(No Model.) 2 Sheets—Sheet 1.

J. I. SABIN.

Electrical Switch Board.

No. 230,069. Patented July 13,

Fig. 1.

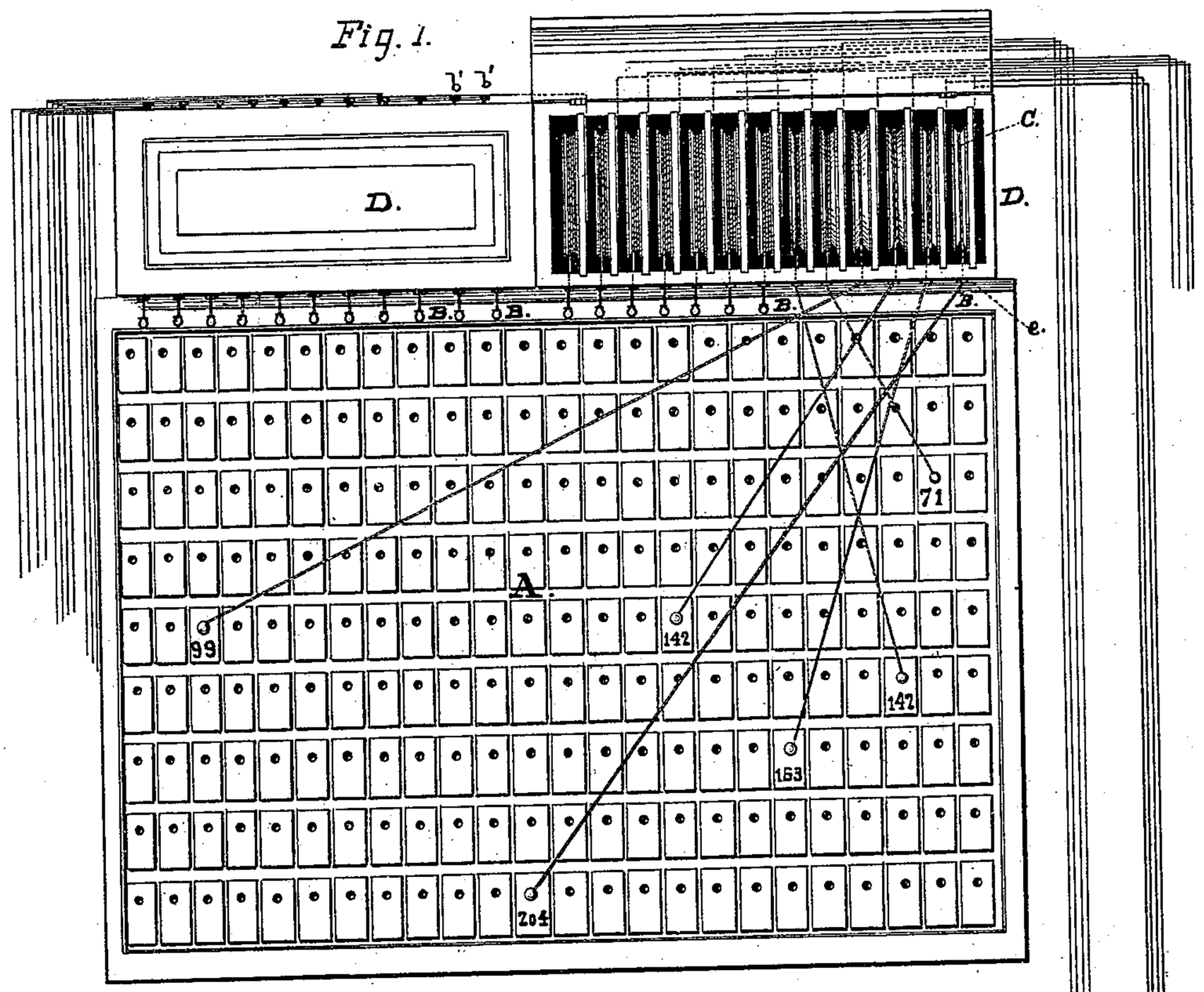

Fig. 1.

