F. DE CANNART D'HAMALE.

ELECTROMECHANICAL MAKE AND BREAK MOVEMENT FOR ELECTRIC CIRCUITS.

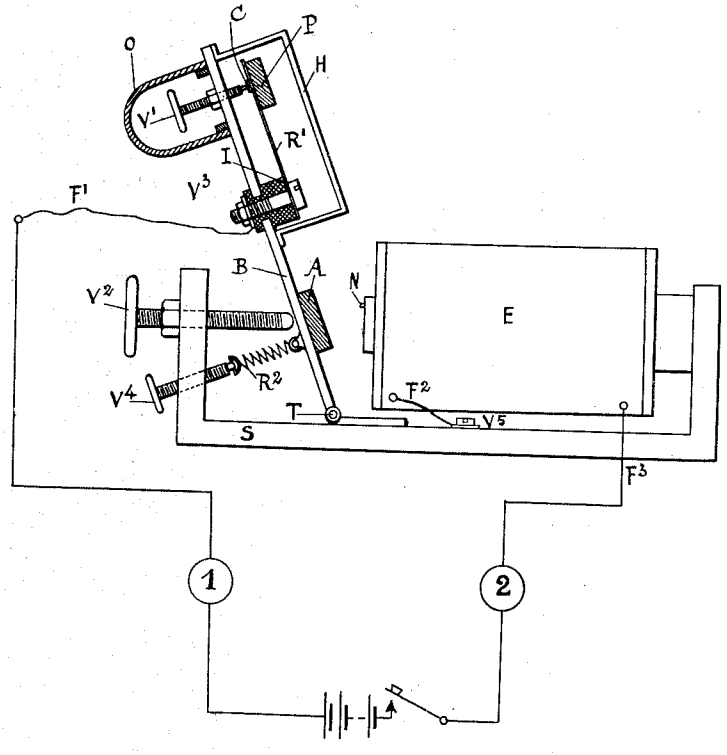
APPLICATION FILED DEC. 27, 1917.

1,282,388.

Patented Oct. 22, 1918.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:

Inventor:

François de Cannart d'Hamale

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2 SHEETS—SHEET 2.

Fig. 2.

