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COMPLETE SPECIFICATION.

# Improvements in Apparatus for Electrically Winding Up, or Giving Tension to, Driving Springs.

We, HERMANN ARON, Ph.D., of 6, Lutzow-strasse, Berlin, in the German Empire, Professor and ARON ELECTRICITY METER, LIMITED, of 46, Upper Thames Street, in the City of London, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in apparatus for electrically winding up or giving tension to springs, of the class for which Letters Patent No. 24876 of 1894 were granted to one of us (Hermann Aron).

In practical use the apparatus constructed as described and claimed in the Specification of the said Letters Patent has not proved entirely satisfactory, for the reason, that the small spiral-spring serving to conduct the current from the coil of the electro-magnet, or solenoid, to the swinging armature is liable to break thus opening the electric circuit and interrupting the motion of the apparatus.

The object of the present invention is to provide means whereby this objection is avoided.

In the accompanying drawing, is shewn in side elevation in Figure 1 and in sectional front elevation in Figure 2 an apparatus for electrically winding up, or giving tension to, springs the said apparatus including improvements according to this invention.

The electro-magnet *a* carrying on its neutral, portion the energising coil *s*, is secured between two brass-plates $m^1$, and $m^2$, receiving the journals of the axis *c*, carrying, (so as to turn upon it) the swinging armature *b*. Secured to the said armature *b* and insulated from it, is an arm *k*, embracing the ratchet-wheel *e*, and carrying two projecting pins $b^1$, and *h*. To the front of the plate $m^2$, and insulated from it, is secured another small brass-plate $m^3$, to which the current is fed from the coil *s* by means of a conducting wire *l* and to which is adjustably secured the driving spring *g* to be wound up or to have tension imparted to it for driving clock-work or the like. The said spring *g* according to this invention is utilised to convey the current from the small plate $m^3$ to the pin $b^1$ projecting from the arm *k*, which being secured to the armature *b* as aforesaid partakes of the swinging motion of said armature. The other pin *h*, projecting from the said arm *k*, serves as a make and break, to open and close the circuit, at the proper time, as fully described in the Specification of the aforesaid Letters Patent No. 24876 of 1894. A small cylinder *d* adjustably fixed by means of a screw *f* serves to adjust the tension of spring *g*, and thereby to control the play of the return-stroke of the armature *b*. The other end of the said spring *g*, is shewn in the drawing as being not rigidly secured to the pin $b^1$ of the arm *k*, but as having a sliding contact upon the said pin $b^1$, it engaging the said pin by its curved or hook-shaped, end but this end of the said spring *g*, may if desired be secured to a

[*Price* 8*d*.]

small adjustable cylinder, adjustably fixed by means of a screw as shewn with regard to the cylinder *d* and screw *f* at the other end of the spring.

The described arrangement of the spring *g*, offers besides the advantages before stated, the further advantage of allowing ready access, and of facilitating fitting and repairs.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed we declare that what we claim is:—

1. In apparatus for electrically winding up, or imparting tension to, driving springs, the combination, with an electro-magnet or solenoid of a swinging armature *b* an insulated arm *k* carried by the said armature and carrying the pins $b^1$ and *h* and a driving spring *g*, connected to the said pin $b^1$ and serving to convey the current to said pin $b^1$ and thence to the pin *h* substantially as, and for the purpose, hereinbefore described.

2. In apparatus for electrically winding up, or imparting tension to, driving springs, the combination with an electro-magnet or solenoid of a swinging armature *b*, an insulated arm *k*, carried by the said armature and carrying the pin *h*, a driving spring *g*, connected to the said arm *k*, so as to convey the current thereto and an adjustable cylinder, or adjustable cylinders (such as *d*) to which one, or both, ends of the said spring is, or are secured for adjusting its tension, substantially as, and for the purpose hereinbefore described.

Dated this 25th day of October 1899.

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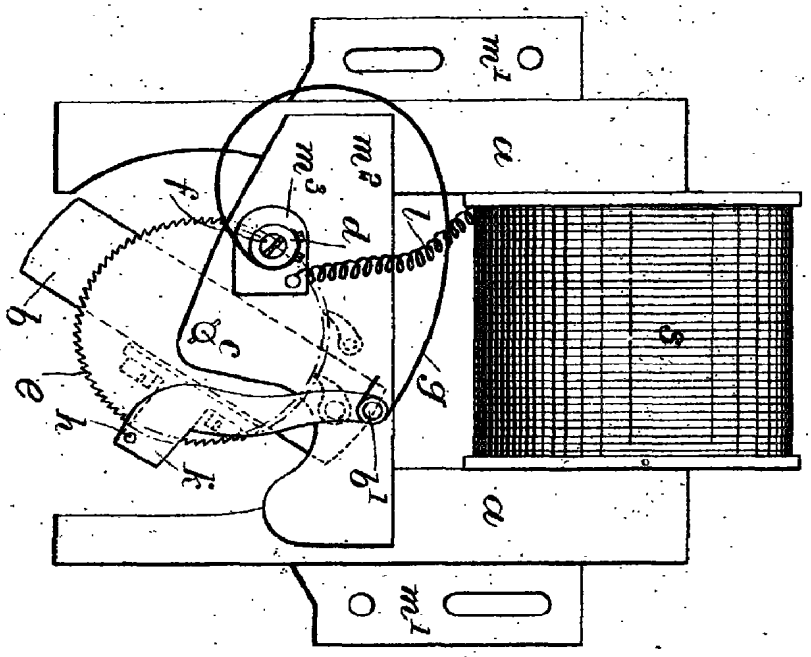


Fig. 1.

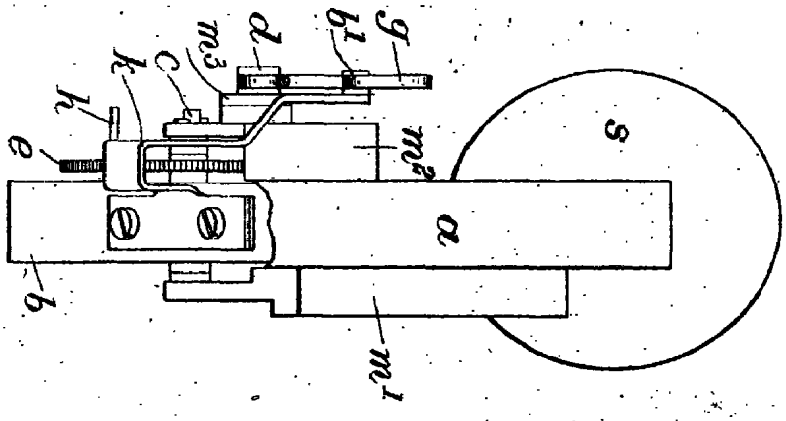


Fig. 2.

*[This Drawing is a reproduction of the Original on a reduced scale]*

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