

(No Model.)

J. M. BELL.
DISTRICT TELEGRAPH RETURN SIGNAL KEY.

No. 497,942.

Patented May 23, 1893.

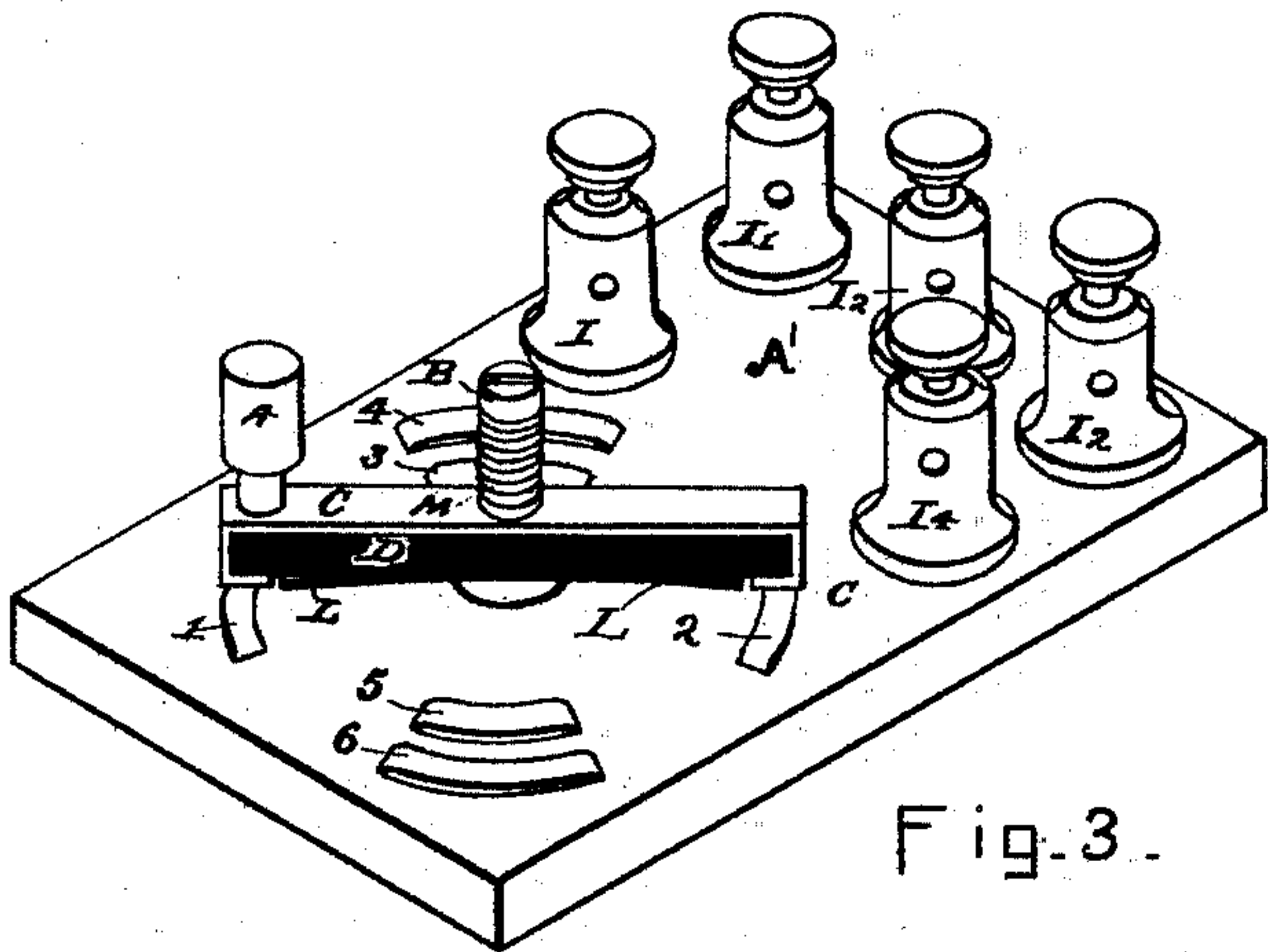


Fig. 3.

