

(No Model.)

2 Sheets—Sheet 1.

E. A. FORDYCE.
ELECTRIC SWITCHBOARD.

No. 572,748.

Patented Dec. 8, 1896.

Fig. 1.

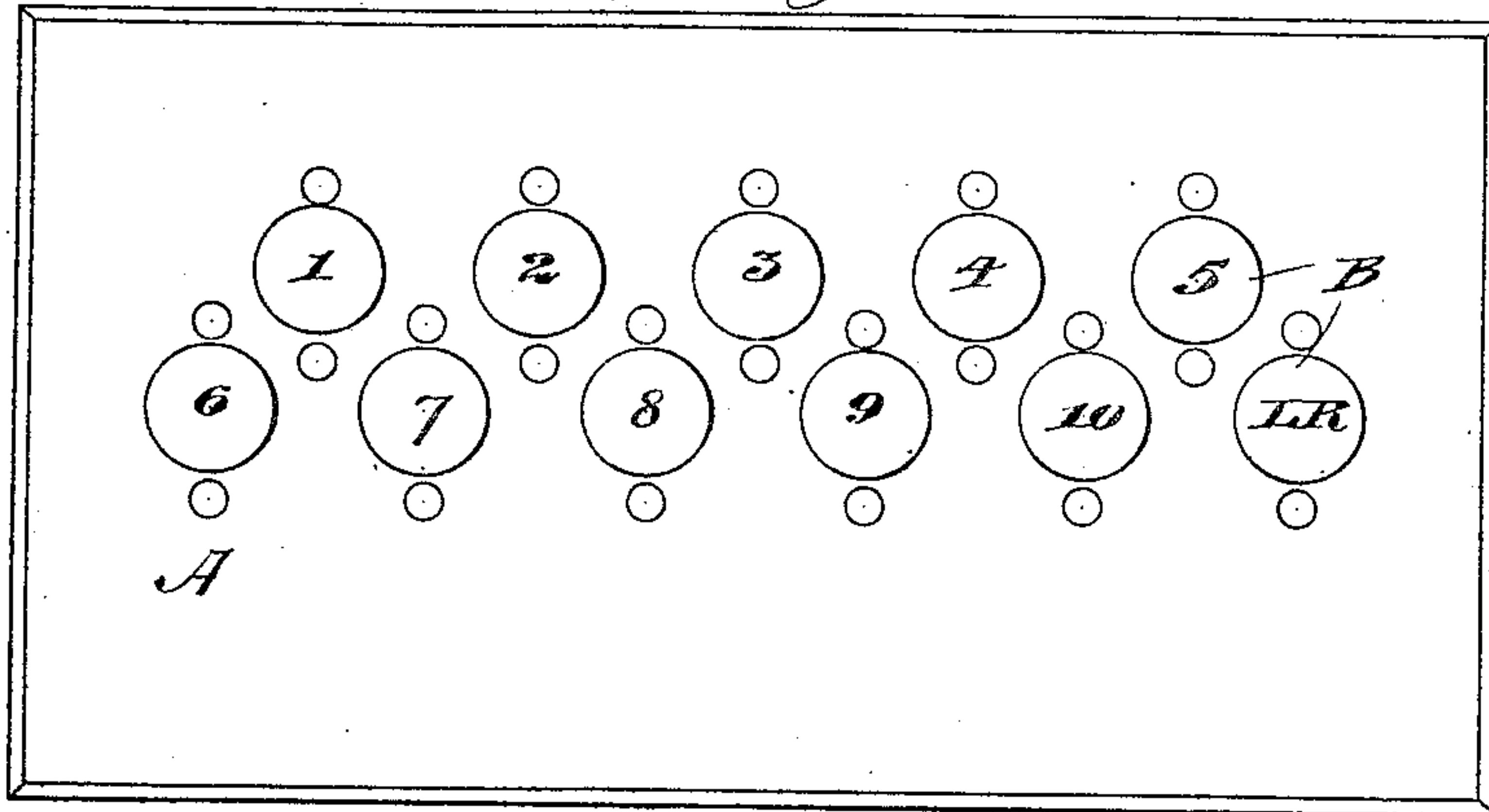


Fig. 2.