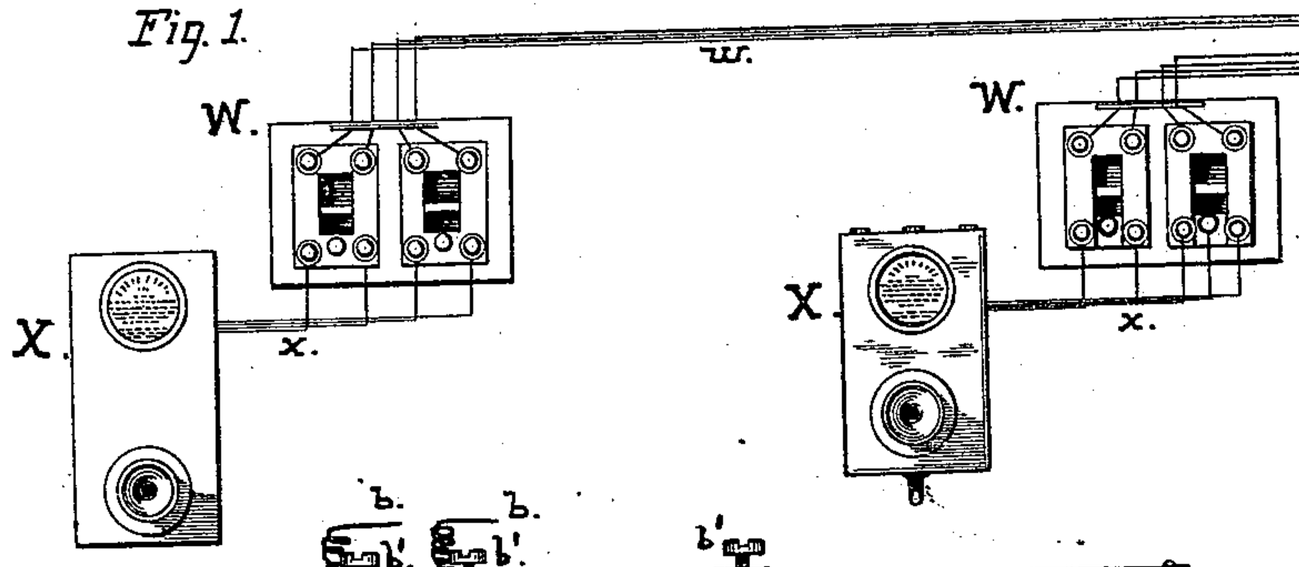

Fig. 2.

Fig. 3.

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Inventor:
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(No Model.) 2 Sheets—Sheet 2.

J. I. SABIN.

Electrical Switch Board.

No. 230,069. Patented July 13, 1880.

