

(No Model.)

M. J. O'SULLIVAN.  
TELEGRAPH RELAYS.

No. 286,955.

Patented Oct. 16, 1883.

Fig. 1.

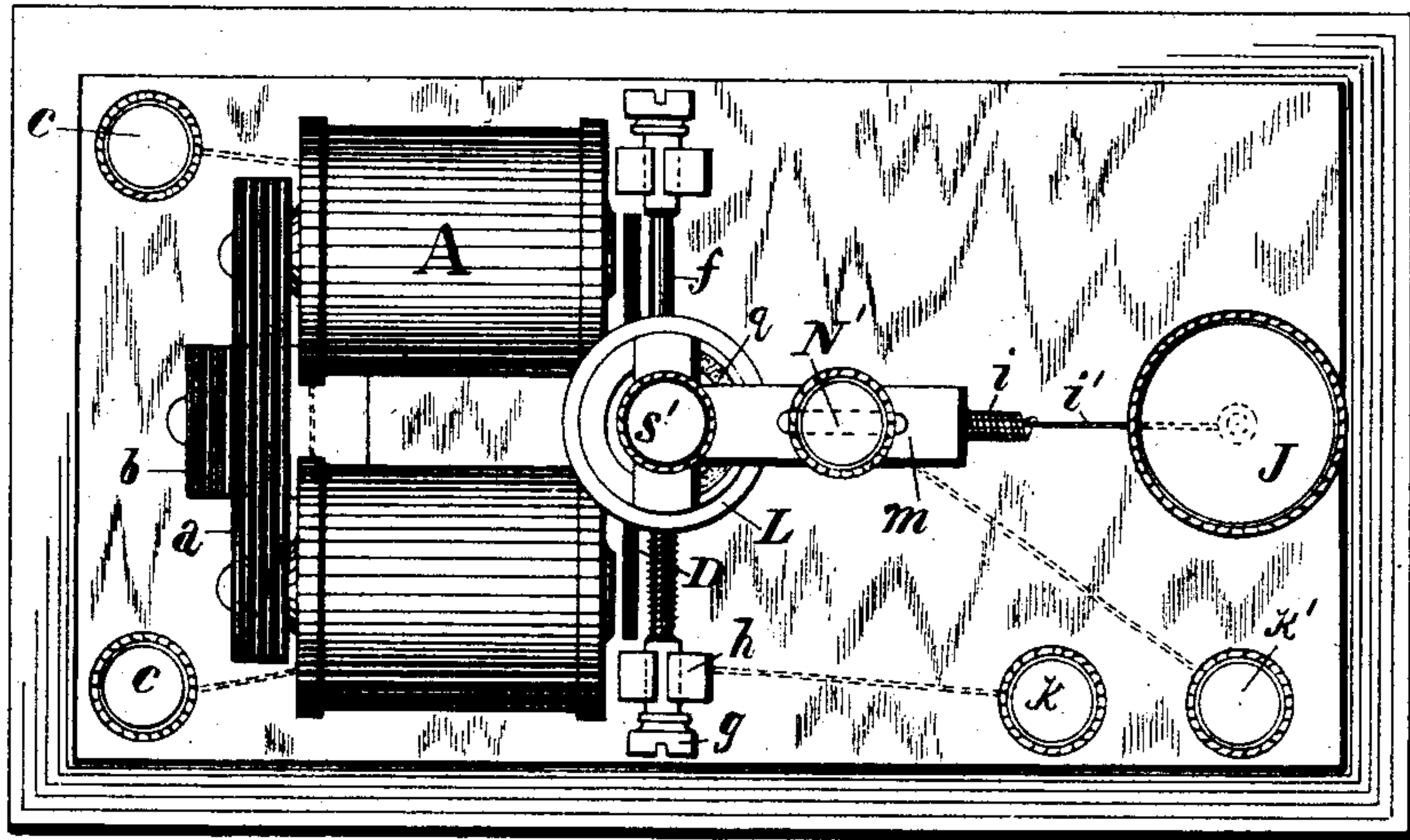


Fig. 2.

