

(No Model.)

T. A. WATSON.
TELEPHONE EXCHANGE APPARATUS.

No. 280,266.

Patented June 26, 1883.

Fig. 1.

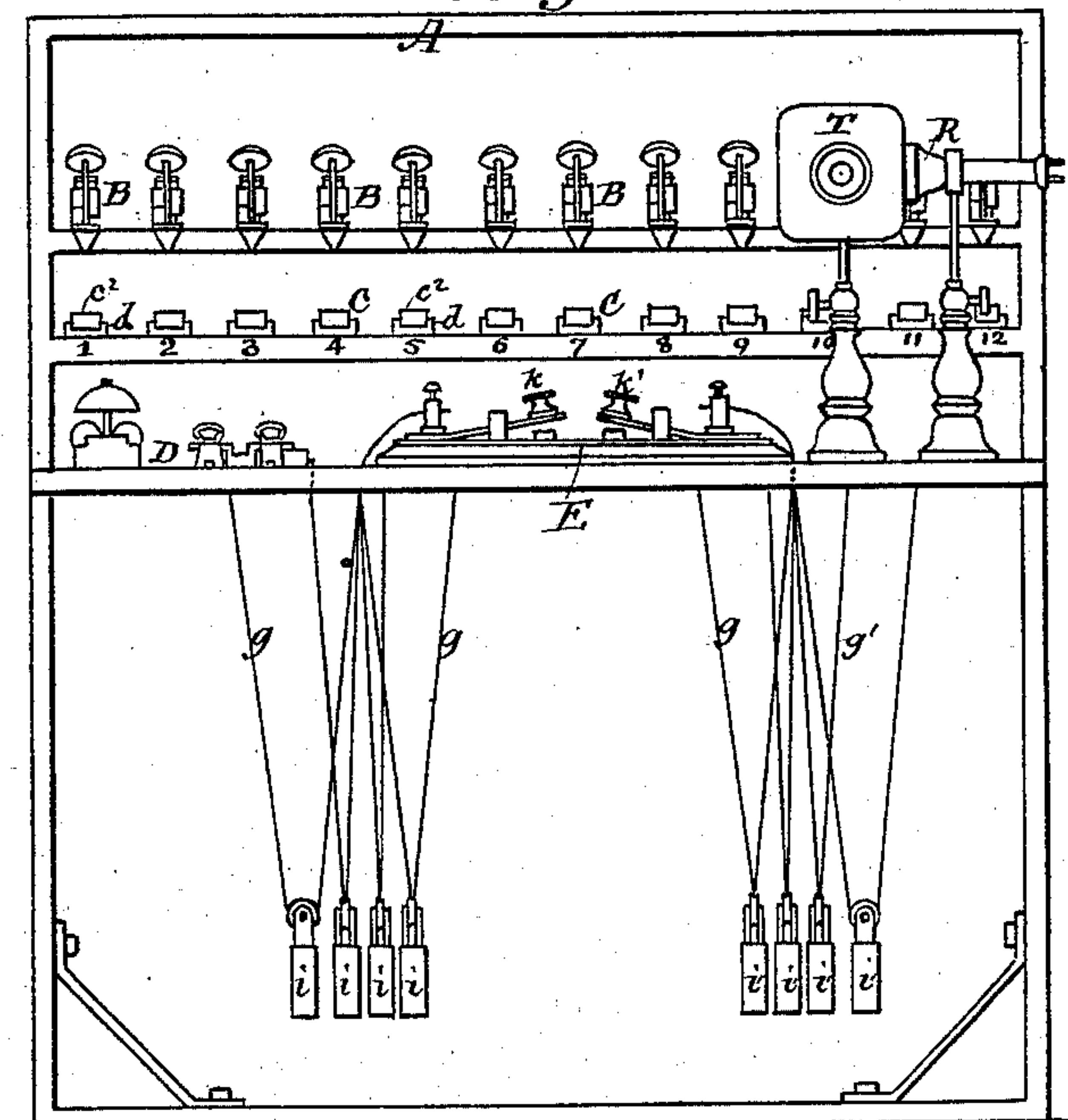


Fig. 2.