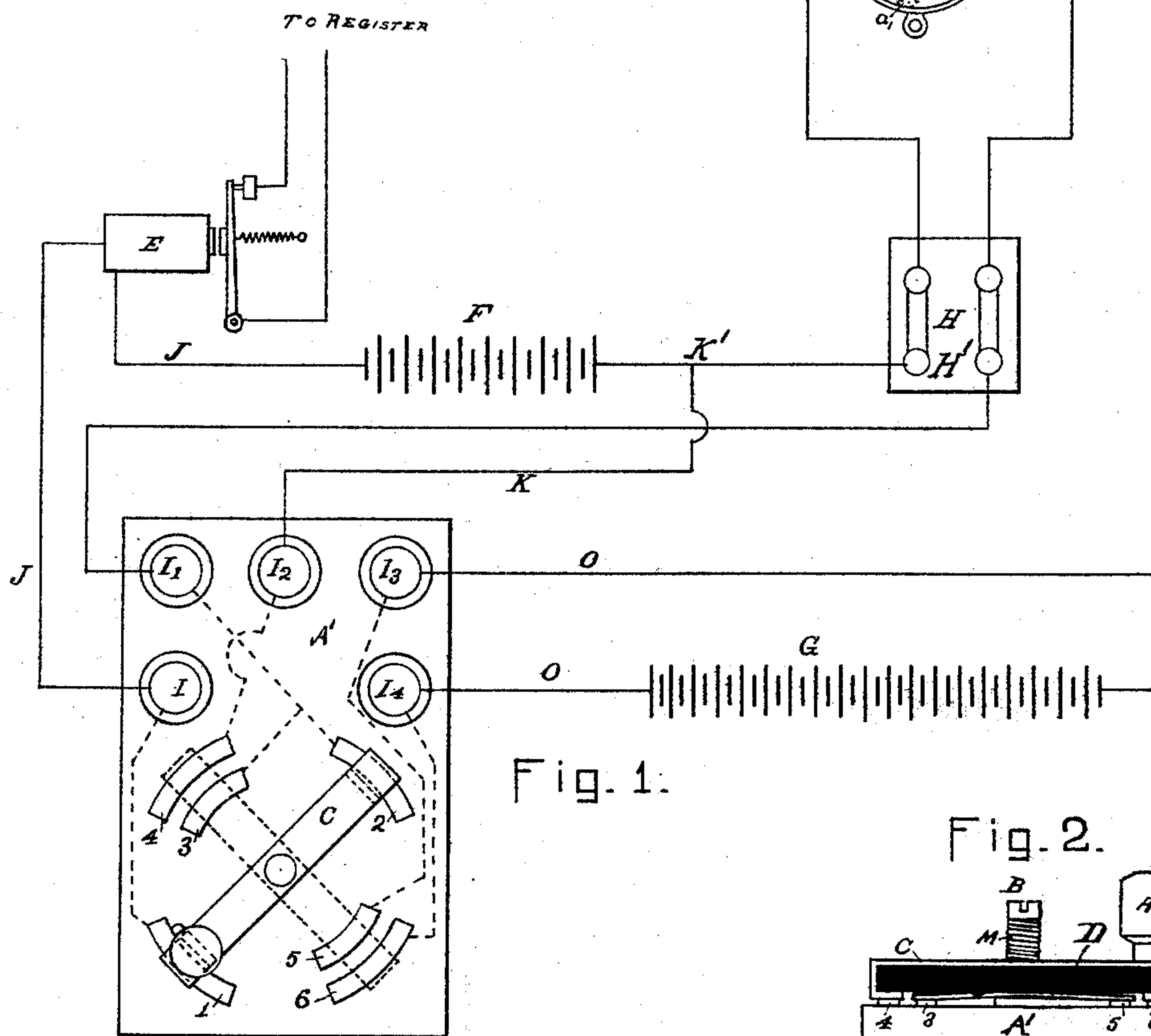


Fig. 1.