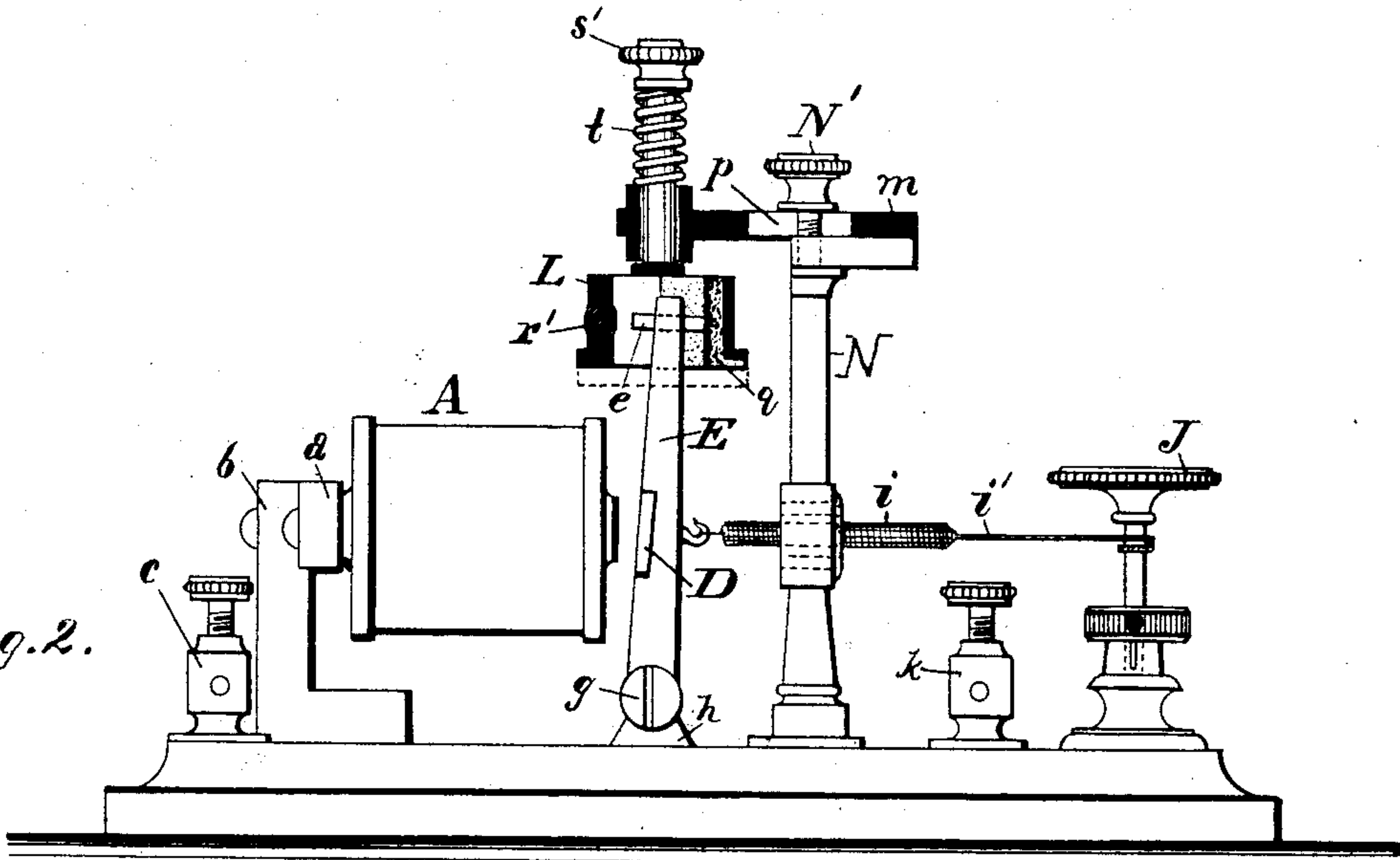


Fig. 3.

