PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Electric Means for Re-energising the Driving Springs of Clockwork Mechanisms.

We, SCHILD & CIE., of 137, rue de Parc, La Chaux-de-Fonds, Switzerland, a joint stock company organised and existing under the laws of Switzerland, 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 electric means for re-energising the driving springs of clockwork mechanisms of the type comprising a driving member subjected to the action of a spring and an electromagnet of which the armature actuates this driving member and energises the said spring, the driving member and the armature forming the contact pieces of the switch in the circuit of the electromagnet.

There has already been proposed a device of the above mentioned type in which the driving member is electrically connected to the body of the device which itself is connected to one of the poles of the source of current. The armature of the electromagnet is provided with an insulating plate on which are mounted a contact adapted to co-operate with the driving member and a fastening device for the current supply conductor. Since the armature is movable and the supply conductor is connected to the electromagnet, this conductor is formed of a small flexible wire.

This arrangement has several inconveniences, specially when it is used for small clockwork as in automobile clocks. The armature is relatively large and heavy and a strong antagonistic spring has to be used, and since this armature is subjected to sudden and very often repeated movements, the flexible cable which is not sufficiently elastic will soon deteriorate.

According to the present invention the winding of the electromagnet is surrounded by a shell which makes contact with one end of the winding and the armature is mounted on this shell. In this way no wire connection between the electromagnet and the armature is necessary and the other end of the winding can be connected to the source of current by a rigid conductor.

[*Price* 1/-]

The invention consists in electric means for re-energising the driving springs of clockwork mechanisms of the type referred to, and in which the driving member is in electrical connection with one pole of the source of current, characterised in that the shell of the electromagnet is connected to one end of the winding, while the other end of the winding is connected by a rigid conductor to the second pole of the source of current and the armature is mounted on said shell by means of an antagonistic spring permitting the current to flow from said shell to the spring and then to said armature.

The accompanying drawing illustrates by way of example one constructional embodiment of the invention.

The driving member consists in a balanced lever *a* which swings around an axle *b* and is provided with a pawl *c*. This pawl co-operates with the ratchet wheel *d* which forms the first member of the driving gear of the clockwork and is provided with an escapement not illustrated on the drawing; *f* is the driving spring, *g* the electromagnet and *h* the armature. The electromagnet is mounted with a saddle i^1 on the insulating plate i^2 fastened to the body of the apparatus. The carcass of the electromagnet comprises a cylindrical shell g^1 and a core g^2 provided with two insulating discs *k* between which is arranged the coil *l*. The core g^2 has one end threaded to which is screwed the nut *m* which secures the core g^2 and the coil in the shell g^1. The armature *h* forms the cover of the shell g^1 and is connected to it by the spring blade *n* adapted to serve simultaneously as hinge and as antagonistic spring. *o* is a guiding stem for the armature *h* and o^1 is a stop for regulating the play of the armature.

When the electromagnet becomes excited, the armature *h* drives the balanced arm in clockwise direction as seen on the drawing and stretches the driving spring *f* till the armature strikes against the shell g^1. In this moment the balanced arm *a* under the influence of the accumulated kinetic energy continues to turn and opens the circuit of the electromagnet. The armature is then pulled

back by the antagonistic spring n, and the driving spring f slowly drives the balanced arm a in counterclockwise direction, thereby turning the ratchet wheel.

One of the poles of the source of current p is connected to the body of the apparatus and therefore also to the balanced arm a; the other pole is connected to the fixed terminal q, wherefrom a solid insulated conductor r leads through a small hole s formed in the shell g^1 to the coil l; at the other end of the coil the bare end of the wire penetrates the insulating disc k and terminates between the disc and the bottom of the shell g^1. When the nut m is screwed on, the wire is tightly pressed against the said bottom; this arrangement makes soldering of the wire superfluous and simplifies the insertion and removal of the coil. The electric current flows therefore from the coil l to the shell g^1 then to the spring n and finally to the armature h.

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

1. Electric means for re-energising the driving springs of clockwork mechanisms of the type referred to, and in which the driving member is in electrical connection with one pole of the source of current, characterised in that the shell of the electromagnet is connected to one end of the winding, while the other end of the winding is connected by a rigid conductor to the second pole of the source of current and the armature is mounted on said shell by means of an antagonistic spring permitting the current to flow from said shell to the spring and then to said armature.

2. In electric means for re-energising the driving springs of clockwork mechanisms as claimed in Claim 1, the arrangement that one bare end of the winding terminates between the bottom of the shell of the electromagnet and an insulating disc in order to make contact with said bottom when the core of the electromagnet is screwed into said shell.

3. Electric means for re-energising the driving springs of clockwork mechanisms substantially as described and as illustrated in and by the accompanying drawings.

Dated this 10th day of October, 1927.

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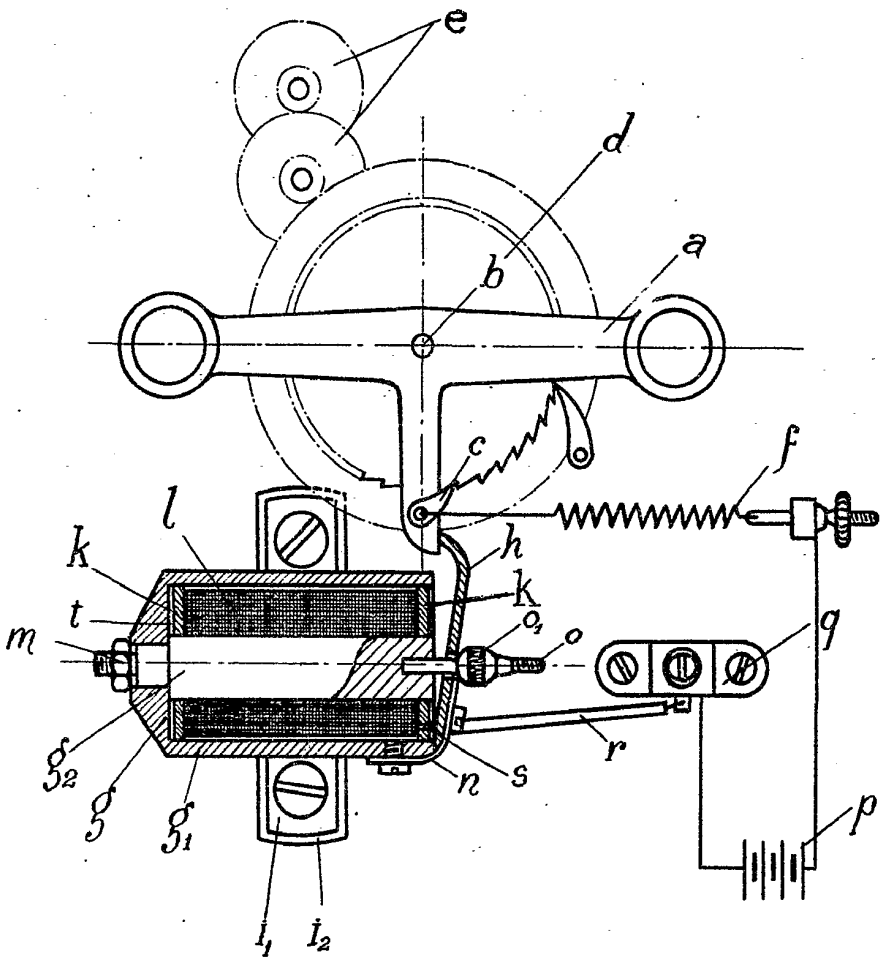

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