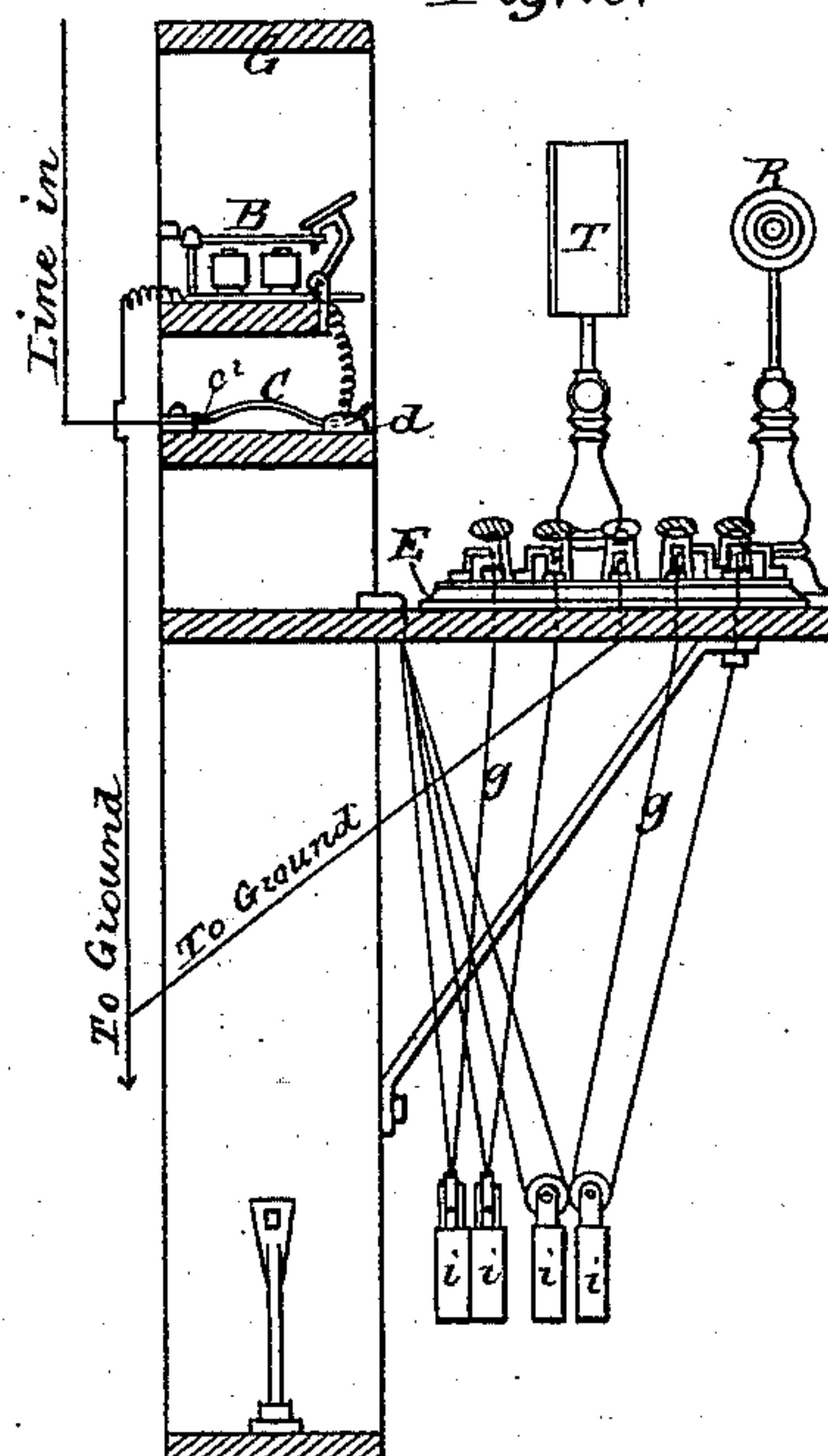