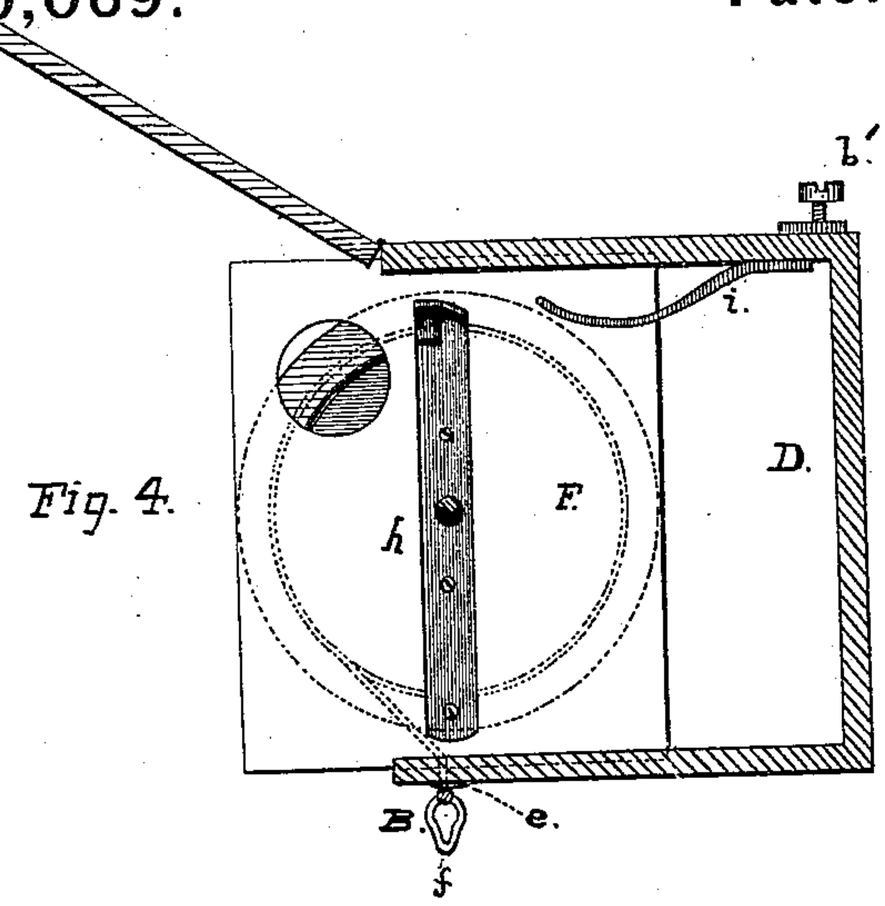

Fig. 4.

