(No Model.)

E. L. ORCUTT.

RELAY MAGNET.

No. 378,552. Patented Feb. 28, 1888.

Fig. 1.

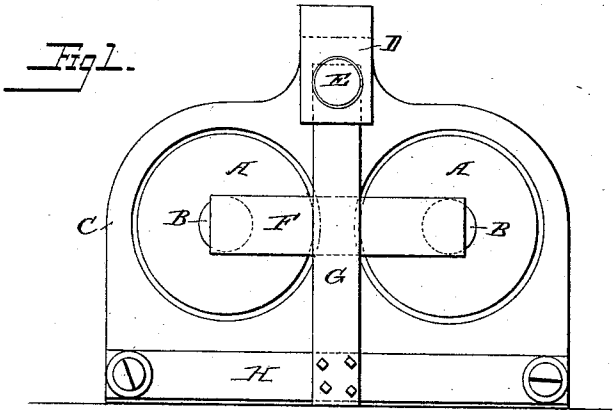


Fig. 2.

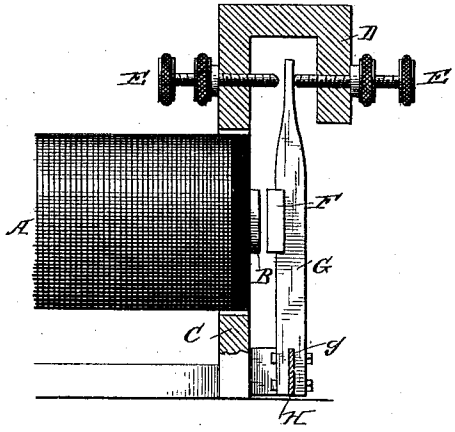


Fig. 4.

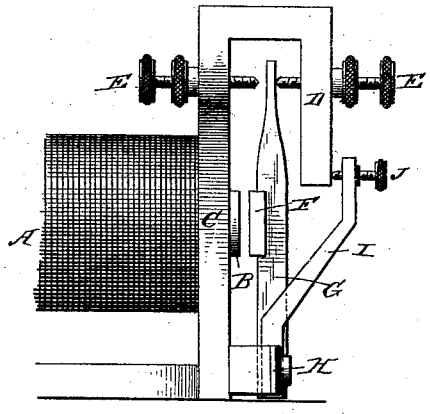
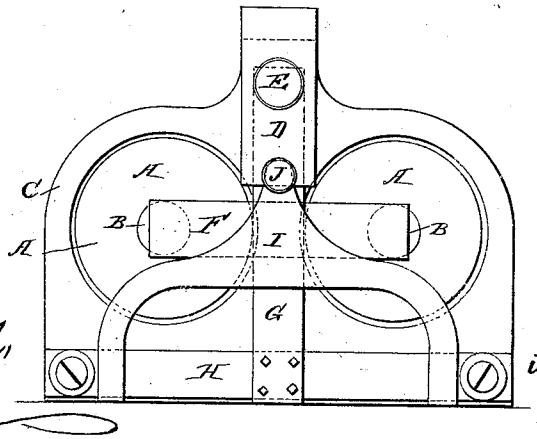


Fig. 3.



Attests:
Jno. J. Hinkel Jr.
Wm. A. Harries

E. L. Orcutt.
Inventor: by
Foster & Freeman.
attys

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

EDWARD L. ORCUTT, OF SOMERVILLE, MASSACHUSETTS.

RELAY-MAGNET.

SPECIFICATION forming part of Letters Patent No. 378,552, dated February 28, 1888.

Application filed February 7, 1887. Serial No. 227,064. (No model.)

To all whom it may concern:

Be it known that I, EDWARD L. ORCUTT, a citizen of the United States, and a resident of Somerville, Middlesex county, Massachusetts, have invented certain new and useful Improvements in Armatures for Magnets and Relays, of which the following is a specification.

My invention relates to electro-magnets, relays, &c., and instruments of that class, and has for its object to improve and simplify the construction of such instruments; and it consists in mounting or supporting the armature-levers upon a spring in such a manner that when the lever is operated the spring will be distorted, and the movement of the lever in one direction shall be effected by the torsional resiliency of the spring.

Referring to the accompanying drawings for a more particular description of my invention, Figure 1 is a front elevation of a device embodying my invention. Fig. 2 is a longitudinal side section thereof. Fig. 3 is a front view showing a modified form, and Fig. 4 is a side view of part of the same.

As my present invention relates more particularly to the armature, I do not deem it necessary to particularly describe the other parts of the devices shown, but may remark, generally, that while I have illustrated one well-known form of magnet or relay, my invention is applicable to all similar instruments, as well as to bells, signals, and, in fact, all classes of electrical devices in which a vibrating armature is used, the only changes necessary to adapt it to these various devices being structural and not different in kind, and included in my invention.

I have shown the magnet-coils A A and cores B B as mounted in a frame, C, having a projecting or overhanging arm, D, with adjusting screw-stops E E. The armature F is mounted on the armature-lever G, one end of which extends between the adjusting-screws, and the other end is preferably slotted, as at *g*, and embraces the spring H, or is otherwise properly secured thereto. This spring H preferably consists of a comparatively thin flat plate or strip, the ends of which are securely fastened to the frame C, so as to maintain the armature-lever attached to the spring in proper normal relation to the magnet-cores and the adjusting-screws.

It is evident that, the parts being arranged as shown in Fig. 2, the magnet being energized, it will attract the armature and armature-lever toward it, and the ends of the spring being rigidly secured, the middle portion will be distorted, strained, or twisted, and as soon as the armature is released from the magnet the spring will tend to restore the armature-lever to its normal position.

One very important advantage of this construction, aside from its simplicity and durability, is found in the fact that the movement of the armature under the control of the spring is not in a direct and true arc of a circle, for as the spring is distorted the lower part moves outwardly and the upper part moves inwardly, and the armature-lever not only moves laterally, but downwardly, thereby causing a rubbing contact between the end thereof and the stop-screw, keeping the contact bright, and this is a very important feature, especially in relays or when the armature-lever forms part of an electric circuit. It will thus be seen that the armature-lever is practically mounted upon a movable fulcrum, and the amount of movement of this fulcrum is dependent upon the adjustment of the parts and the resiliency of the spring supporting the lever.

The magnet-cores B may be adjustable to and from the armature; or the spring H may be made adjustable in various ways as well. For instance, washers may be used between the end of the spring and the frame; or, as is illustrated in Figs. 3 and 4, a yoke, I, may be used, the lower ends of the arms of the yoke embracing or being secured to the spring near its ends, and the upper central portion of the yoke being bent outwardly and provided with a screw, J, insulated therefrom, if necessary, which bears upon the extended end of the overhanging arm D. By this or similar means it will be seen that the spring may be adjusted so as to exert any desired degree of pull or strain against the force of the magnet.

Having thus fully described enough of my invention to enable those skilled in the art to make and use the same, I will not go into further details, but will state that, without limiting myself to the particular devices shown and described, what I claim is—

1. The combination, with a magnet, frame, and stops, of an armature and armature-lever,

a spring fixed at or near its ends and carrying said lever near its center, and adjusting means for twisting said spring to suit the power of the magnet, substantially as described.

2. The combination, with a magnet, frame, and stops, of an armature and armature-lever, a spring fixed at or near its ends and supporting said lever, a yoke secured to the spring near its ends, and an adjusting-screw carried by said yoke bearing against some fixed part of the device, substantially as described.

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

EDWARD L. ORCUTT.

Witnesses:

F. L. FREEMAN,

WM. A. HARRIES.