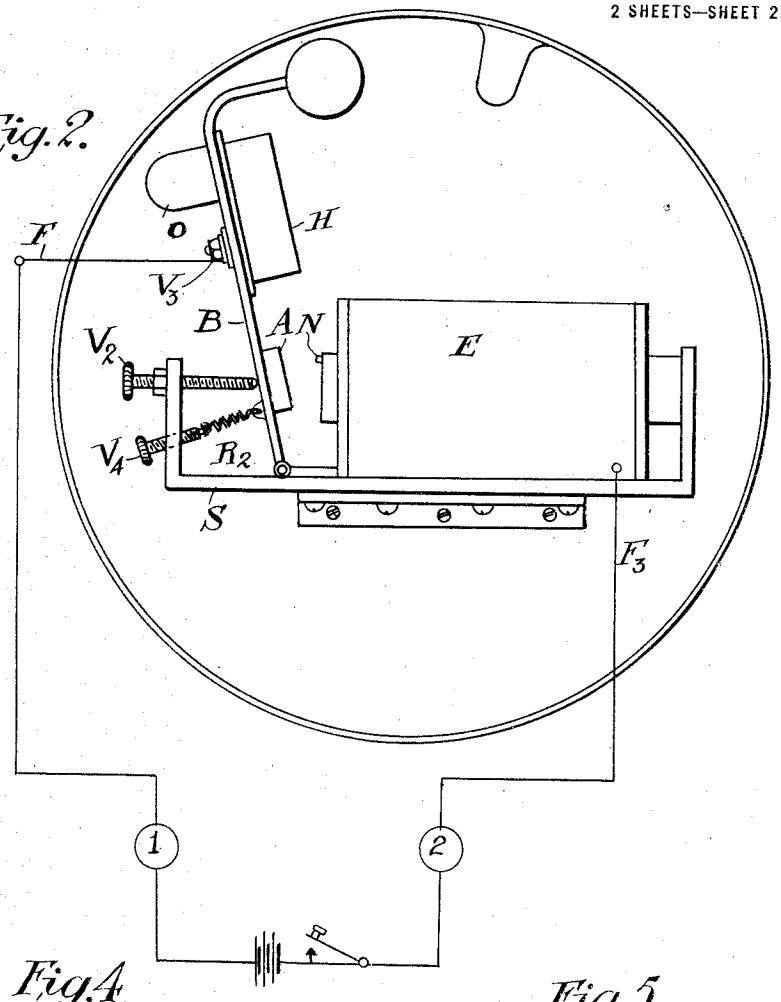


Fig. 3.

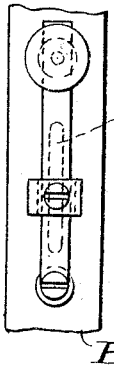


Fig. 4.

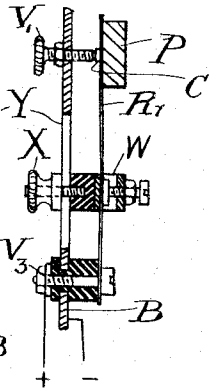
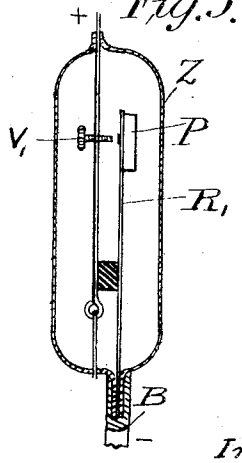


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANÇOIS DE CANNART D'HAMALE, OF ENFIELD, ENGLAND.

ELECTROMECHANICAL MAKE-AND-BREAK MOVEMENT FOR ELECTRIC CIRCUITS.

1,282,388. Specification of Letters Patent. Patented Oct. 22, 1918.

Application filed December 27, 1917. Serial No. 209,124.

To all whom it may concern:

Be it known that I, FRANÇOIS DE CANNART D'HAMALE, a subject of the King of the Belgians, residing at Enfield, Middlesex, England, have invented certain new and useful Improvements in Electromechanical Make-and-Break Movements for Electric Circuits, of which the following is a specification.

My invention relates to an electromechanical make and break movement for electric circuits in which the break is produced by the inertia of a weight secured at the end of a spring, the whole being supported or put into motion by the armature of an electromagnet.

The invention will be more fully understood by the following description taken in conjunction with the accompanying drawings in which—

Figure 1 is a side view partly in section of one form of apparatus.

Fig. 2 is a side view of part of a bell with the invention applied thereo.

Figs. 3 and 4 are details.

Fig. 5 is a detail view showing the contact breaking devices inclosed in a bulb.

Referring to the drawings:—E is the electromagnet. A is the armature which is supported on a metallic plate B hinged at T to the frame S.

I is an insulating block on which is fixed the spring R, which carries the weight P. V_1 is the platinum tipped screw which makes contact at C with the spring R_1. V_2 is an adjusting screw to limit the range of movement of the armature A when pulled back by spring R_2. V_4 is a screw to adjust the tension of spring R_2. H is a gas tight cover which may be fixed on plate B and inclose hermetically the contact C so allowing the make and break movement to be used in any explosive atmosphere.

O is a gas tight cap covering screw V_1. The action is as follows:—When the circuit is closed, the current flows through the flexible wire F_1 from terminal 1 to the screw V_3 which is connected to the spring R_1 through the insulating block I, and thence from spring R_1 to screw V_1, plate B, frame S, screw V_5, connection F_2 and then through the coils of the electromagnet E to wire F_3 and back to terminal 2.