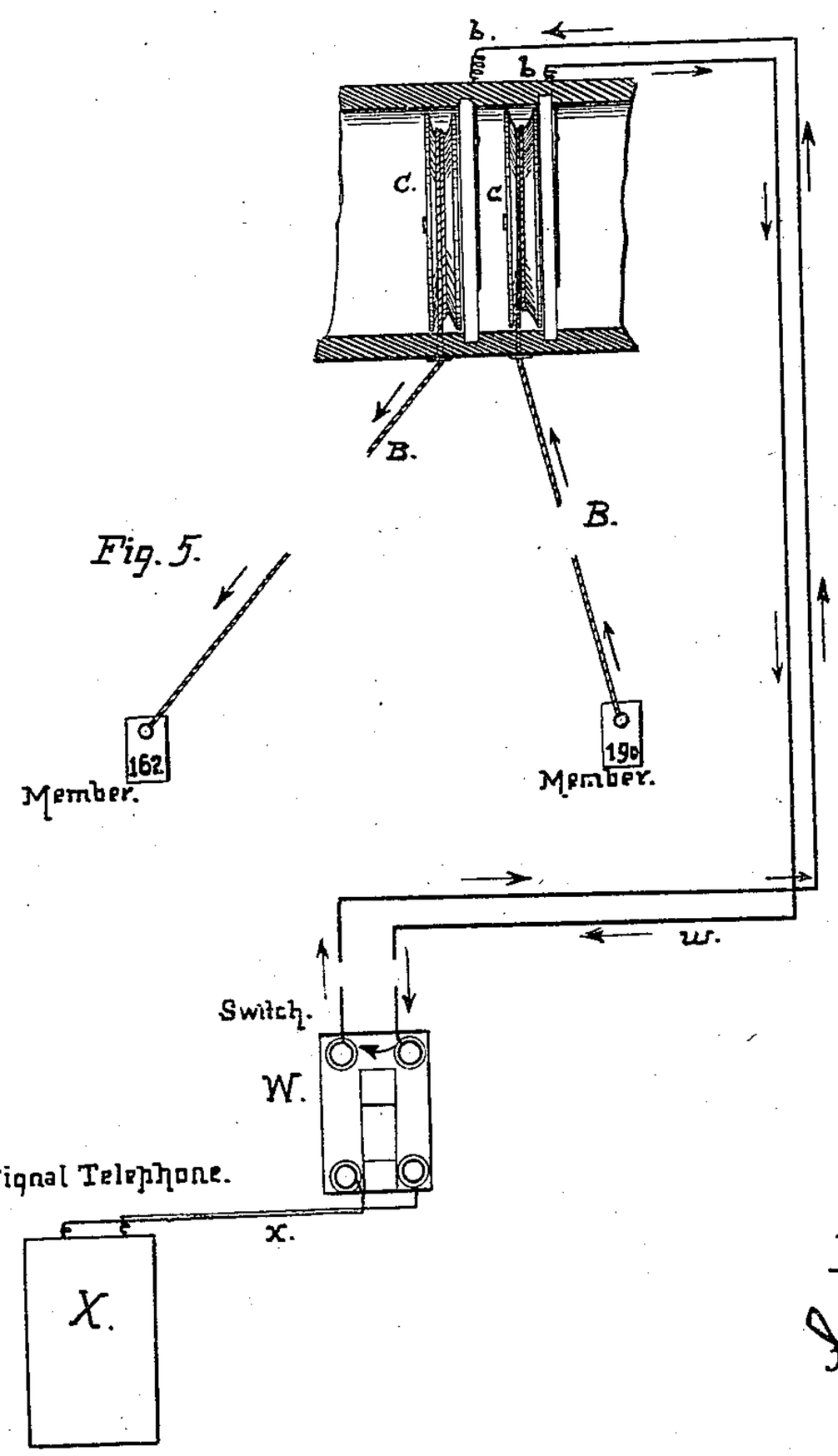

Fig. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN I. SABIN, OF SAN FRANCISCO, CALIFORNIA.

ELECTRICAL SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 230,069, dated July 13, 1880.

Application filed May 14, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN I. SABIN, of the city and county of San Francisco, in the State of California, have made certain Improvements in Switch-Cords for Telephone-Exchange Systems and methods of connecting lines or members of the system; and I do hereby declare that the following specification fully and clearly explains and describes the nature of my said invention, and the best mode of applying and working the same now known to me, reference being had to the accompanying drawings by figures and letters.

My invention relates to certain new and useful improvements in the switches of telephonic exchange systems, and more particularly in the mode or manner of arranging, applying, and operating the switch-cords, or the means by which any pair of the lines or members of the system are interconnected.

The switching apparatus heretofore in general use consisted of a board or tablet having the termini of the several lines or members of the system arranged thereon in regular order, and each one provided with a plate in which was the hole to receive the connecting-pin. Connection between any pair of the members was effected by using a switch-cord with a connecting-pin on each end and of proper length to reach from one point to the other on the board. The position of the two points or members on the board to be connected governed the length of cord to be used, and a number of such cords of different lengths were employed. This arrangement and mode of connection and exchange among the several members of a telephonic system was attended with more or less confusion and delay, because of the frequent entangling of the switch-cords and the time required to connect and disconnect the signal-telephone with the lines or members of the board, and afterward, by means of a separate switch-cord, make the required connection of the two members with each other.

My invention has for its object to dispense with the number of these separate or independent switch-cords of different lengths heretofore employed, and to enable any number of pairs of the system to be connected and disengaged without confusion or interference and entanglement with one another, and with a great saving in time, as will be more fully described hereinafter.

It consists in providing an extension switch-cord having an automatic take-up or retracting device, so that in the operation of interconnecting the cords can be drawn out to reach any point on the switch-board, and as soon as released therefrom they are automatically retracted and drawn back out of the way.

Referring to the accompanying drawings, Figure 1 is a front view of a switch-board or system of telephone-exchanges with my improvement applied thereto. Fig. 2 is a front view, in detail, of the automatic take-up for the extension switch-cord. Fig. 3 is a side view of the same, showing its position in the inclosing-case. Fig. 4 is a view of the rear side when the circuit with the line-wire is broken. Fig. 5 is a diagram illustrating the mode of connecting a signal-telephone with the extension switch-cords, whereby the operation of receiving signals from any line of its system and making the desired connection between pairs of the same is greatly simplified and facilitated.

