(No Model.)

J. G. SCHREUDER.

RELAY.

No. 442,338. Patented Dec. 9, 1890.

FIG. 1.

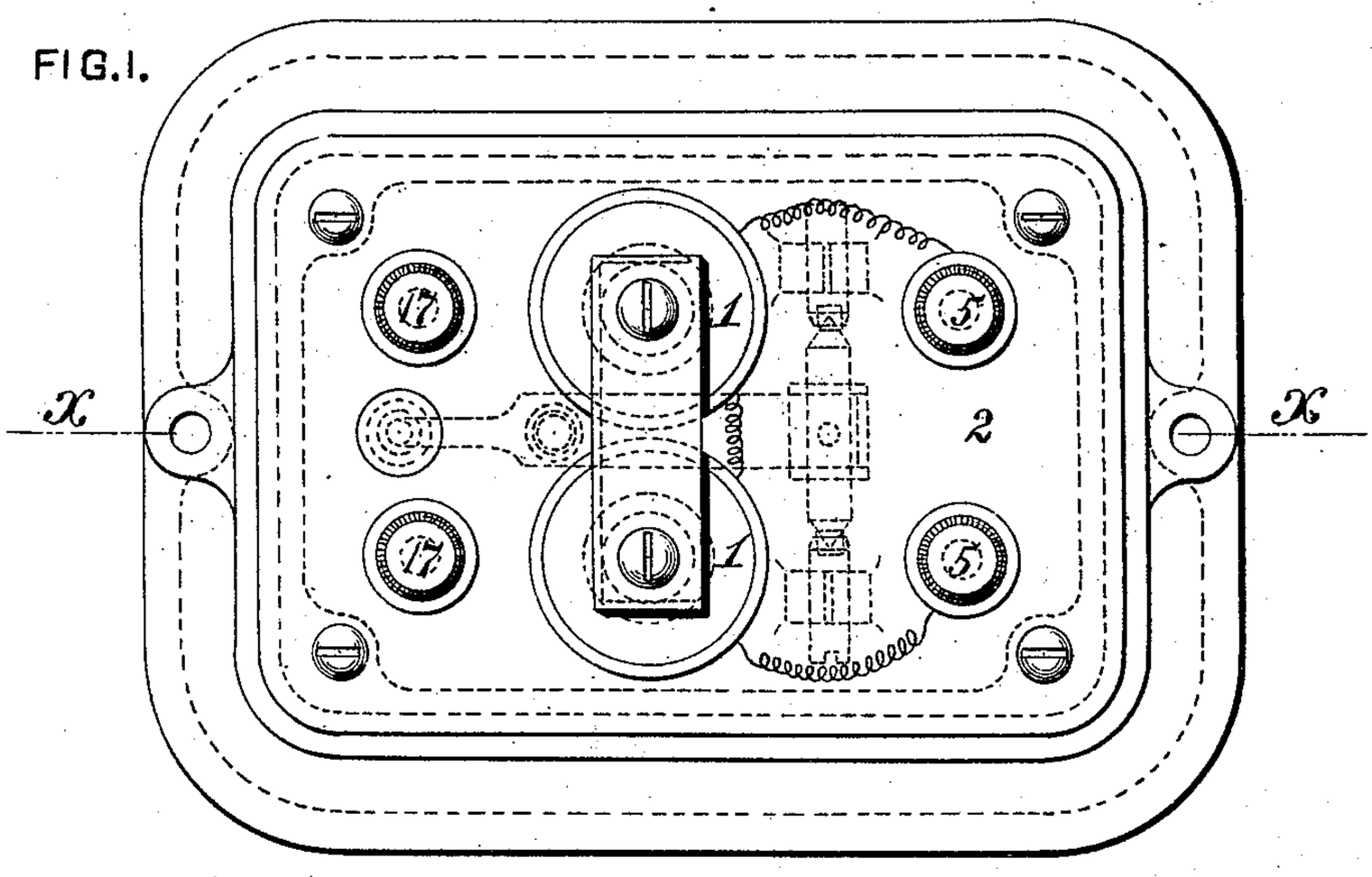


FIG. 2.

