

G. W. COY.
 Circuit Changer for District Telephone Systems.
 No. 238,361. Patented March 1, 1881.

fig. 1

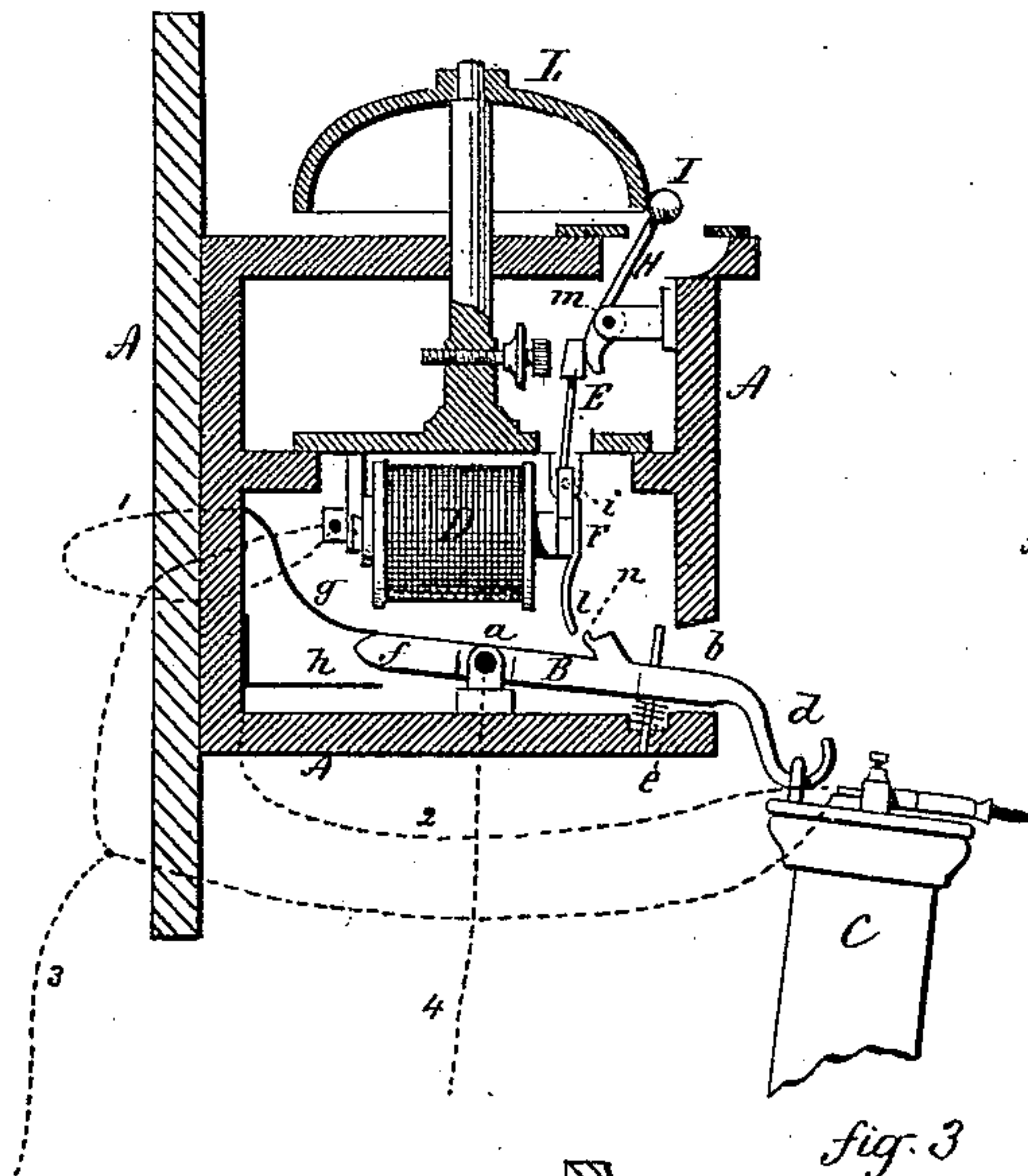


fig. 2