A is a switch-board of the usual construction. Upon it I arrange the lines or members of the system, as heretofore; but in connection therewith, and in suitable position along and above the top of the board, I provide a number of permanent switch-cords, B, arranged in pairs, and two or more pairs of cords I connect, by means of a switch, W, with a signaling-telephone, X. These cords I arrange and apply so that they are capable of being extended or drawn out to any required length, and when released from connection with any point or member on the switch-board they are automatically retracted or drawn in out of the way. The means I employ to effect this extension and automatic retraction of the cords consists of a take-up, C, composed of a reel or drum mounted on an axle, *d*, and acted upon by a spring or weight to turn always in one direction, or so as to wind up the cord B when it is released.

One end of the cord B is fastened to the circumference of its reel, and after being laid around it in the groove the cord is carried down through the bottom of the case or com-

partment D, wherein the take-up is placed. Here it passes through a hole, *e*, and the hook or other connection *f* on the end prevents the reel from drawing the cord entirely up.

For convenience I have arranged each one of the reels upon a separate or independent slide or plate, F, which is adapted to fit and be held in a groove or between guides in the case D, above the switch-board A, so that any one of the drums can be drawn out and removed for repairs, or to disconnect it, without interfering with the others. This drum or take-up is always drawing upon its cord, so that when the end is connected with a member of the system at any point on the board the cord is held in a state of tension, instead of hanging loosely in curves or loops.

The connection between the cord B and the line-wire *b*, I make by employing a permanent conductor, *g*, fixed in the drum and leading from its axis out to the circumference, where the end of the cord B is fastened, and by fixing a circuit-closing plate, *h*, on the rear side of the slide, and a spring, *i*, in suitable position on the under side of the case and in electric connection with the wire *b*. This construction is followed in each one of the drums, and when any one of the slides F is partly drawn out the parts *h i* are separated and the circuit is broken, as will be readily noticed by examining Figs. 3 and 4 of the drawings. This construction affords a simple and ready means of cutting out or removing any one of the drums or automatic take-ups from the system without disturbing or deranging any of the others.

In Figs. 1 and 5 of the drawings I have shown my method of arranging and working these extension-cords in pairs, in connection with the signal-telephone, by which signals are received and the connections are made at the station.

I combine several pairs of the cords with a signal-telephone, X, by means of a switch, W, to which the ends of the cords are connected by the lines *w w*, connection being also made between the switch and its telephone by wires *x x*, and thus the telephone can be connected with any member on the board by one of its cords, and by moving the switch the ends of any pair of cords on the switch can be connected to complete the circuit from one member on the board through the two cords to the other member, as illustrated in diagram, Fig. 5.

Any number of pairs of these cords can be arranged and applied for one signal-telephone, according to the extent of the system and the amount of business done by it.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a telephonic-exchange system, the combination, with the terminal or end of a line or member of the system, of an extension cord or switch connection provided with an automatic take-up.

2. A telephone switch-cord or means for interconnecting any two lines or members of a telephone system having an automatic take-up.

3. In combination with a telephone switch cord or connection, the automatic reel or take-up drum C, arranged and applied to operate substantially as herein described.

4. In combination with the case or compartment D, two or more automatic reels or take-up drums, C C, having the switch-cord B secured thereto, and a means for establishing electric communication between the said cord on the drum and a post or connection, *b'*, on the case, substantially as herein described, for the purpose set forth.

5. The automatic reel or take-up drum C, mounted on the slide or plate F, and having the conductor *g*, in combination with the circuit-closer *h* on the slide and the spring on the case or compartment D, substantially as herein described, for the purpose set forth.

6. In combination, the extension-cords, the connecting-wires *w w*, the switch W, and a signal-telephone, X, substantially as herein described, to operate as set forth.

In witness whereof I have hereunto set my hand.

JOHN I. SABIN.

Witnesses:
WM. T. CLARK,
EDWARD E. OSBORN.