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PROVISIONAL SPECIFICATION.

Improvements in or relating to Electro-mechanical Impulse-devices applicable to Clocks and for other Purposes.

I, HENRI CAMPICHE, Watchmaker, R. Kuster & Co.. Cairo, Egypt, do hereby declare the nature of this invention to be as follows:—

The invention relates to an electro-mechanical device which may be used in any apparatus in which a mechanical impulse is to be imparted, (for instance to a pendulum) by means of closing the circuit in which both a source of electricity of any kind and the said apparatus are included.

The invention will be described by way of example as constructed for acting upon the pendulum of a clock.

A base or support carries an electromagnet and a plate to which is pivoted on a pin two levers. The inner lever is provided with a spring which tends to move the same away from the electromagnet the armature of which is fixed to the said inner lever.

A strong spring, secured to the outer lever bears against the heel of the inner lever, and therefore the two levers remain normally applied against one another, the pressure of the two springs causing the whole device to remain normally out of contact with the electromagnet.

The free end of the outer lever carries a rocking lever pivoted to it and having a flexible arm secured to its free end and projecting downwards.

The rocking-lever is normally caused to bear either owing to its own weight or to a suitable spring against a pin fixed to a cross bar on the electromagnet.

If an electric current is sent through the electro-magnet the armature of the same will be attracted and the end of the inner lever will be drawn to it, turning on its pivot. If at that moment the flexible arm is free to move in the same direction, the outer lever to which it is connected will simply move with the inner lever. But if at that moment the flexible arm is in contact with the object to which an impulse is to be imparted, say for instance with a clock-pendulum, the outer lever will be held by the resistance of the pendulum in its outward position and the result will be that the heel of the inner lever will act upon the spring of the outer lever, the tension of which will react upon the pendulum through the rocking lever and its flexible arm.

The upper end of the rocking lever bearing against the fixed pin will not be able to move so that its pivot and lower end will alone be moved in the direction of the magnet by the outer lever and the depending arm pressing the pendulum in the same direction will be turned on its pivot.

At this moment of the working of the apparatus the electric circuit will be interrupted so as to allow the parts to return to their normal positions.

Dated this 17th day of May 1899.

BOULT & WADE,
Agents for the Applicant.

[*Price 8d.*]

COMPLETE SPECIFICATION.

Improvements in or relating to Electro-mechanical Impulse Devices applicable to Clocks and for other Purposes.

I, HENRI CAMPICHE, of R. Kusten & Company, Cairo, Egypt, 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 electro-mechanical impulse devices particularly adapted to driving or operating upon clocks or other apparatus requiring impulses imparted at intervals, and has for its particular object the arrangement of the mechanism in such a manner that the impulse shall be transmitted gradually to the object it is desired to move and the force of each impulse shall be constant.

In carrying out this invention according to one method an electro-magnet is provided with an armature carried by a spring-controlled lever pivotted to any convenient support. This lever is provided with a tail or projection which extends beyond the point at which it is pivotted and about which it turns. A second lever carried by the same pivot or arranged in close proximity to the first lever has secured to it a spring, which bears against the tail of the first lever so that the two levers are normally kept in contact with each other. Pivotted to the free end of the second lever is a rocking lever, one end of which bears against a stationary stop or pin, whilst the other is in engagement with the object to which it is desired to transmit the impulses given by the electro-magnet.

When a current is passed through the electro-magnet the armature is drawn towards the latter against the action of its spring. This will cause the tail of the armature lever to force back the spring secured to the second lever so that the second lever will follow the movement of the armature. At the same time the movement of this second lever relatively to the stationary stop aforesaid will cause the stop to turn the rocking lever about its pivot so that the free end of the rocking lever will receive a greater angular movement than that of the second lever by which it is carried.