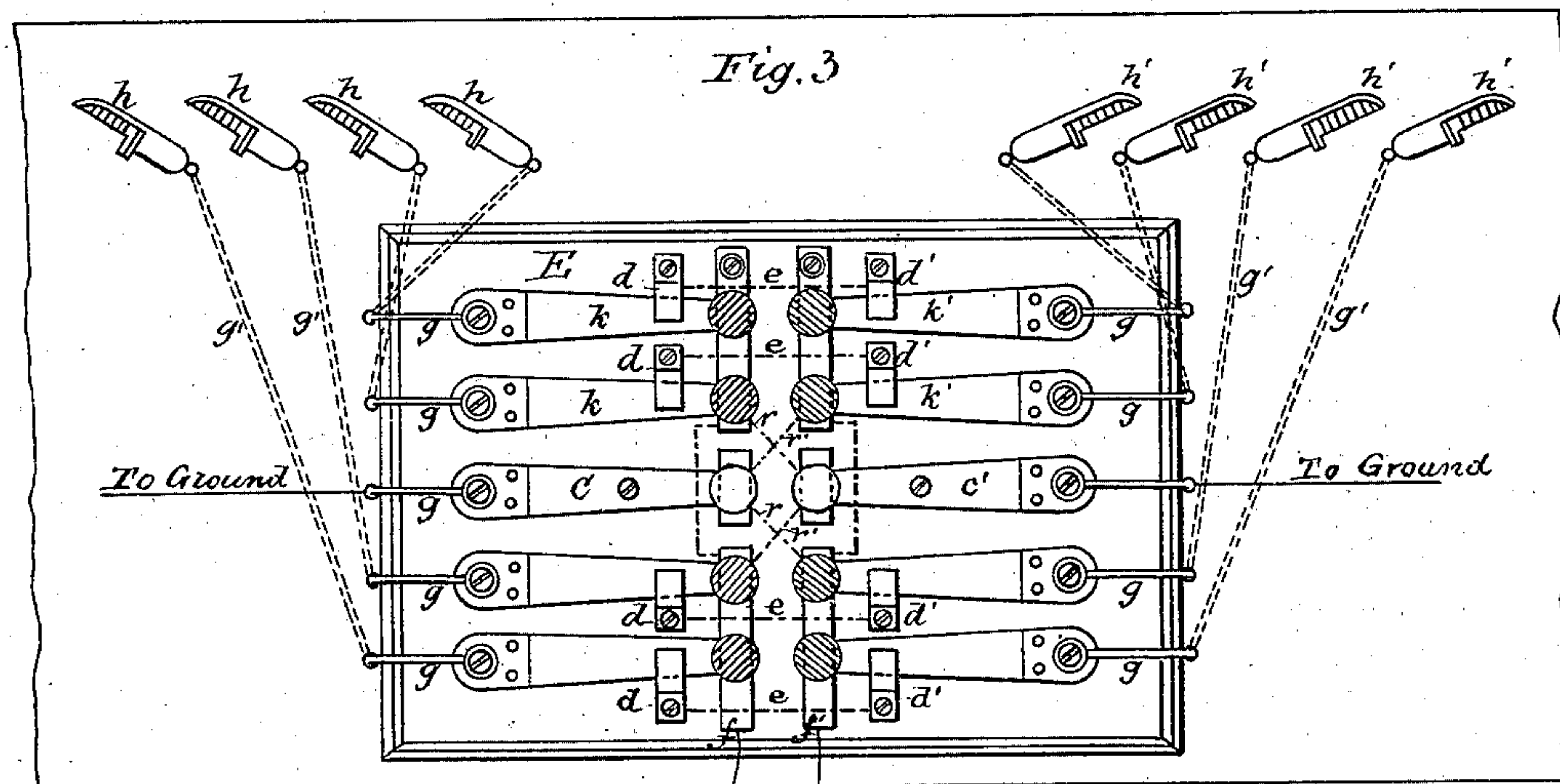