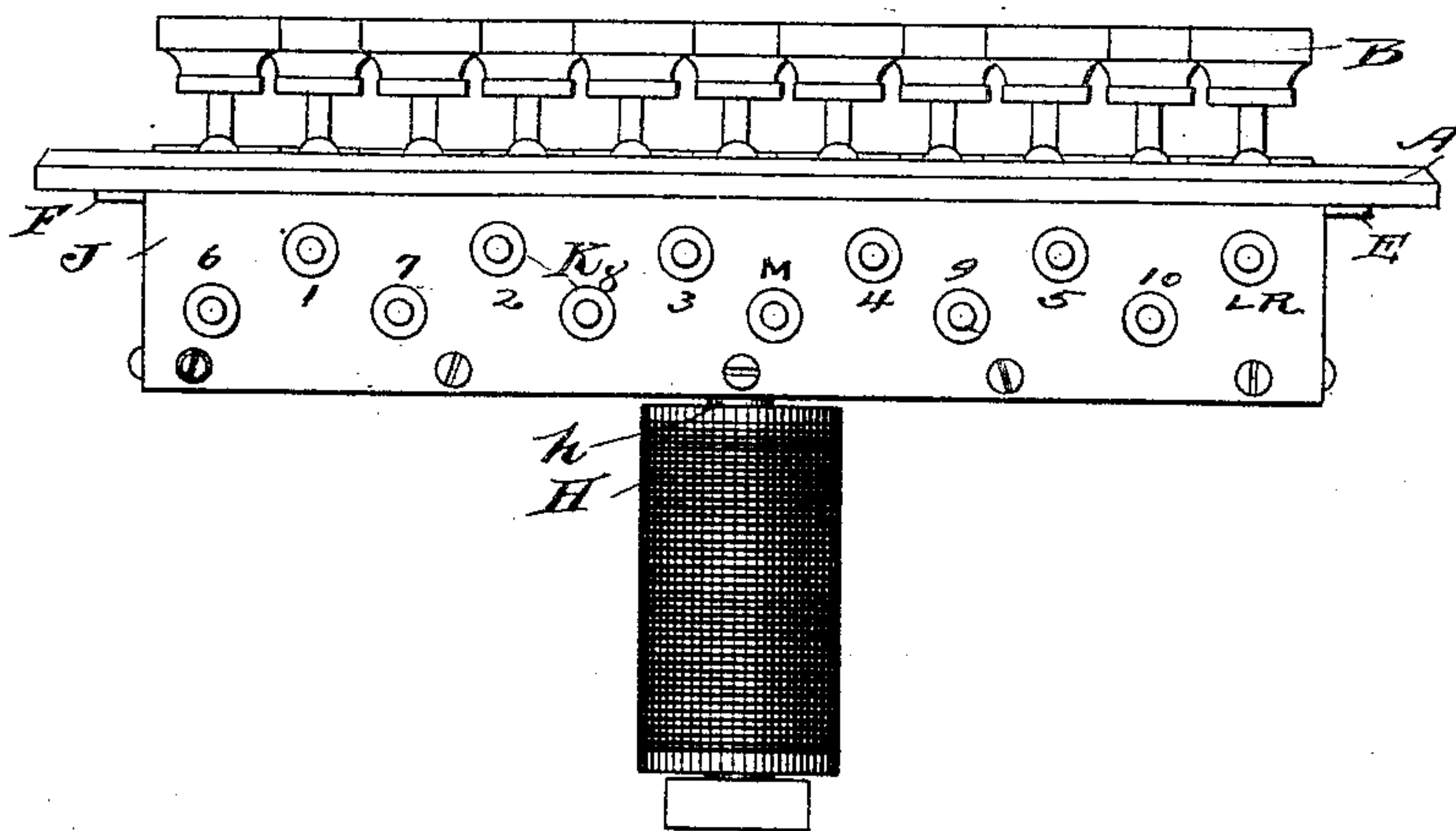