In the accompanying drawings which illustrate one method of carrying out this invention,

Figure 1 is an elevation of the apparatus in part section showing the different parts of the mechanism in one position;

Figures 2 and 3 are similar views of the apparatus showing the positions taken by the different parts of the mechanism during operation, and

Figure 4 is an underside view showing the mechanism in section on the line 4—4 of Figure 1.

Like letters indicate like parts throughout the drawings.

Secured to a base A is an electro-magnet B and a bracket C provided with a pin or pivot D. On this pin or pivot D are mounted levers E and F and secured to the free end of the lever E is the armature G of the electro-magnet. The lever E is provided with a tail or projection E^1 which extends beyond the pivot D and secured to the lever F is a spring H which bears against the tail E^1 of the lever E. A rocking lever I is pivotted at *i* to the free end of the lever F and to the lower end of the lever I is secured a pendant arm J. The parts F I constitute a compound lever. The upwardly extending or free end of the rocking lever I is arranged to bear against a stationary stop or pin K conveniently carried by a bridge-piece *b* secured to the electro-magnet B. The lever E is normally kept in such a position that its armature G is withdrawn from the electro-magnet B by means of a spring *e* secured to the lever and conveniently made to bear against the bracket C, and the spring H bearing against the tail E^1 of the lever E will normally keep the levers E and F together. For the spring *e* a weight or other

returning-device for the armature might be substituted. An adjustable stop L of any convenient construction may be mounted upon the base A in order that the distance to which the armature G is permitted to move from the electro-magnet B may be adjusted.

The operation of this device is as follows:—

When no current is passing through the electro-magnet B the levers E F and the rocking lever I take up the position shown in Figure 1. If now the current is passed through the electro-magnet, the armature G will be drawn towards the pole pieces of the electro-magnet so that the lever E will swing upon its pivot D and take the position shown in Figure 2 deflecting the spring H; the lever F would, if no resistance were offered to it, immediately follow the movement of the lever E under the action of that spring so that both levers would take the position shown in Figure 3. The arm J is assumed to engage with some device it is desired to move, such for instance as the pendulum of a clock, which it will operate gradually by the action of the spring on the lever F and arm J. As the lever F swings towards the lever E the rocking lever I will turn about its pivot *i* so that only the lower portion of this lever advances, the upper portion remaining against the pin K, as is shown in Figure 3 whence it will be observed that the angle through which the arm J is moved is greater than that through which it would have moved had it been rigidly secured to the lever F.

When the different parts of the mechanism have taken the position shown in Figure 3, the forward stroke of the apparatus is completed; whenever thereafter the current is cut off, the spring *e* returns the levers E and F to their normal position in which they are shown in Figure 1, the rocking lever being returned by the pendulum to which it may be attached or if necessary by any convenient spring or gravity device.

The spring H in addition to imparting movement gradually to any objects secured to the arm J and thus preventing sudden shock when the current is passed through the electro-magnet B will also ensure the force of each impulse being constant, as provided the current passing through the electro-magnet B is of sufficient strength to draw the armature G against the pole pieces, the force applied to the lever F will always be that exerted by the spring H when extended a given distance, so that however violently the armature G may be brought against the pole pieces of the electro-magnet B, the force with which the lever F moves will be constant.

It will be understood that this mechanism may be used for driving apparatus other than clocks, the arm J being adapted for connection to any object it may be desired to move by imparting impulses at stated intervals.

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

1. In an electro-mechanical impulse device the combination with a movable armature of a simple or compound lever such as F or F I and a spring forming an operative connection between the armature and that lever substantially as and for the purpose described with or without a stop such as K for the part I.

2. In an electro-mechanical impulse device the combination with a pivotted armature lever having a tail E^1, and a lever such as F, of a spring, bearing on the tail and on the lever F, substantially as described.

3. The complete electro-mechanical impulse device substantially as described and illustrated in the accompanying drawings.

Dated this 16th day of February 1900.

BOULT, WADE & KILBURN,
Agents for the Applicant.