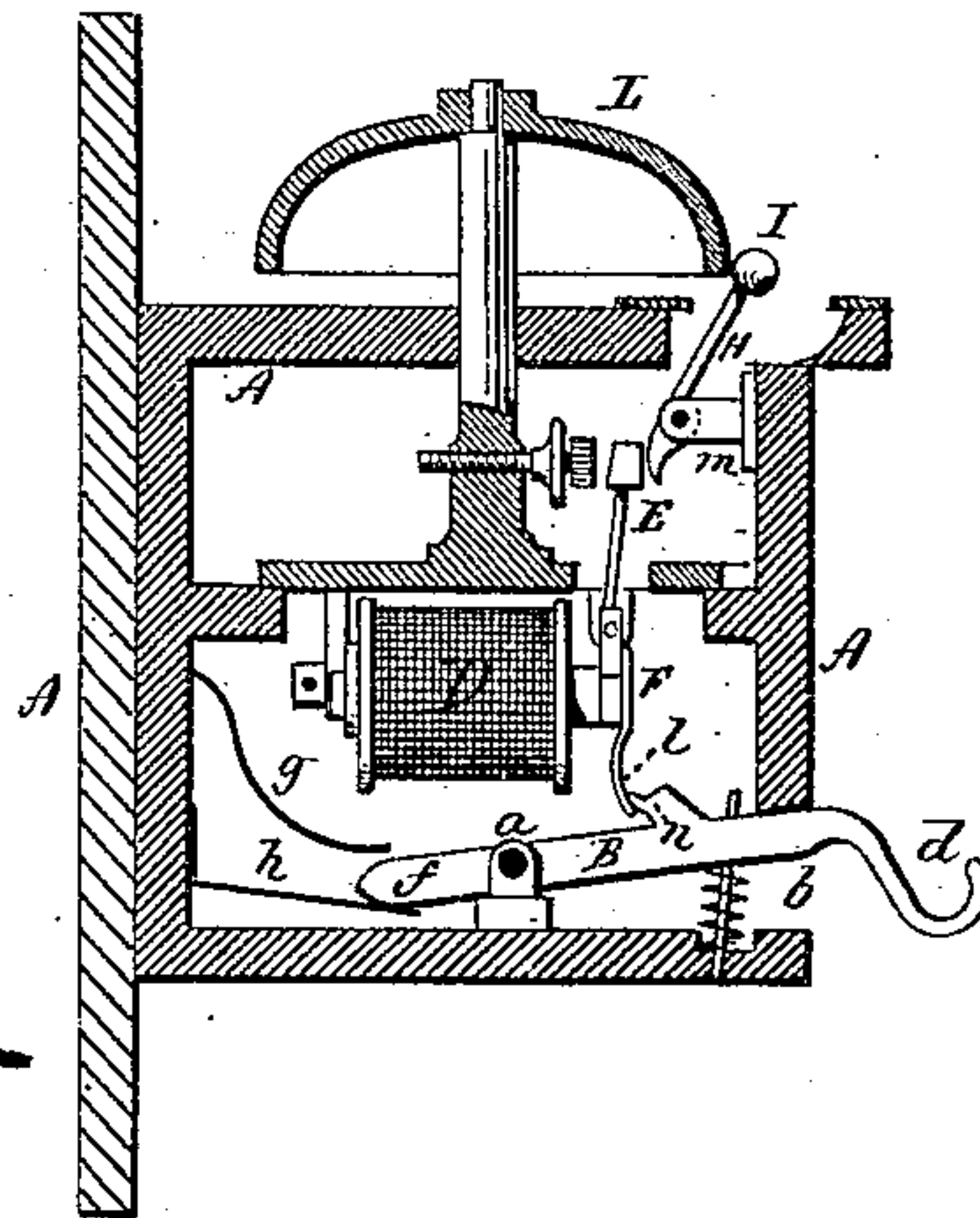
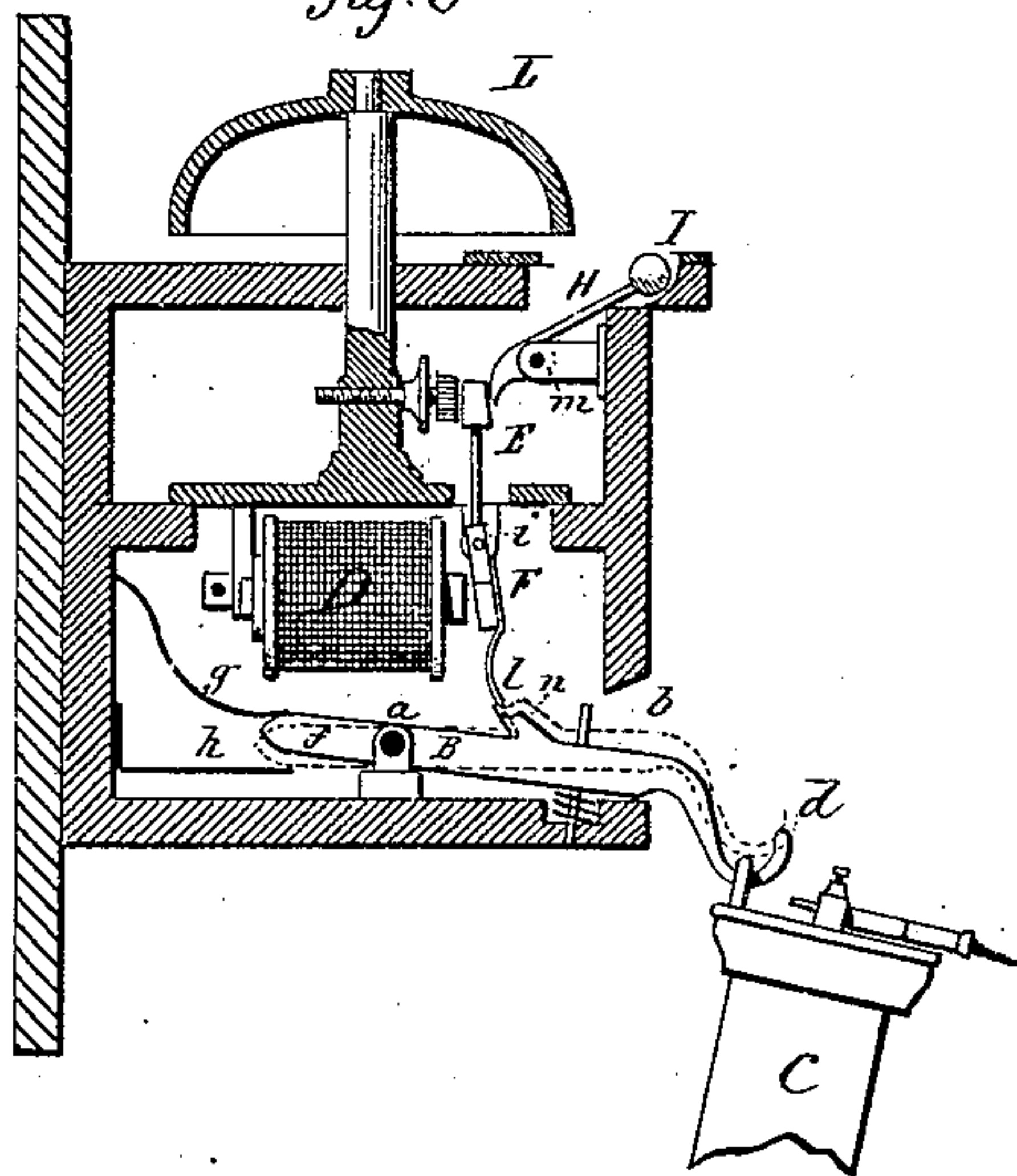


fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE W. COY, OF MILFORD, ASSIGNOR OF ONE-HALF TO HERRICK P. FROST, OF NEW HAVEN, CONNECTICUT, AND, BY MESNE ASSIGNMENT, OF THE REMAINING ONE-HALF TO THE UNITED STATES TELEPHONE MANUFACTURING COMPANY, OF NEW YORK, N. Y.

CIRCUIT-CHANGER FOR DISTRICT-TELEPHONE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 238,361, dated March 1, 1881.

Application filed January 23, 1880.

To all whom it may concern:

Be it known that I, GEORGE W. COY, of Milford, in the county of New Haven and State of Connecticut, have invented a new Improvement in Circuit-Changers for District-Telephone Systems; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a sectional side view, showing the instrument as in its normal condition; Fig. 2, the same, with telephone in circuit for communication. Fig. 3 illustrates the condition of other telephones on the same circuit while the one or more, as in Fig. 2, are in communication.

This invention relates to an improvement in instruments for signaling different telephones on the same circuit and opening communication.

The object of this invention is to prevent the sound or messages communicated through the wire from being heard at any other station than those which are in proper or regular communication; also, to make it impossible for any one to cut off or interfere with the parties on that circuit which are at the time in communication; also, to insure possible communication over the line should a person at any one or more points fail to return the telephone to its hook when his own communication is completed.

The invention consists in the construction and arrangement of parts, as hereinafter described, and more particularly recited in the claims.

A A represent the box within which the mechanism is arranged.

B is the key or lever, hung upon a pivot at *a*. One arm extends through an aperture, *b*, in the box, and terminates in a hook, *d*, or other device upon which the telephone C may be hung, and so that the weight of the telephone will draw down that arm of the lever. At some convenient point a spring, *e*, is ap-

plied, the tendency of which is to raise that arm of the lever, and so that when the telephone is removed from the hook that arm of the lever will be automatically raised to the position seen in Fig. 2. The other arm, *f*, of the lever B lies between two springs, *g* and *h*. These springs are fixed to one wall of the box, and from the spring *g* a wire, 1, runs to the magnet D, and from the other spring, *h*, a wire, 2, runs to the telephone. The springs are arranged so that when the lever is depressed, as seen in Fig. 1, it is in connection with the spring *g* and disconnected from the spring *h*, and so that when the telephone is removed from the hook and the lever raised the arm *f* of the lever is disconnected from the spring *g* and put in connection with the spring *h*, as seen in Fig. 2.

The line-wire 3 runs to the telephone, and also to the magnet D, and the second line-wire 4 runs to the lever, as indicated, it being understood that the usual intermediate posts and connections are employed. (Not shown in the drawings.)

E is a lever arranged to swing on a pivot, *i*, and its lower arm is connected to the armature F and extends down to near the lever B, as at *l*. The other arm extends from the pivot upward, and so as to bear against the hammer-lever H. The said lever H is hung upon a pivot, *m*, and so that the upper end of the lever E may bear against the lower arm of the hammer-lever H, as seen in Fig. 1, and so that when the armature F is held against the magnet the hammer I will be up in striking position against the bell L, as seen in Fig. 1; but when the armature is free from the magnet, as in Fig. 3, then the hammer falls back into a cavity in the top of the box, and when the armature is again drawn to the magnet it will force the hammer up, as seen in Fig. 1, and strike the bell. Thus by simply opening and closing the circuit through the magnet the bell is struck for the signal. Because of this detachment of the bell-lever from the armature it is impossible to move the armature by the bell-lever or without opening the box, except from the central office, when the magnet is con-

connected with the battery, it being understood that the magnet is used only as a means of signaling, and that after the signal has been made and answered the battery is cut off from all stations on the line, causing the several bell-hammers to drop to the position seen in Fig. 3.