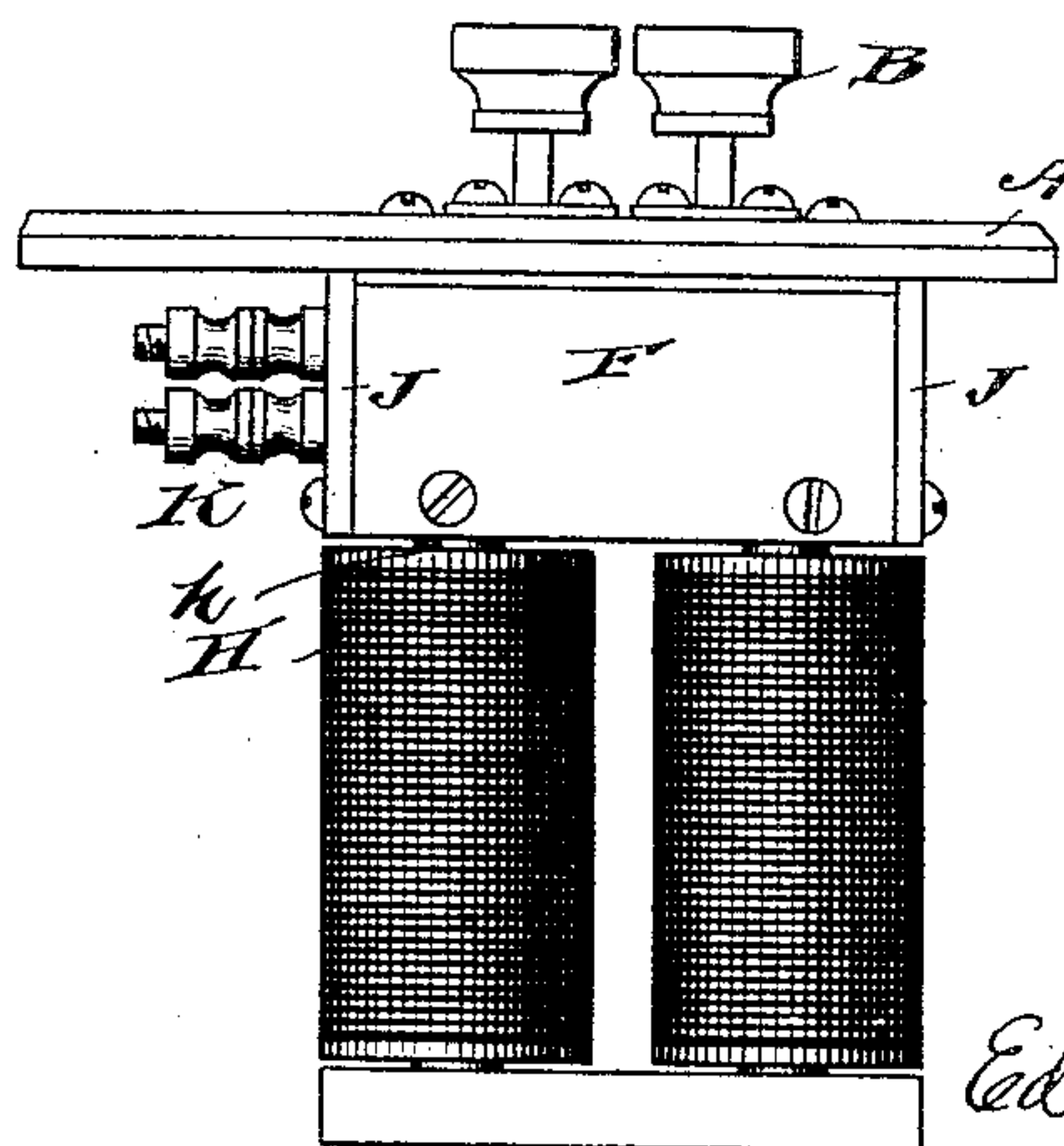


