

(No Model.)

J. I. CONKLIN, Jr.
ELECTRIC TELEGRAPH RELAY.

No. 353,288.

Patented Nov. 30, 1886.

Fig.1.

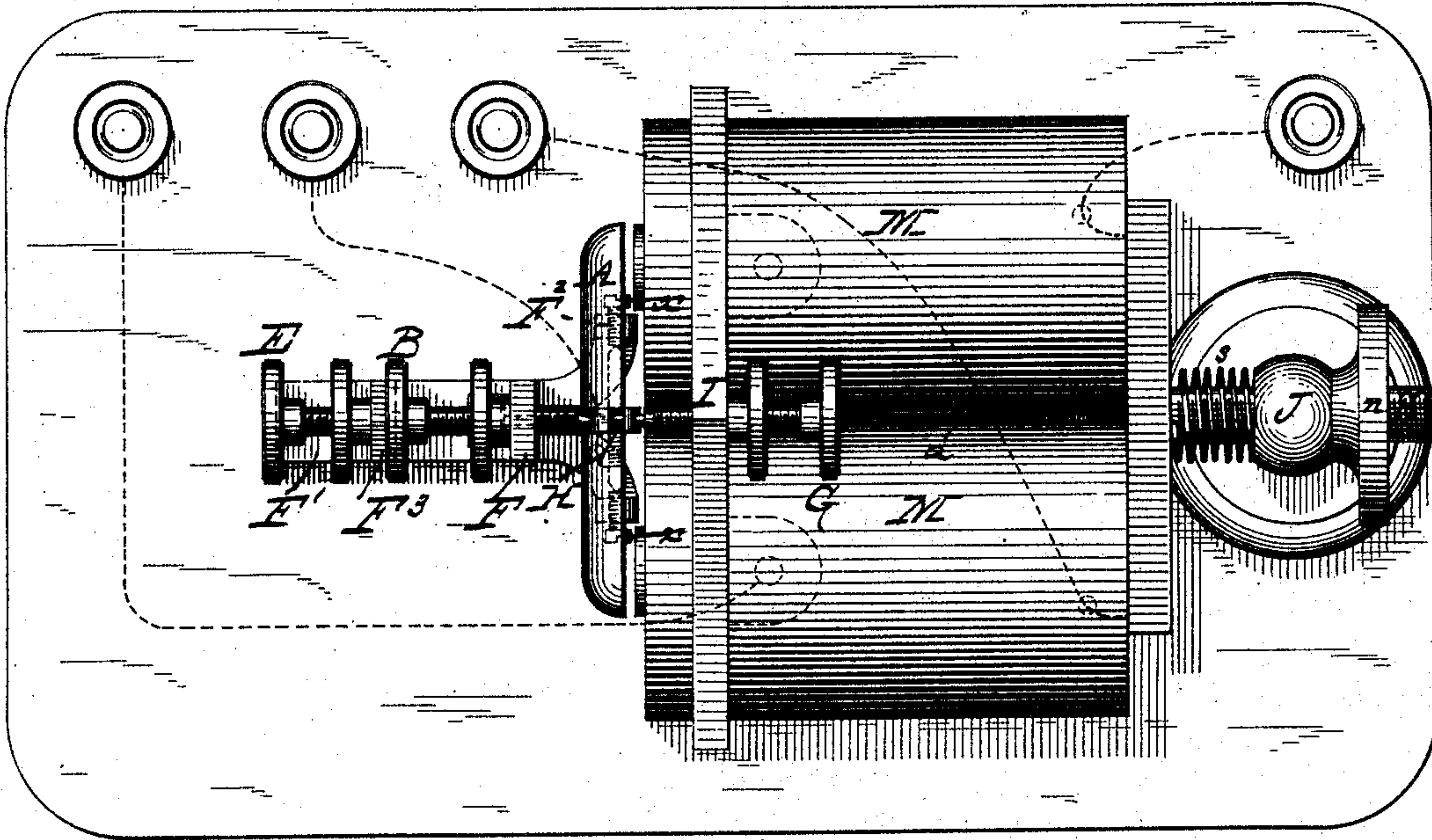
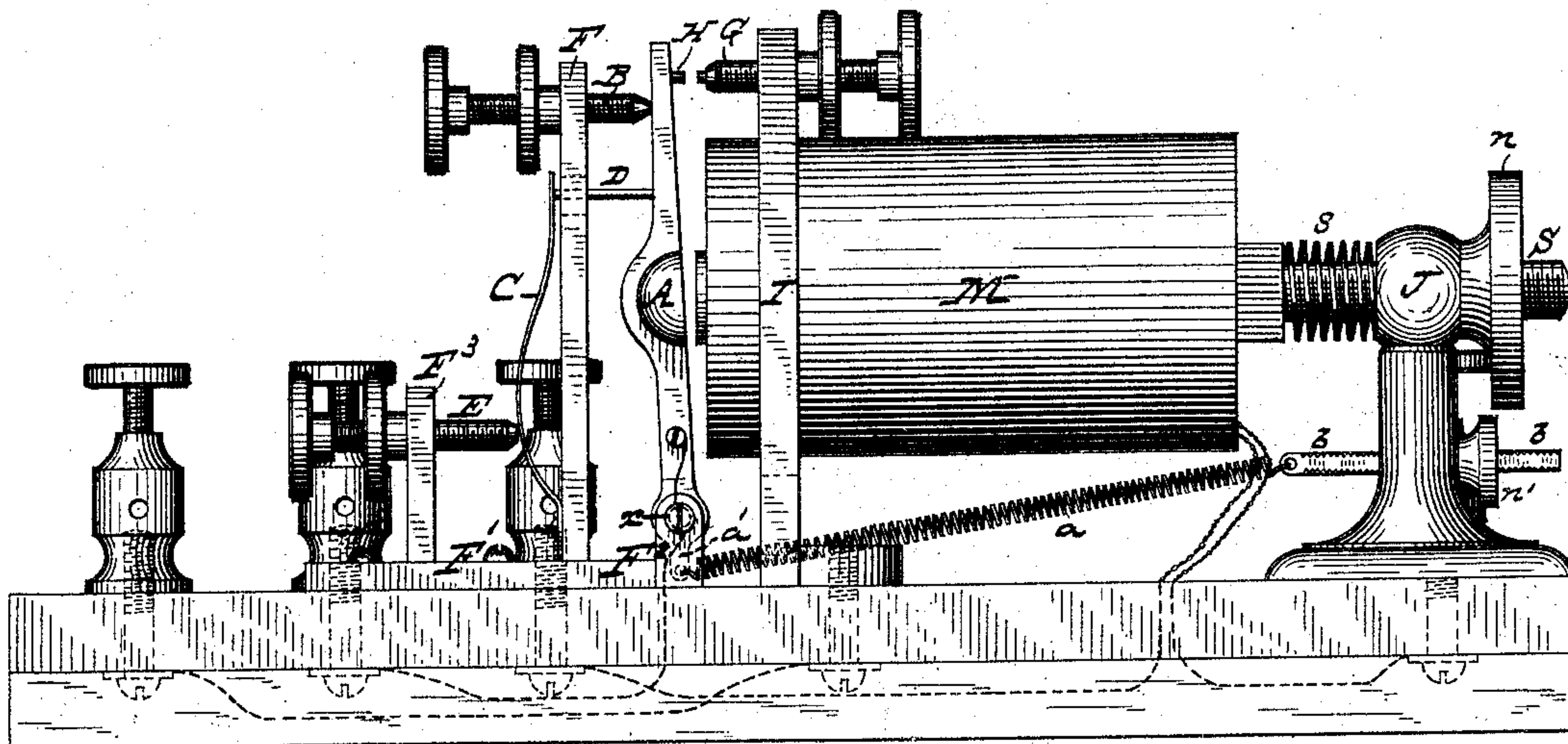