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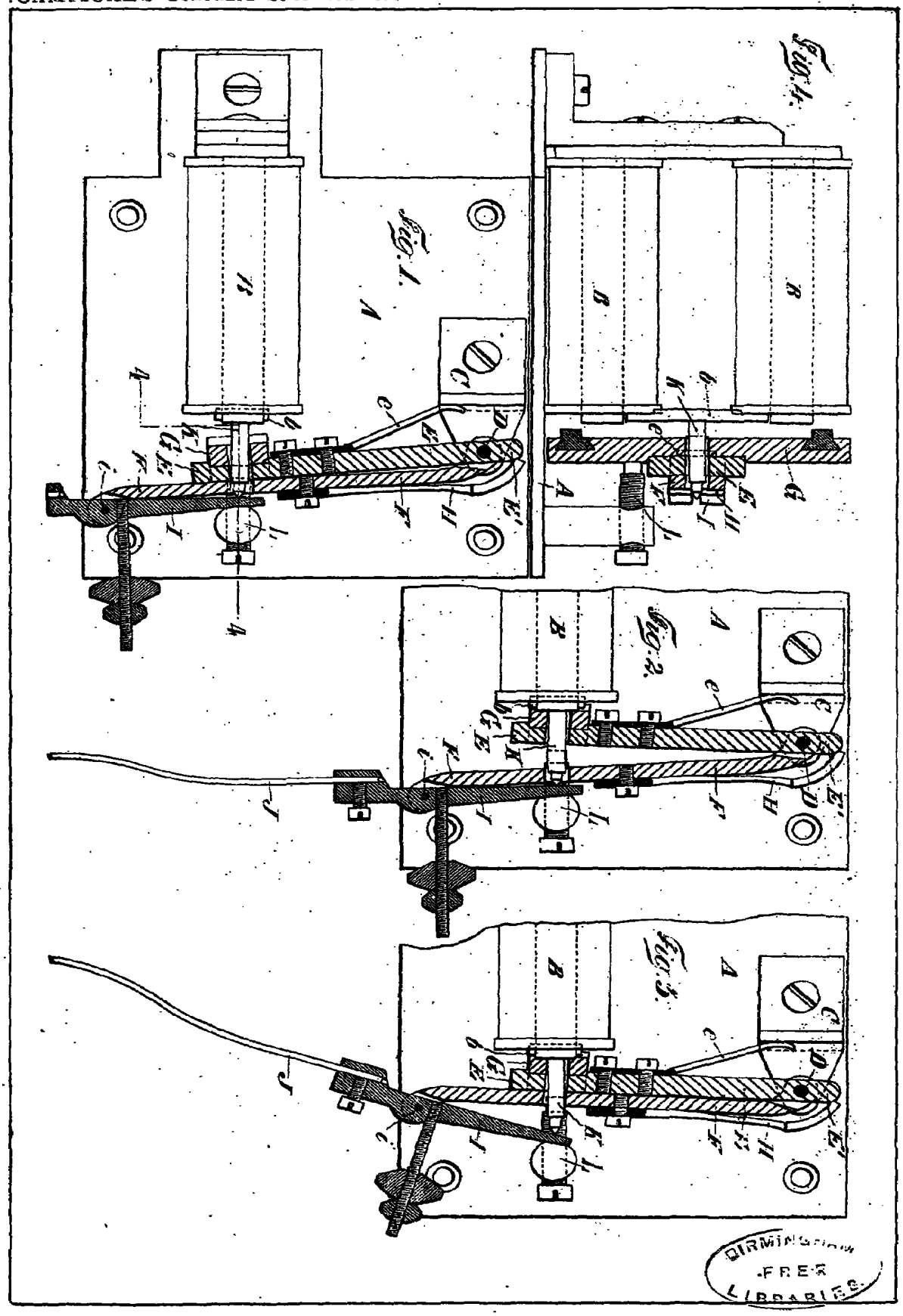
CAMPICHE'S COMPLETE SPECIFICATION. *(1 SHEET)*



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