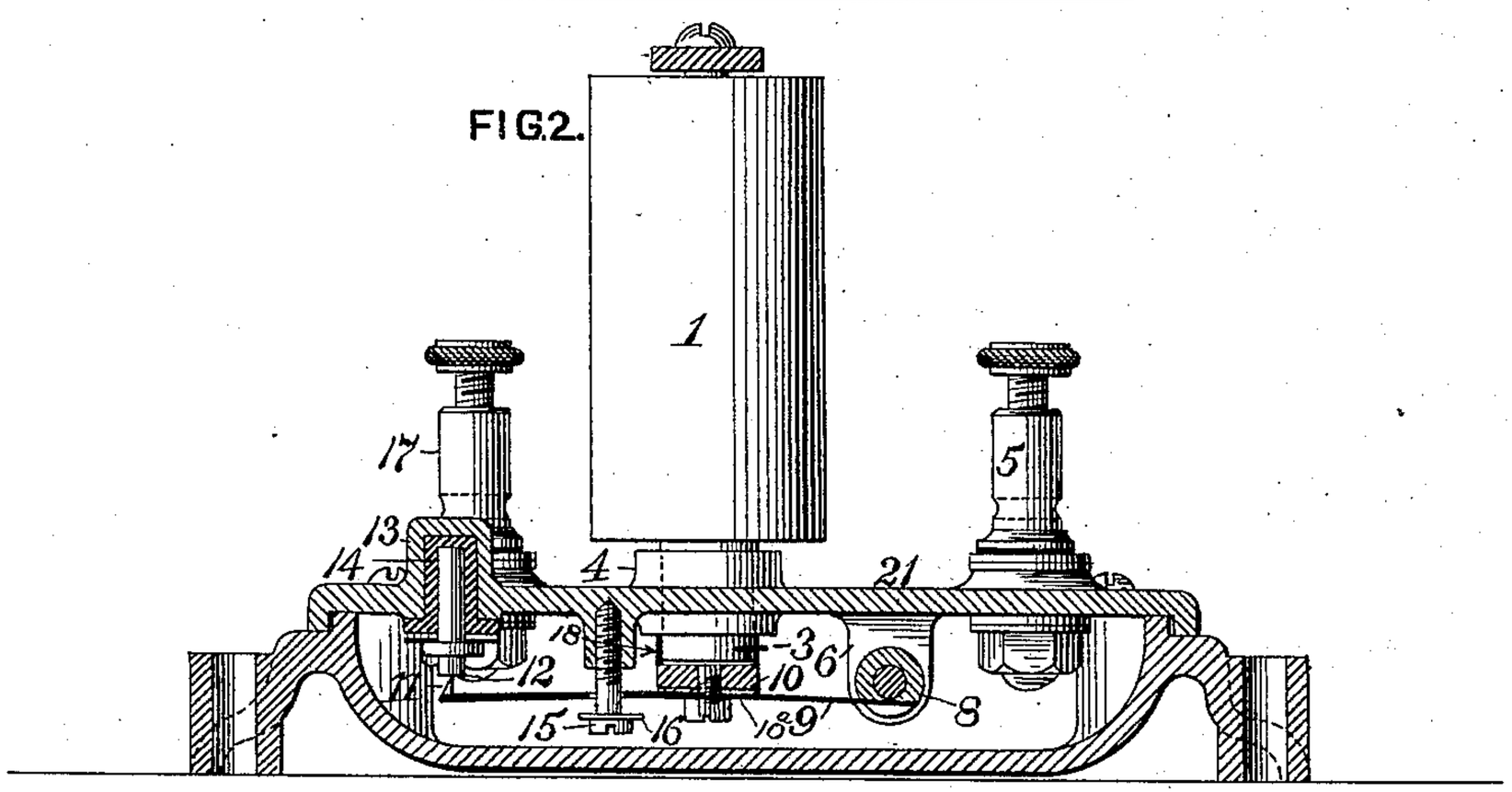
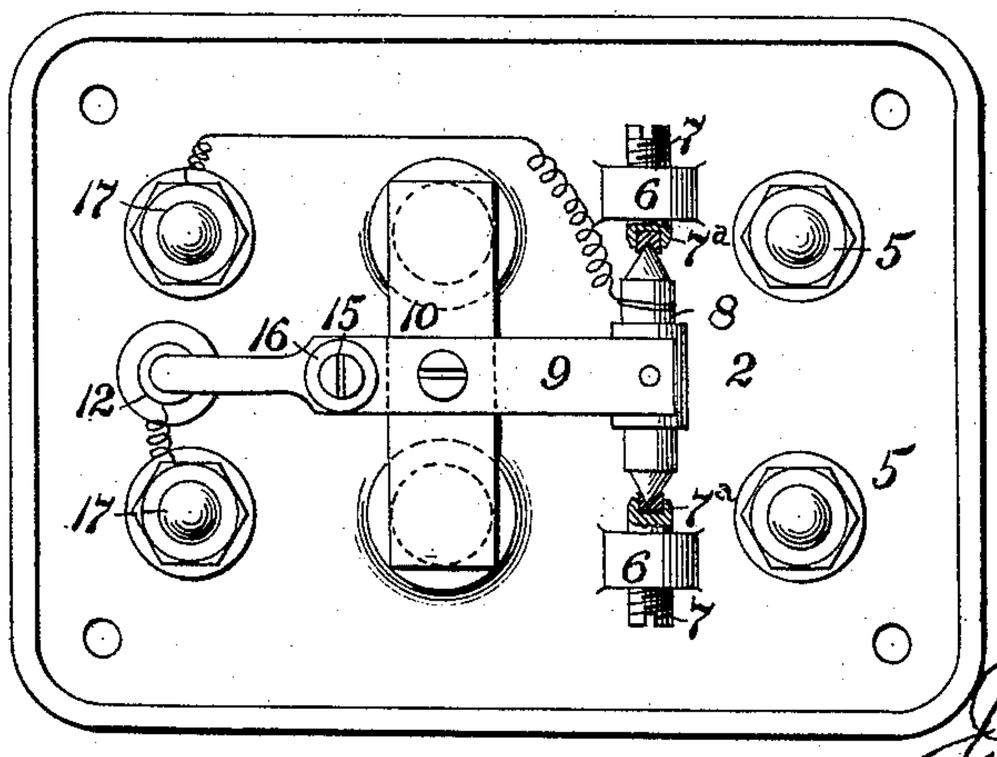