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS A. WATSON, OF EVERETT, MASSACHUSETTS.

TELEPHONE-EXCHANGE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 280,266, dated June 26, 1883.

Application filed March 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. WATSON, of Everett, in the State of Massachusetts, have invented a new and useful Improvement in Telephone-Exchange Apparatus, which improvement is fully set forth in the following specification.

In the central offices of exchange systems it is customary to employ flexible conducting-cords for making connections between two subscribers' lines and between a subscriber's line and instruments at the central office, and it is necessary, in performing the business of a central office, to make a great many such connections and to employ a large number of such conducting-cords, in consequence of which the cords are liable to become entangled, creating great confusion and impeding the business of the office.

The present invention has for its object to obviate this difficulty; and it consists, first, in an automatic take-up or device for automatically taking up the slack in the several conducting-cords; and, second, in the special means employed—viz., a weighted pulley or movable weight suspended in the loop or bight of the cord.

In the accompanying drawings, which form a part of this specification, the invention is shown embodied in the key-board in connection with a key-board apparatus such as described in my application No. 7,976, filed April 20, 1880, of which the present application is a division, Figure 1 being a front view of the switch-board; Fig. 2, a transverse vertical section of the same; and Fig. 3, a top view of the key-board with conducting-cords.

The spring-jacks C and indicators B (one for each subscriber's line) are supported on shelves of the frame A, and normally grounded at the central office, as shown in Fig. 2. The key-board E is supported on a shelf or table, D, forming part of frame A, but could be on a separate table, if desired. The two sets of black keys *k k'* are connected in pairs through their back contacts, *d d'*, by wires *e*, and the white keys *c c'* are connected to ground. With each of the black keys *k k'* is connected a conducting-cord, *g* or *g'*. These cords connect with the keys underneath the table and pass up through holes therein, and are fastened at their

free ends to switch-plugs *h h'*. In the bight or loop of the cords underneath the table D are suspended weighted pulleys *i i'*, the object of which is to keep the cords taut while the switch-plugs are in use, and to return the latter, when disconnected, to their proper position on table D. A transmitter, T, and receiver R and a battery, X, in separate branches, are shown connected in circuit with the conducting-strips *f f'*, which form the front contacts of the keys *k k'*. The front contacts of the white keys *c c'* are connected each with the conducting-strip on its opposite side.

When a subscriber—say on line No. 1—has called the central office, the operator inserts one of the left-hand plugs *h* in spring-jack No. 1. The black key *h*, corresponding to the switch-plug used, is depressed, bringing in receiver R and transmitter T, (the switch S being placed in proper position,) and the circuit completed to ground by depressing key *c*. After ascertaining with whom the subscriber wishes to communicate, the operator calls up the station wanted by inserting the right-hand switch-plug *h'* in the proper spring-jack, depressing keys *k'* and *c'* and switching in the battery. By simply releasing the keys *k'* and *c'*, the two subscribers are left in communication with each other. When the subscribers have finished conversation, it is only necessary to withdraw the switch-plugs from the spring-jacks, when the weights act as automatic take-ups to take up the slack of the cords and to restore the switch plugs or connectors to their position when not in use. There is thus no danger of the cords becoming entangled, even when the number of conducting-cords is very large, and each switch plug or connector, when not in use, will be found in its proper place. The weight also acts in use to stretch the cords, so that they cannot become kinked or wound about others, even when they overlies them.

Although the invention is illustrated in connection with the particular apparatus shown, its use is not limited thereto, for it is obviously applicable to central-office systems in which the connections are made by flexible conducting-cords on a switch-board of any ordinary or suitable construction.

Having now described the said invention

and the manner of carrying the same into effect, I would, in conclusion, observe that I do not claim herein the key-board apparatus shown, nor the special arrangement and connections of the keys thereon, as these form the subject of my before-mentioned application of April 20, 1880; but

What I do claim, and desire to secure by Letters Patent, is—

10 1. The combination, with flexible cords provided with switch plugs or connectors at their ends, of means, as indicated, for automatically taking up the slack in said cords, substantially as described.

2. The combination, with a series of switch-plugs and flexible conducting-cords, of movable weights suspended in the bights of said cords, substantially as described. 15

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 14th day of February, A. D. 1882. 20

THOMAS A. WATSON.

Witnesses:

LEWIS RICHMOND,
CHARLES M. WOOD.