The electromagnet E being energized attracts the armature A which is arrested by a stop N. The weight P being supported on a spring R_1 continues its forward movement owing to its inertia and breaks the contact at C. The armature then falls back to its first position under the action of the spring R_2.

The weight P under the action of spring R_1 flies back also to make contact again with screw V_1 and the whole series of operations is repeated, giving a continuous vibratory or trembling movement.

The speed of the make and break movement can be adjusted by different means:—

(1) If this invention be applied to an electric bell or like apparatus, in which the speed of vibration is more or less determined by the maker once for all, it will be noted that the length and flexibility or springiness of spring R_1 and the amount of the weight P, are fixed, and the adjustment of rate of vibration can be made within certain limits by screw V_1. The tension of spring R_2 can also be adjusted by the screw V_4. For the same current, the stroke of the armature can be made longer by unscrewing V_2 when the spring R_2 will be weaker. This adjustment can only be made within certain limits, as the spring R_2 must always be strong enough to pull back quickly the armature A.

(2) If the make and break be applied to an apparatus which requires variation of rate of vibration within fairly wide limits, say from 1 to 15 or more beats per second, the length of the spring R_1 can be altered by means of a sliding piece W (Figs. 3 and 4) secured by a milled nut X or the like, to plate B on which it may move in a slot Y.

The position of the weight P on the spring R_1 may be also altered. It is obvious that the method of adjustment described in the above paragraph (1), by means of screws V_1 and V_2 is also applicable in this case.

In the case described in the above paragraph (1), it is easy to inclose the make and break movement, that is the spring, weight and tip of screw V_1 in gas tight cover H secured on plate B and hermetically sealed either by rubber, by means of a tallowed cord, or the like device, or by providing simply flat machined surfaces.

The adjustment would be made from outside the cover by the screw V, which has preferably a fairly long bearing and a fine thread, in order to avoid any admission of gas.

The lock nut helps to keep it gas tight and

if necessary a gas tight screwed cover O can be fitted so as to inclose the head of screw V_1 when the adjustment has been made.

The whole make and break movement, that is, spring, weight and contact screw may also be inclosed in a hermetically sealed bulb Z (Fig. 5) in which a vacuum is produced or in which nitrogen, hydrogen, or the like gas is introduced under any suitable pressure.

The make and break movement above described may either be part of the apparatus it operates, as for instance, in a bell, being carried by the armature which operates the hammer; or it may be constructed with its own magnet as a separate unit and be connected in series in some part of the circuit of the apparatus it is required to operate.

I claim:—

1. Electro-mechanical make and break device for an electric circuit, comprising an electro-magnet, a pivoted armature, a contact on said armature, a weight, a spring carrying said weight and connected to said armature, said weight being adapted to move, under its inertia, away from said contact when said armature is arrested after being attracted by said electro-magnet, and to move again into engagement with said contact under the action of said spring, substantially as and for the purpose hereinbefore set forth.

2. Electro-mechanical make and break device for an electric circuit, comprising an electro-magnet, a pivoted armature, a contact on said armature, a weight, a spring carrying said weight and connected to said armature, said weight being adapted to move, under its inertia, away from said contact when said armature is arrested after being attracted by said electro-magnet, and to move again into engagement with said contact under the action of said spring, and a gas tight cover for the aforesaid contact spring and weight for the purpose of excluding explosive gas from the neighborhood of said contact, substantially as and for the purpose hereinbefore set forth.

3. Electro-mechanical make and break device for an electric circuit, comprising an electro-magnet, a pivoted armature, a contact on said armature, a weight, a spring carrying said weight and connected to said armature, said weight being adapted to move, under its inertia, away from said contact when said armature is arrested after being attracted by said electro-magnet, and to move again into engagement with said contact under the action of said spring and an electric circuit including in it the aforesaid contact and electro-magnet, substantially as and for the purpose hereinbefore set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANCOIS DE CANNART D'HAMALE.

Witnesses:
A. W. MATHYS,
H. MATHYS.