Fig. 3.



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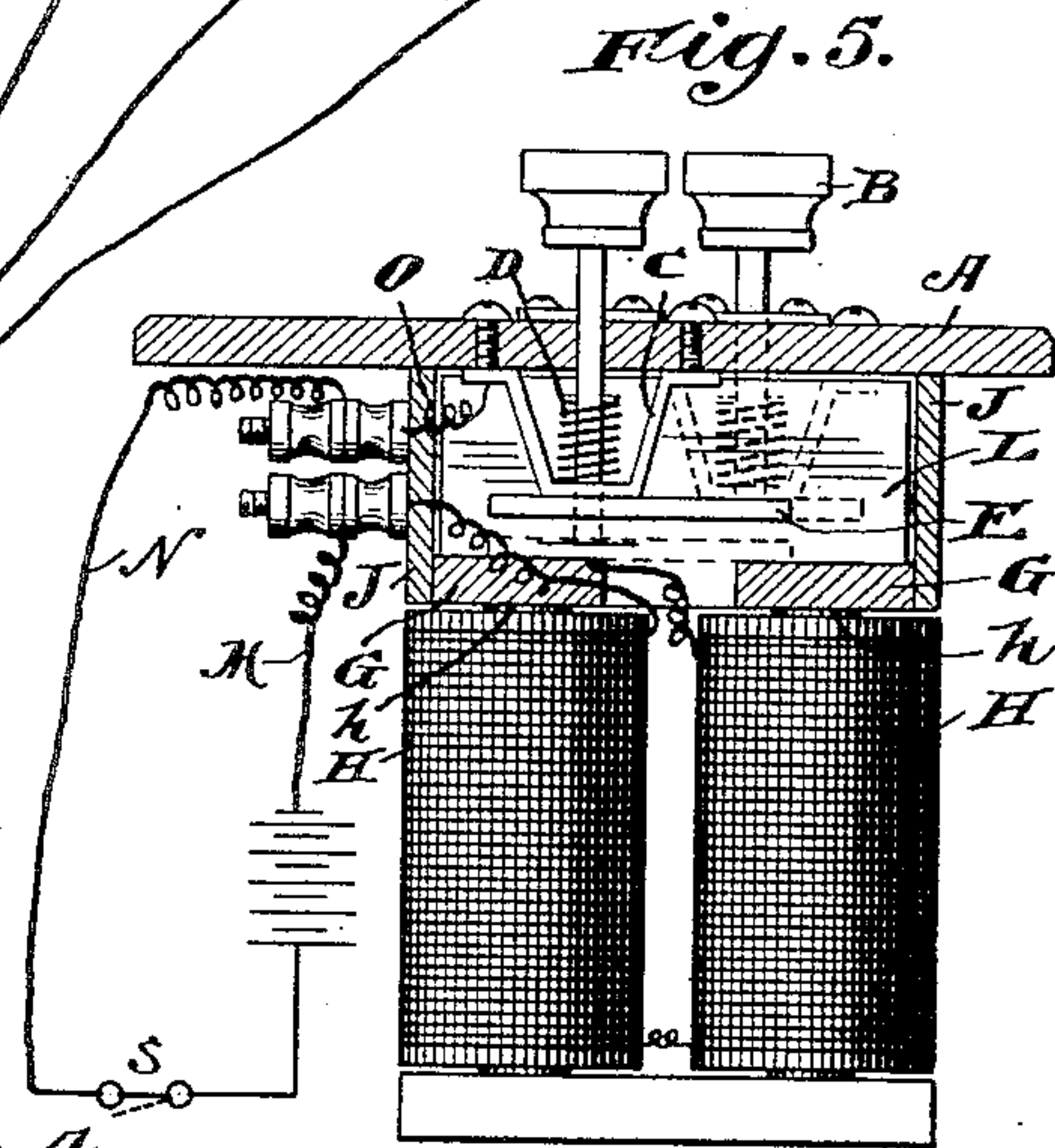