FIG. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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RELAY.

SPECIFICATION forming part of Letters Patent No. 442,338, dated December 9, 1890.

Application filed July 16, 1890. Serial No. 358,931. (No model.)

To all whom it may concern:

Be it known that I, JENS G. SCHREUDER, a citizen of the United States, residing at Edgewood, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Relays, of which improvements the following is a specification.

The invention described herein relates to certain improvements in relay-magnets; and has for its object such a construction and arrangement of the armature and its connections that on the demagnetization of the magnets the armature will move automatically away from the magnets.

In general terms the invention consists in the construction and arrangement of mechanical devices or elements, as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of a relay embodying my invention. Fig. 2 is a sectional elevation of the same, the plane of section being indicated by the line *x x*, Fig. 1; and Fig. 3 is a plan view of the under side of the relay.

In the practice of my invention the magnets 1 are arranged in an inverted position and side by side on the plate 2, which is preferably formed of metal, the cores 3 of said magnets extending down through openings in the plate, a flange 4 being formed around the edges of the openings in the plate, so as to provide a broader bearing for the projecting ends of the cores. The magnets are electrically connected to the binding-posts 5 for the wires of the main circuit, said posts being attached to the plate but insulated therefrom in the usual or any suitable manner. On the under side of the plate are formed lugs or ears 6 having threaded openings therethrough for the reception of the bearing-screws 7, which have holes formed in their ends for the reception of plugs 7^a, formed of insulating material, and in the ends of said plugs are formed conical holes for the conical ends of the shaft 8, as shown in Fig. 3. The lugs or ears 6 are so arranged that a resilient strip or plate 9, preferably formed of steel or phosphor-bronze and attached at one end to the shaft 8, will pass under and transversely of the downwardly-extending ends of the cores of the magnets. On this resilient strip or plate is attached the bar 10 in such position as to extend across the lower ends of the cores 3. Said bar serves as an armature for the magnets and is insulated by a washer 10^a from the strip. The outer end of the strip or plate 9 is provided with a spur or point 11, adapted to strike and bear upon the contact-pin 12, which is arranged in a socket 13, formed in the plate 2 above the outer end of the strip or plate, but insulated from the walls of the socket and plate by a thimble 14, formed of insulating material. The contact-pin is preferably made adjustable in the socket 13, and when the magnets are in use is so adjusted that the spur 11 on the strip 9 will bear upon the contact-pin 12 before the armature 10 reaches or bears upon the ends of the cores, so that the resilient strip or plate will be bent out of line or placed under tension by the further movement of the armature into contact with the cores, as shown in Fig. 2. As soon as the cores are demagnetized the resilience of the strip or plate will pull the armature away from the cores, overcoming any residuary magnetism remaining therein or cohesion between the cores and armature after the exciting-current has been cut off, the plate or strip assuming its straight or normal condition. The movement of the strip or plate to normal condition does not necessarily move the point or spur 11 away from the pin 12. The further movement of the strip necessary to rupture the auxiliary circuit is effected by gravity, the weight of the armature assisting therein. The downward movement of the strip is limited by the head of a screw 15 passing through the strip and screwing into the plate 2, and is provided with a washer 16 of insulating material, so as to prevent electrical contact between the strip and screw.

On the upper side of the plate are binding-posts 17, to which are connected the conductors of the auxiliary circuit, said binding-posts being also connected, one to the contact-pin 12 and the other to the resilient strip or plate.

It will be observed that the strip or plate 9

is wholly insulated from the supporting-frame and also from the magnets, so that in case of any short-circuiting of the main circuit either through the bed-plates or the magnets themselves the auxiliary circuit will not be affected.

In order to prevent the armature from cohering to the poles of the magnets, a collar 18, formed of brass or other non-magnetic material, is slipped over the end of the cores 3, said collars projecting slightly beyond the ends of said cores, so as to prevent contact between them and the bar 10.

I claim herein as my invention—

In a relay, the combination of electro-magnets and a gravity-armature formed of resilient material, the pivotal support and contact-point of the armature being arranged in a plane below the poles of the magnets, whereby the armature is placed under tension when attracted by the magnets, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JENS G. SCHREUDER.

Witnesses:
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