Fig. 2.

Fig. 3.



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SPRING-MOTOR FOR MUSIC-BOXES.

SPECIFICATION forming part of Letters Patent No. 525,717, dated September 11, 1894.

Application filed April 12, 1894. Serial No. 507,223. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV OTTO, a resident of Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Spring-Motors for Music-Boxes, of which the following is a specification.

My invention relates to spring motors, and has for its object to produce a spring motor which is specially adapted for use in musical instruments of the self-playing variety, although it may be used in various situations where it is desirable to have a spring motor which will run for a considerable length of time.

To this end my invention consists in the construction set forth herein, illustrated in the accompanying drawings and more particularly pointed out in the claim, together with all analogous structures which, in view of the prior art, may justly be regarded as equivalent structures.

In the drawings—Figure 1 is a plan view of a music box mechanism showing one form of my invention applied thereto. Fig. 2 is a section through the box showing in side elevation the spring motor mechanism. Fig. 3 is a broken away plan view of the spring mechanism, and Fig. 4 is a section on line 4—4 of Fig. 3.

In the drawings, *a* is a suitable shaft mounted in bearings *b*. On this shaft is mounted a suitable drum or other suitable reel mechanism *c*. Mounted also upon the shaft *a* is a gear wheel *d*, preferably a bevel gear, although other suitable forms may be used. Gearing with this wheel *d* is a suitable gear wheel *e* carried by a shaft *f* on the framework *g* of the mechanism. From this gear *e* motion is communicated to a gear *h* carried by shaft *i* which communicates motion to the main shaft *j* of the music box or other device through the medium of suitable gearing, such as the gears *k l*.

Mounted in a suitable carrying frame shown as consisting of the rods *m m* are suitable elliptical springs *n*, the ends of which extend between and are guided by the rods *m m*. These springs *n* are preferably connected in pairs by means of suitable guide and clips *p*, as shown, to suitable follower plates *o* mounted in the carrying frame with lugs on the ends thereof which project into the spaces formed between the guide rods *m m*. By this means the plates *o* and the springs *n* form a superposed pile which exerts its tension in one line and prevents all lateral play of any of the separate parts. One of the end springs *n* of the series bears against the side of the music box or other suitable bearing surface (or a head or cross piece may be provided rigidly secured to the carrying frame to form the bearing for the springs). Bearing against the other end of the series of springs is a cross head or follower plate *q* mounted upon the carrying frame and sliding thereon, and held in position upon the said frame by long bearings *r*. Connected to this cross head, preferably to a lug *s* extending upwardly therefrom, is a cord *t* which passes around and is secured by one end to the drum *c*.

A pawl or ratchet or other suitable stop device is provided for the mechanism so as to hold the same from movement. A governor *u* may also be provided for the mechanism, which governor may be actuated from the main shaft through a train of gearing 1, 2, 3, 4, 5 or other suitable connection.

In order to set the apparatus for operation the drum *c* is rotated by hand to wind the cord *t*, thus compressing the series of springs *n* and causing them to exert their tension on the cord *t*. When the cord has been wound to the desired extent and the springs *n* compressed to the desired degree, the rotation of the drum *c* may be suspended and any suitable mechanism (not shown) thrown into action to prevent the spring from holding the mechanism from motion and from returning to its original form. Upon releasing the stop mechanism the spring will return to its original form to actuate the mechanism in a well understood manner.

What I claim, and desire to secure by Letters Patent, is—

In a spring motor, the combination of a train of gears, suitably supported rods *m*, elliptical springs *n*, the ends of which extend between said rods *m* and are guided thereby, follower and guide plates *o* interposed be-

tween each pair of the elliptical springs, said follower plates having lugs on the ends thereof which project between and are guided by the rods *m* and clips *p* for connecting the springs to the follower plates, and cross-head *q* having long bearings *r* sliding upon the rods *m* and means for communicating motion from the cross-head to said train of gears substantially as described.

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Witnesses:
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