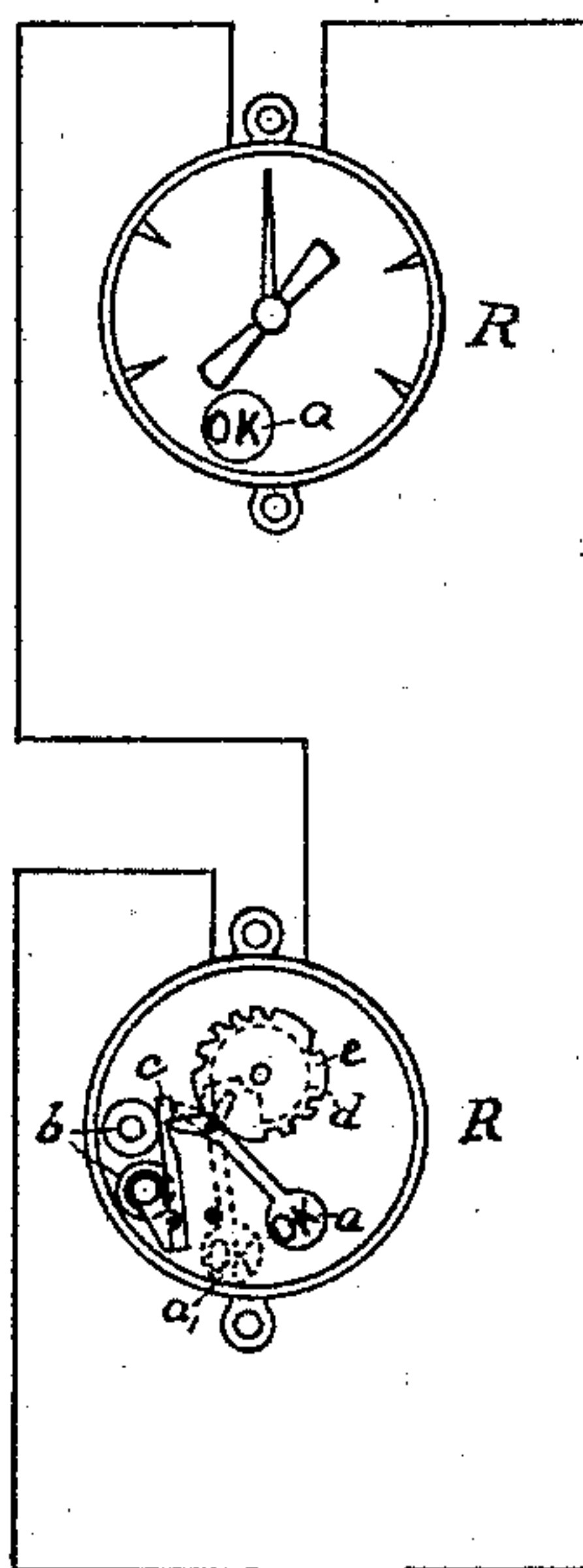


Fig. 2.

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DISTRICT-TELEGRAPH RETURN-SIGNAL KEY.

SPECIFICATION forming part of Letters Patent No. 497,942, dated May 23, 1893.

Application filed October 24, 1892. Serial No. 449,900. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BELL, a citizen of the United States, and a resident of Tacoma, Pierce county, State of Washington, have invented certain new and useful Improvements in a Return-Signal Key and System of Wiring Therefor, of which the following is a specification, reference being made to the drawings, in which—

Figure 1 is a diagrammatic plan view of the system of wiring and return signal key used by me. Fig. 2 is a side view of the key, and Fig. 3 is a perspective of the same.

My invention relates to the "district telegraph" systems at present used in large cities, and its object is to render unnecessary the use of a separate "return signal" or "answer back" battery for each particular circuit, such batteries being very expensive and troublesome to keep in running order. At present each circuit has a separate battery for actuating the return signal. With the keys and system of wiring at present used, it would be impossible to use one battery, as the return signal battery would never be entirely out of circuit as it is in my device.

In Figs. 2 and 3, which illustrate the key A, used by me, D, indicates the body of the key lever, made of rubber, papier-maché, or other suitable material, through which passes the pivot B, suitably insulated and connected to the base A'. C, is a strip of metal covering the length of D, and bent around its ends as shown. On the bottom of the key lever is a bridge-piece L, of spring metal and having its ends bent downwardly as shown.

The key-board A', as shown in Figs. 2 and 3, has contact plates 1, 2, 3, 4, 5, 6. The plates, 1, 2, 3, 4 are so placed that they will be in the line of movement of the ends of the key A, and be in contact with the strip C where it is bent under the lever D. The contact plates 3 and 5 are however, set on the arc of a circle described by the ends of the bridge-piece L. When the key is, therefore, turned in one direction, the plates 1 and 2, are connected through the strip C, and when in the other direction, the plates 4 and 6, are connected through the strip C, and the contact plates 3 and 5 are connected through spring L.

The system of wiring used by me, is as follows, the dotted lines showing the wiring on

the under side of the key-board: J J, is the main-line wire passing from contact plate 1, to binding post I, thence to the relay E, to main-line battery F, to switch-board H and thence out to the call boxes, returning through switch-board H, to binding post I', and from there to contact plate 2. As normally the key lever is held by the spring M, in position to connect the contacts 1 and 2, the main-line circuit is completed.

The "return signal" circuit is as follows: K, indicates a "tap" which is connected to the main-line either at binding post H', of the switch-board, or at K', as shown and from there is carried to the binding post I'' and from there to the contact piece 4. The return main-line wire J, is tapped at N' by a "tap wire" N, which is connected to contact 3. Contact pieces 5 and 6 are connected to the terminals of a wire O, which passes from contact piece 5 to binding post I³, thence to the "return call," battery G, thence by post I⁴ to contact piece 6.

While I have described the wiring of my system as though the wires T, K and O, were in one piece from one contact plate to the other, it is understood, however, that there are separate wires on the under side of the key-board which connect to the binding posts.