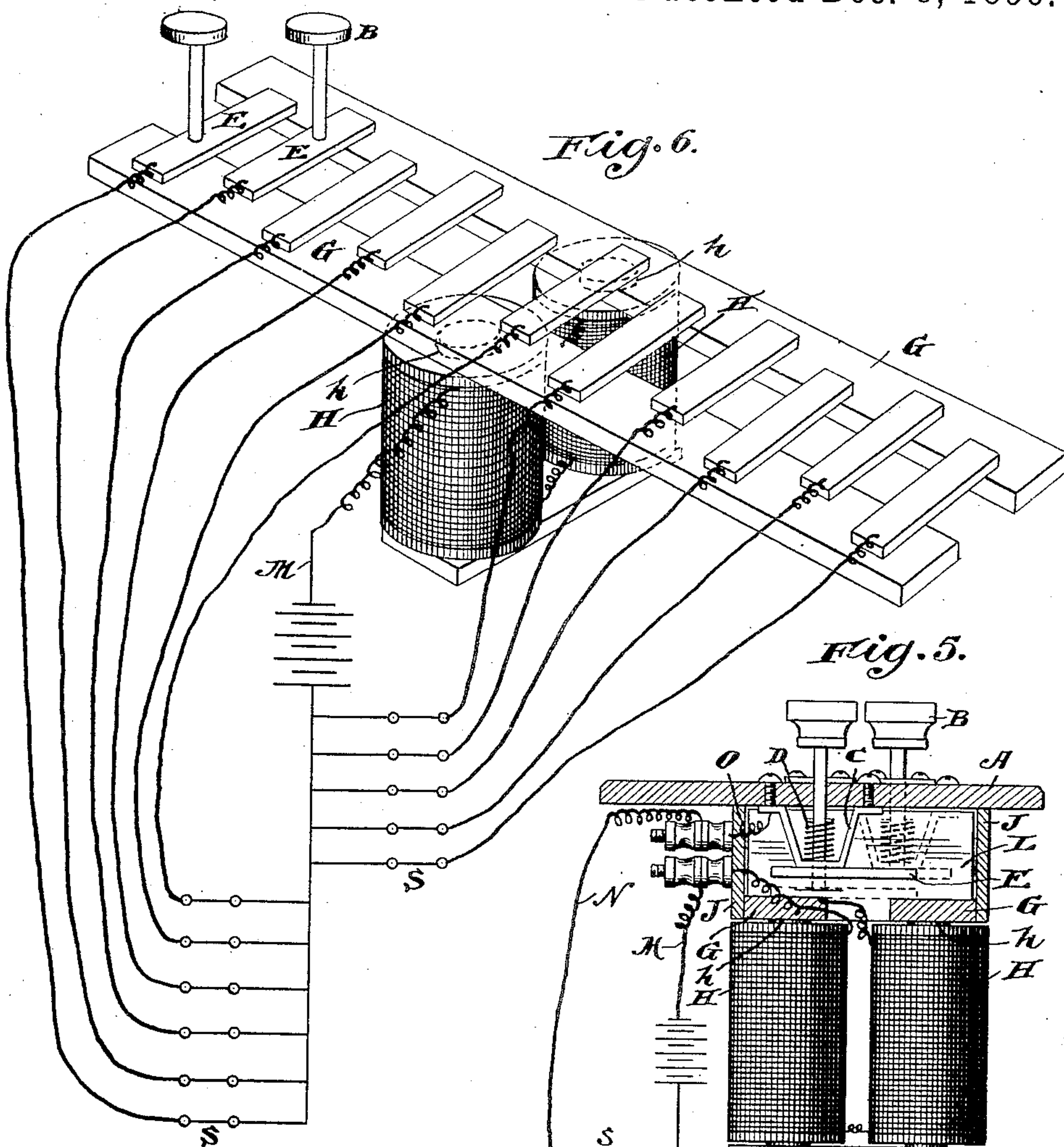
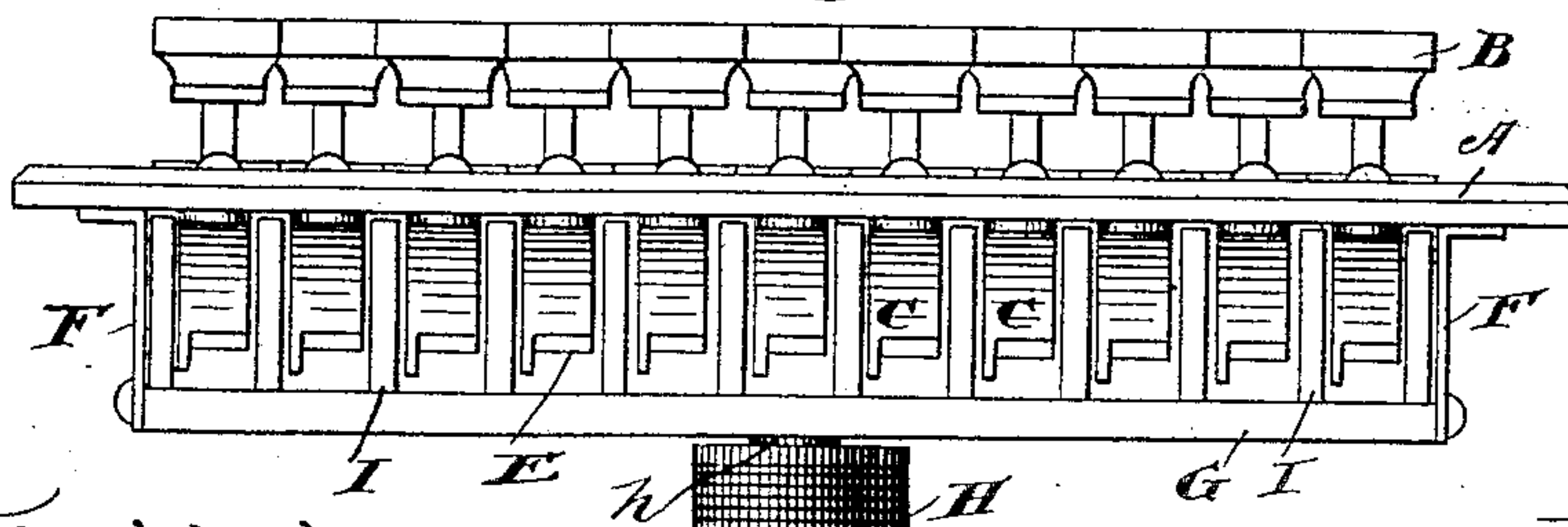
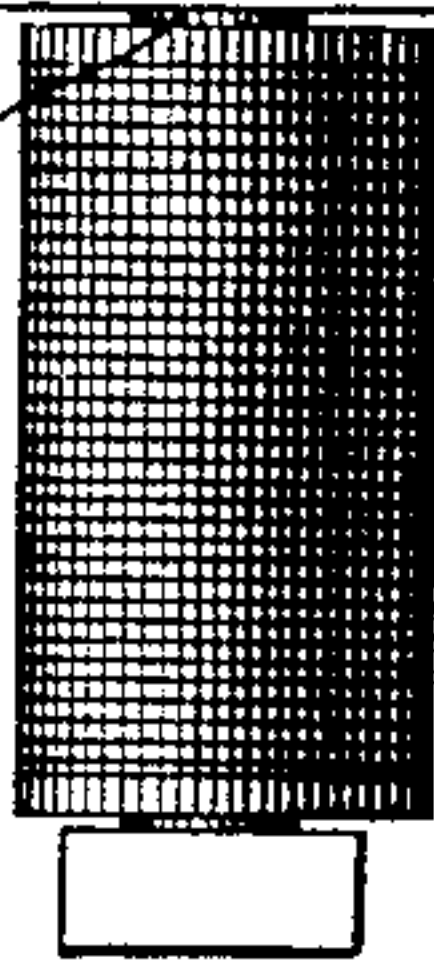