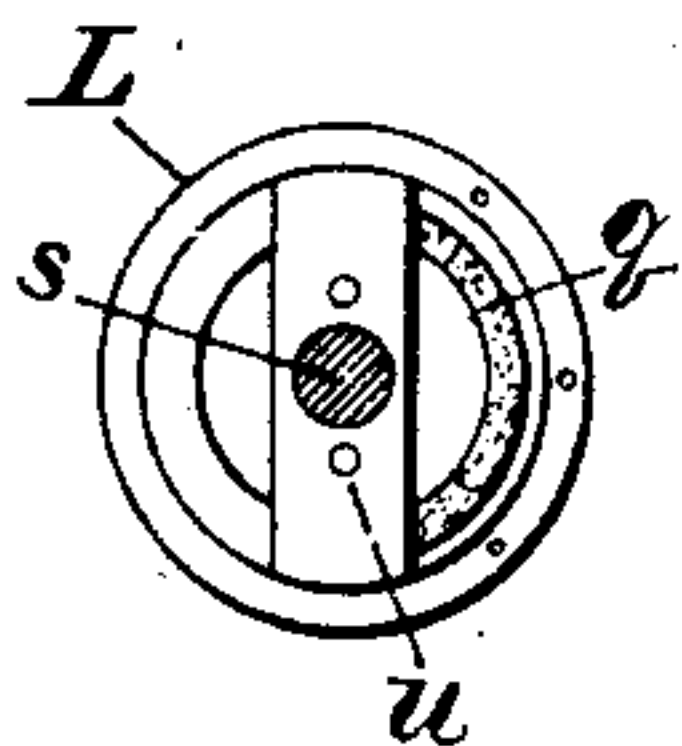


Fig. 4.

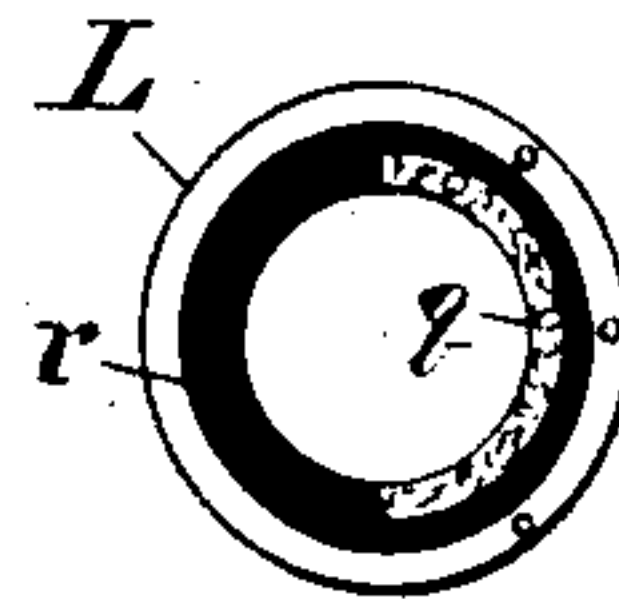
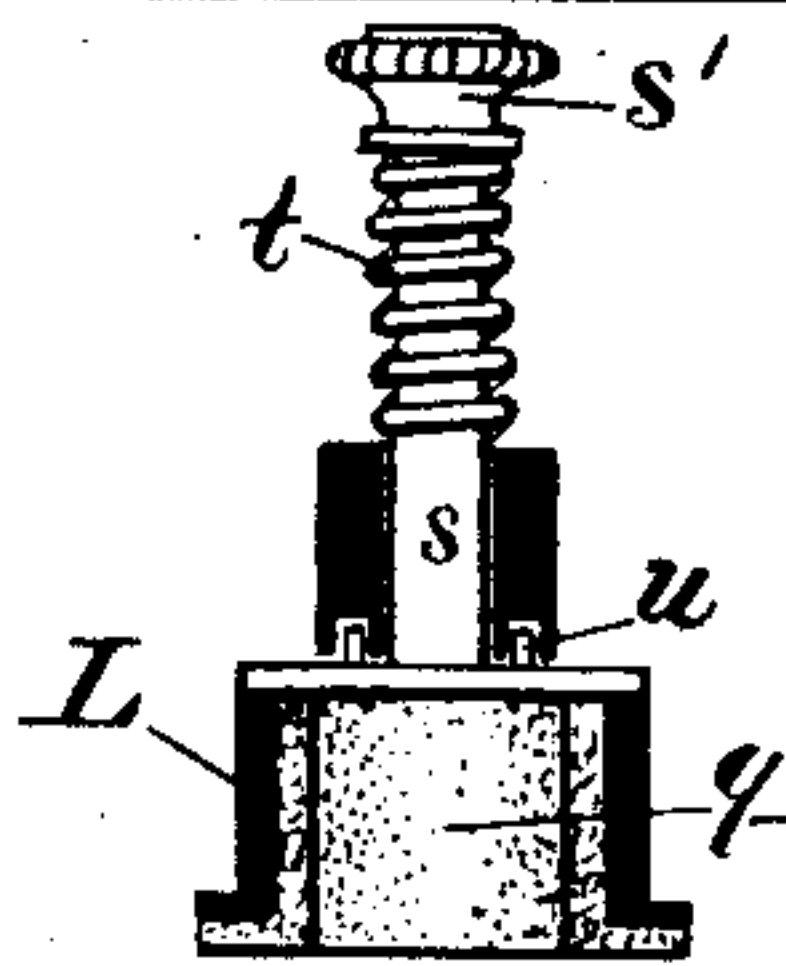


Fig. 5.