In its normal condition the key lever A, connects the contact plates 1 and 2, the spring M holding the key lever in position. When a call is sent in from a call-box, the main-line circuit and the relay are actuated as ordinarily. In order to answer this call, the key is turned to the right and the circuit is completed as follows: from battery G, through wire O, to contact plate 5, thence by bridge-piece L to plate 3, through "tap" N, to main-line wire J, to switch-board, through the call-box system back to switch-board H, by "tap" K, to binding post I², to contact 4, across, by the metal strip C, to contact 6, and then by wire O, to battery G, thus completing the circuit, which includes the "answer back" battery G, and cuts out the relay and main battery F. It will thus be seen that while the key is in its normal position and the circuit is completed through main line, the battery G, which operates the return signal, is entirely out of circuit and disconnected. It is because of this arrangement that I am enabled to use

but one "return signal" or "answer back" battery to actuate the return signal on all the circuits. In none of the other systems of wiring of which I am aware, is the return signal battery entirely and completely disconnected, from the main-line when the line is in its normal condition, nor where that portion of the line on which the relay and main battery are, is cut out when the "answer back" battery is used. If it had been attempted to use but one battery with all the circuits, the various circuits would have become crossed, and the current would have traversed the length of all the circuits.

The form of key used was not constructed to complete one circuit to the exclusion of the other.

While I have shown what I deem my preferable form of key, and arrangement of wires, I do not desire to be limited to these details, as various forms of keys might be used and the wiring be varied, provided the principle of my invention be included, this being that the key shall be so constructed as that, in one position, it shall entirely cut out the return signal battery G.

The term "key" or "switch" I have used interchangeably throughout the specification, as these terms are so used in the art. By these terms I mean any device whereby a circuit may be made or broken.

Having described my invention, what I claim is—

1. In a district telegraph system, a main-line circuit having in it a relay and main battery, a return signal circuit having in it a return signal battery, said circuit being normally entirely disconnected from the main-line, a "tap" wire connected to the main-line beyond the battery and relay for cutting out the relay and main battery, and means whereby the circuit may be completed either through the main-line or through the tap wire and "return signal circuit," all substantially as described.

2. In a district telegraph system, the combination with a main-line circuit having in it a relay and battery, the terminals of the main-line wire being connected to suitable contact points, and a tap wire, one end of which is connected to the main-line to cut out the relay and battery, and the other end of which is connected to a contact, of a return signal circuit, and battery, the ends of which circuit are connected with suitable contacts, and a key which in one position will connect the main line contacts, and in the other, position, will connect the tap contact with one of the return signal contacts, and the other return signal contact plate with the main-line whereby the relay and its battery are cut out when the return signal is sent in, all substantially as described.

3. In a district telegraph system two or more main-line circuits, and return signal call boxes in said circuits, a return signal battery and circuit normally entirely disconnect-

ed from the main line, circuits, and a key in each main line circuit for connecting the said return signal circuit with the said main line substantially as described.

4. In a district telegraph system, the combination with a main-line circuit having a relay and main battery, a tap wire connected with the main-line beyond the relay and battery, and a "return signal" battery and circuit, normally entirely disconnected from the main-line, of a key or switch, one end of which is always connected with one terminal of the main line, and the other end of which is, in its normal position, in contact with the other terminal of the main-line, but in its other position, is in contact with one terminal of the "return signal" circuit, and a bridge piece upon said key which, when the key is thrown from its normal position, connects the other terminal of the "return signal" circuit, and the terminal of the tap wire, all as and for the purpose described.

5. In a district telegraph system, having a main-line circuit, two tap wires for each end of such circuit, a "return signal" circuit O, normally entirely disconnected from the main-line, of a keyboard having two opposite contact plates to which the main-line wires are attached, two opposite contact plates to one end of which the end of one tap wire is connected, and to the other end of which one terminal of the "return signal" circuit is connected, two inner contact plates connected, one to the other tap wire, and the other to the other terminal of the "return signal" circuit, and a key movable upon the board, the said key having a metal strip adapted to connect the outer line of contact pieces, and a bridge-piece to connect the two inner contact pieces, all substantially as described.

6. A key-board for use in the district telegraph system herein described, having four contact plates arranged on the circumference of a circle, two inner contact plates on a line with two of the outer plates, and a key lever pivoted in the center of the circle and having a metal strip connecting its ends, and a metal bridge piece on its bottom, the strip being for connecting opposite outer contact plates, and the bridge piece for connecting the inner contact plates, all substantially as described.

7. In a key-board having four outer contact pieces arranged on the circumference of a circle and two inner contact plates on a line with two outer plates, of an insulated pivot in the center of the circle, a lever made of insulating material on said pivot, a metal strip on the top of the lever and bent over its ends, and a bridge piece with turned down ends on the bottom of said lever, all substantially as described and shown.

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Witnesses:

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