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDMOND A. FORDYCE, OF CHICAGO, ILLINOIS.

ELECTRIC SWITCHBOARD.

SPECIFICATION forming part of Letters Patent No. 572,748, dated December 8, 1896.

Application filed November 4, 1893. Serial No. 489,989. (No model.)

To all whom it may concern:

Be it known that I, EDMOND A. FORDYCE, of Chicago, Illinois, have invented certain new and useful Improvements in Electric Switchboards, of which the following is a specification.

The invention has for its object to provide a novel construction of switchboard which is simple and compact and which is capable of controlling any desired number of electric circuits.

The invention is applicable to many uses, one use to which I have practically applied it being for controlling the switches of a series of receiving-boxes in a pneumatic-tube system, wherein the despatch-tube is provided with a series of receiving boxes or stations, each of which has its communication with the main tube controlled by an electrically-operated switch and the parts of which are so arranged that upon the discharge of a carrier into or through the receiving-box the electric circuit is broken and the circuit-controlling key at the switchboard released; but the invention is equally applicable to many other forms of electrically-controlled apparatus in which a switchboard is employed for controlling the several circuits, each circuit having at a point distant from the switchboard a circuit-breaker.

In the construction of my switchboard I employ a series of keys corresponding in number to the number of electric circuits to be controlled, a main conductor extending from the switchboard to a distant point, a series of branch conductors having one terminal at the switchboard and connected with the main conductor and provided at some point in the branch by a circuit-breaker, each of the branch circuits having its controlling-key. The several keys carry contact-pieces and are provided with controlling-springs which maintain the several circuits normally open, and a locking magnet or magnets are employed, arranged, usually, beneath the keyboard and carrying a connector—say, in the form of a metal bar—with which the several contact-pieces carried by the keys are made to impinge when the key is depressed. The depression of any one key of the series will thus effect the closing of one of the branch circuits and the locking-magnet will hold the

key depressed and the circuit closed until it is broken at a remote point.

The foregoing is a description of a simple form of apparatus; but in the construction which I have illustrated in the drawings I have employed a magnet consisting of two spools, each having a connector and both of which connectors are impinged by the contact-pieces of the several keys of the circuit as they are respectively depressed. Any number of these magnets may be joined to the connector or connectors; but the vital element of the construction is the employment of a magnet or magnets operative to control the key after it has been depressed and maintain the circuit closed until it is broken at a distant point.