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# UNITED STATES PATENT OFFICE.

MICHAEL J. O'SULLIVAN, OF BALTIMORE, MARYLAND, ASSIGNOR OF  
THREE-FOURTHS TO J. FRANK MORRISON, OF SAME PLACE.

## TELEGRAPH-RELAY.

SPECIFICATION forming part of Letters Patent No. 286,955, dated October 16, 1883.

Application filed May 26, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL J. O'SULLIVAN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have  
5 invented certain new and useful Improvements in Telegraph-Relays, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in  
10 that class of telegraphic instruments known as "relays," employed in main-line circuits to control the flow of battery-currents over local circuits.

In the drawings hereto annexed, Figure 1  
15 is a plan view of the relay-instrument. Fig. 2 is a side elevation of the same, the contact terminal device being in section. Fig. 3 is a top view of the reversible contact terminal device. Fig. 4 is a vertical section of the same.  
20 Fig. 5 is a horizontal section of the same.

The letter A designates an electro-magnet; *a*, its cross-bar, and *b* a bracket to which it is secured. The posts *c* are for the main-line wires, in which circuit the magnet is included. The armature D is secured to an up-  
25 right lever, E, mounted by one end on a shaft, *f*, which has bearing in screws *g*, set in the split studs *h*. A spiral spring, *i*, is attached to the lever, and has a cord, *j*, which is wound  
30 on a tension-post, J. The upper end of the lever has a platinum pin, *e*, which constitutes one terminal of the relay, and is connected with the local battery through the shaft *f*, screw *g*, stud *h*, and a suitable wire (indicated in Fig. 1 by broken lines) to the post  
35 *k*. The retractile force of the spring *i* serves the usual purpose to draw the lever and armature away from the magnet when the main-line circuit is broken. The reversible contact device L, which constitutes the other  
40 terminal, is supported by an arm, *m*, on a post, N, and is connected with the local circuit by a wire (indicated by broken lines in Fig. 1) to the post *k*.

45 The arm *m* (shown in section in Fig. 2) has a slot, *p*, and a set-screw, N', passes through the slot into the top of the post. By this arrangement the contact terminal device L may

be adjusted toward or from the magnet without disturbing the post, thereby avoiding any  
50 interference with the adjustment of the tension-spring *i*. The contact terminal device L is a metal ring or thimble, (see Figs. 3 and 5,) and sets down around the platinum-pin terminal on the upper end of the lever E.  
55 (See Fig. 2.) One half of the inner wall of this ring is composed of or lined with insulating material *q*, while the other half, *r*, is metal. A small platinum plug, *r'*, may be inserted in the metal wall as a contact-point  
60 for the pin *e*. A round shank, *s*, projects up from the ring and passes through a box in the arm *m*, and has a head, *s'*, at the upper end. This shank is adapted to turn in  
65 its box, and also to be moved up and down. A spiral spring, *t*, is about the shank intermediate of the arm and head, and serves to keep the shank and ring normally elevated. Stop-pins *u* are attached to the ring and project  
70 up, and holes or sockets are formed in the under side of the arm to receive the stop-pins, and these hold the ring-shaped terminal from turning.

From the foregoing it will be seen the ring-shaped terminal may be turned or rotated  
75 about the lever-terminal, and as one half of the ring is metallic and one half insulating material, it may be changed or reversed, so as to adapt it for contact with the lever-terminal either when the main line is intact or  
80 when broken. In other words, this device enables the local circuit to be kept open and in shape to receive signals both when the main line is normally open or closed.

The improved terminal has been described  
85 as ring-shaped, and this particular shape I deem of practical importance; but it may have other shape. The most essential feature about it, however, is that it has two contact parts, one of which is metallic and one insulated, and  
90 that the two-part device is so contrived as to permit it to be reversed when desired.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

In an electro-magnetic relay, the combina-

tion of the armature-lever constituting one terminal, and a two-part contact device—one part of which is of metal and one of insulating material, adapted to be reversed with reference to the armature-lever—constituting the  
5 other terminal, whereby the local circuit may be kept open to receive signals from the main line whether the latter is normally opened or closed, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL J. O'SULLIVAN.

Witnesses:

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