When a person at one telephone desires to communicate with the central office, or thence to other telephones, he takes the telephone C from the hook *d*, which causes the lever B to turn on its pivot and change the connection from the spring *g* and connect the telephone with the line through the spring *h*, as seen in Fig. 2. At the same time a projection, *n*, on the lever B comes in front of the extension *l* and holds the armature against the magnet, notwithstanding the battery is cut off.

The springs *g h* are arranged so that the arm *f* of the lever B comes into contact with the spring *h* before it leaves the spring *g*, and so that the armature will be locked, as before described, before disconnecting from the spring *g*. This operation of the lever B opens communication through the telephone C with the office. Then the communication is made in the usual manner, it being understood that the usual call-button is employed to open and close the circuit to signal the central office. At the instant the circuit is changed through the magnet by disconnection of the lever B from the spring *g*, as before described, all the armatures on the line are free, and, by means of a weight or spring, fall back from their respective magnets and drop the hammer, as seen in Fig. 3. This brings the extension *l* of the armature over the projection *n* on the lever, as seen in Fig. 3; hence if any other telephone on this line be lifted from its hook *d* the lever will rise slightly, as seen in broken lines, Fig. 3, and until the projection *n* comes in contact with the extension *l* on the lever, and there it will be stopped before the arm *f* of the lever can have disconnected from the spring *g*, and before it strikes the spring *h*. This slight movement of the lever does not in any degree interfere or change the working of the line any further than the particular telephone which is in the condition described and shown in Fig. 3. That armature, being held by the free lever, will be prevented from signaling that particular station.

Should the person who is in proper communication through the line, as in Fig. 2, neglect to return his telephone to the hook, and thereby re-establish the circuit through his magnet, the only derangement is, that his own station cannot be signaled until the telephone is replaced to bring his magnet again into circuit. Because of the operation described and shown in Fig. 3, it is impossible for any telephone on the line to be put in circuit after one or more

have been put in proper communication, it being understood that when the telephones are in such proper communication the battery is cut off at the central office.

I do not claim, broadly, the combination, with the armature of an electro-magnet, of a switch that is in such a relative position to the armature as to be movable for the purpose of a switch when the armature is attracted, and to be prevented from being used for such purpose by coming into contact with the armature when the latter ceases to be attracted.

I claim—

1. In an electric bell-signal for telephone-stations, the combination, with the bell-magnet, its armature, and a bell, a lever extending from said armature, and a bell-hammer lever hung independently of the armature-lever, and arranged to be acted upon thereby for ringing the bell, of a switch-lever arranged to change the circuit from the bell to a telephone, and vice versa, and to lock the armature, either in the position to which it is attracted by the magnet or that to which it returns on being released by said magnet, substantially as described, and for the purpose set forth.

2. The combination of the magnet and bell-operating mechanism, in connection with the armature, with a lever, B, in constant connection with one line-wire, and the springs *g h*, one of which is in connection with the telephone, the other in connection with the magnet D, telephone, and the other line-wire, one arm of said lever arranged between said springs so as to be turned into connection with either, to make the circuit through either the telephone or magnet D, and mechanism, substantially such as described, to engage the lever with the armature, so as to hold the armature to the magnet when the circuit is through the telephone and the battery cut off from the magnet, substantially as described.

3. The combination of the magnet and bell-operating mechanism, in connection with the armature, with a lever, B, in constant connection with one line-wire, and the springs *g h*, one of which is in connection with the telephone, the other in connection with the magnet D, telephone, and the other line-wire, one arm of said lever arranged between said springs so as to be turned into connection with either, to make the circuit through either the telephone or magnet D, and mechanism, substantially such as described, to engage the lever with the free armature and prevent the disconnection of the lever from the circuit through the magnet, substantially as described.

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Witnesses:

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