Fig. 2.



Witnesses:

Jos. S. Lattimer.
 Delbert H. Decker

Inventor.

JOSEPH I. CONKLIN JR.

By his Attorney,

~~W. L. Swin.~~

UNITED STATES PATENT OFFICE.

JOSEPH I. CONKLIN, JR., OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO THE LEWIS & FOWLER MANUFACTURING COMPANY, OF SAME PLACE.

ELECTRIC TELEGRAPH-RELAY.

SPECIFICATION forming part of Letters Patent No. 353,288, dated November 30, 1886.

Application filed January 30, 1886. Serial No. 190,351. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH I. CONKLIN, Jr., a citizen of the United States, residing at Brooklyn, in the State of New York, have invented a new and useful Improvement in Electric Telegraph-Relays, of which the following is a specification.

This invention consists, primarily, in a peculiar "duplex spring adjustment" for the armatures of electro-magnetic instruments, as hereinafter set forth, the object of which is to overcome a serious defect in the operation of such instruments as heretofore constructed. For example, in ordinary relay-instruments the attractive force of the magnets is frequently not sufficient to overcome the tension of the retractile spring, owing to the escape of the electric current due to atmospheric and other influences. Consequently, the relay fails to work in unison with the transmitting-key of the operator at a distant station, while it responds freely to the key at the station where the main-line battery is located. In my improved instrument the feeble current is "assisted," so to speak, at the beginning of each attraction of the armature, and throughout a sufficient but limited portion of its movement, by a supplemental spring, which is so applied to the armature as to oppose no resistance whatever to the instantaneous retraction of the latter by the retractile spring until the armature is out of contact. A very sensitive instrument is thus produced without complication of parts, and which does not involve unnecessarily delicate adjustments.

This part of my invention may be embodied in any electro-magnetic instrument.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of the drawings is a plan view of an improved relay-instrument, illustrating this invention; and Fig. 2 is an elevation thereof.

Like letters of reference indicate the same parts in both figures.

A represents an ordinary armature with its swinging carrier, and *a* its retractile spring; B, the customary stop-screw; C, the said supplemental spring; D, a push pin or rod to co-act with said supplemental spring; E, a screw for adjusting said supplemental spring; F, a

standard supporting said stop-screw, and also said supplemental spring and push-pin; F², a fork supporting the armature-pivots *x*; F³, a standard supporting said adjusting-screw E; F', a base-plate common to said standards and fork; G, the customary contact-screw; H, the customary contact-point; I, an upright apertured bracket-plate supporting within it the free ends of the magnets M, and supporting said contact-screw G above the magnets; J, a post supporting the tail-screw S, by which the magnets are held, and coacting with a nut, *n*, and cushioning-spring *s* in the preferred arrangement to adjust the same; *b*, Fig. 2, a screw-threaded sliding-bar working in a horizontal hole in said post J near its lower end, and connected with the rear end of said retractile spring *a*; *n'*, an adjusting-nut on said bar *b*; and *a'*, a short arm of the armature-carrier, projecting below its said pivots *x* to coact with said retractile spring.

The remainder of the instrument represented is of customary construction, and its details are not essential to the present invention and need not be particularly described to make clear to those skilled in the art the effects of the respective parts of this invention. These distinctive effects are as follows: The armature A is represented as resting against the stop-screw B, as when the electric current is off or during breaks therein. The spring C is now in tension, and tends to force the armature, through the medium of the push-pin D, toward the magnets M. Consequently, when the latter are electrically excited, said spring serves to assist in overcoming the inertia of the armature and the tension of the retractile spring *a*, and a very feeble current suffices to make the instrument respond properly. After assisting to start the armature, as aforesaid, the working end of said supplemental spring C comes in contact with the face of said standard F, or it may be with a separate stop, so as to cause its action to cease when the contact-screw G and point H almost meet, the armature being by this time so near the magnets that the attractive force, although weak, suffices to complete the movement of the armature. The retractile spring *a* now acts with full force on the armature prepar-

tory to and succeeding the next break in the current, and its retractile force suffices to fully retract the armature and put in tension the supplemental spring preparatory to the next
5 make of the current. And thus the operation proceeds, the supplemental spring being adjusted, if need be, by said screw E to increase or diminish its effect in assisting the magnets or counteracting the retractile spring.

10 Owing to the location of the retractile spring, as aforesaid, it is protected by the overlying magnets against accidental touches and blows, which impair the efficiency as well as detract from the appearance of exposed springs.

15 Having thus described my said improvement in electric telegraph-relays, I claim as my invention and desire to patent under this specification—

1. In an electro-magnetic instrument, the

combination, with the armature and retractile 20 spring, of a supplemental spring having a relatively-short stroke which acts on the armature at the beginning of each attraction thereof in aid of the magnets, substantially as herein specified, for the purpose set forth. 25

2. The combination, with the armature of an electro-magnetic instrument, of an adjustable retractile spring having a constant connection therewith, a supplemental spring disconnected therefrom, a pin transmitting force 30 from the latter to the armature in aid of the magnets, and a stop limiting the action of said spring, substantially as herein specified.

JOSEPH I. CONKLIN, JR.

Witnesses:

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