In the accompanying drawings, Figure 1 is a plan view of a switchboard; Fig. 2, a side elevation thereof; Fig. 3, an end view; Fig. 4, an elevation of the opposite side from that shown in Fig. 2, and Fig. 5 a transverse section through the keyboard and showing also a diagram of one of the circuits with a circuit-breaker therein. Fig. 6 is a diagrammatic view in perspective showing the magnet, its pole-pieces, a series of contacts, and two of the stems for controlling said contacts with a series of circuits, each including the battery, magnet, and one of said contacts or circuit-closers, and a switch in each circuit.

In the drawings, A represents the base-piece of the switchboard, which may be affixed in a wall or table-top and which has slidably mounted thereon a series of keys B, each key having its stem projected through the base and suitably guided—as, for example, by the guides C. The keys are normally supported in a raised position by the springs D and carry on their lower ends the contact-pieces E, which extend in the construction shown transversely across beneath the board.

To the under side of the keyboard are secured the bracket-pieces F, which support at their lower ends the connectors G, which are affixed, respectively, to the cores *h* of the magnets H. Insulating-strips I are interposed between the several guides of the series of keys, and insulating-strips or side pieces J may be secured parallel to each other and to the brackets which carry the connectors. Upon one of these strips are

mounted the series of binding-posts K, one for each key and one for the main conductor. The switchboard as laid out shows eleven keys, marked from "1" to "10," respectively, and one key marked "L R."

The main conductor is marked M, and I have shown in Fig. 5 a diagrammatic view of a circuit having as elements therein the main wire M and a branch wire (marked N,) which is connected to the upper binding-post shown in Fig. 5, the latter being connected by a short wire O with the guide C of said key 5.

The operation of the apparatus above described is simple. If it be desired to establish an electrical circuit through the main wire M and branch N, key 5 is depressed, its contact-piece is forced down into contact with the connectors, and the circuit is established, it being understood that the break in the distant part of the circuit is normally closed. Now when the contacting-piece impinges upon the connector it is held thereto by the magnet, and the circuit is maintained until broken by the circuit-breaker S, whereupon the key-locking magnet is deenergized and the spring returns the key to its normal position.

In Fig. 6 I have shown a keyboard having five keys or circuit-closers with a main wire M and five branch wires, forming elements in as many branch circuits, one of said wires being marked N and forming with the wire M an electrical circuit controlled by the key 5.

It is obvious that a large number of circuits may be thus controlled by a switchboard of simple construction and compact form, the several keys being locked by the same connector. It will be understood that the two connectors and their magnets are duplicates of each other and that any number of spools may be employed or a magnet of any desired strength employed.

In the preceding description I have mentioned only one use to which this invention might be put, but it will be understood that there may be substituted in lieu of circuit-breaker S, which must be manually operated, any automatic circuit-breaker, such, for example, as is employed in the receiving-boxes of pneumatic tubes.

It will also be understood that the invention is applicable to many other uses—as, for example, in hotel-annunciators, where the circuit-breaker in the several circuits could be an ordinary push-button, and an annunciator-bell would be employed in the circuit.

It will also be understood that the details of construction which are specifically set forth may be varied both as to structure and arrangement.

I claim—

1. The combination with an electrical switchboard having a plurality of keys or circuit-closers and a controlling-magnet having a connector common to the series of circuit-closers and electrical circuits corresponding in number to the circuit-closers at the keyboard and normally open thereat and each including the controlling-magnet and each of said circuit-closers having a controlling device or switch normally closed, substantially as and for the purpose described.

2. An electrical switchboard having a plurality of keys or circuit-closing devices each provided with a contact-piece, a controlling-magnet having a connector common to the series of and a plurality of electrical circuits corresponding to the several keys, each including its respective key and the controlling-magnet and a second circuit-controller for each branch circuit, substantially as described.

3. The combination with an electrical switchboard having a base, a plurality of keys or circuit-closing devices slidably mounted in said base and normally upheld by springs, a controlling-magnet having a connector or contact-piece common to the several keys, strips of non-conducting or insulating material interposed between the several keys below the base, and a series of normally open electrical circuits, one for each key, and each of said circuits including the controlling-magnet and having a second circuit-controller therein, substantially as described.

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