

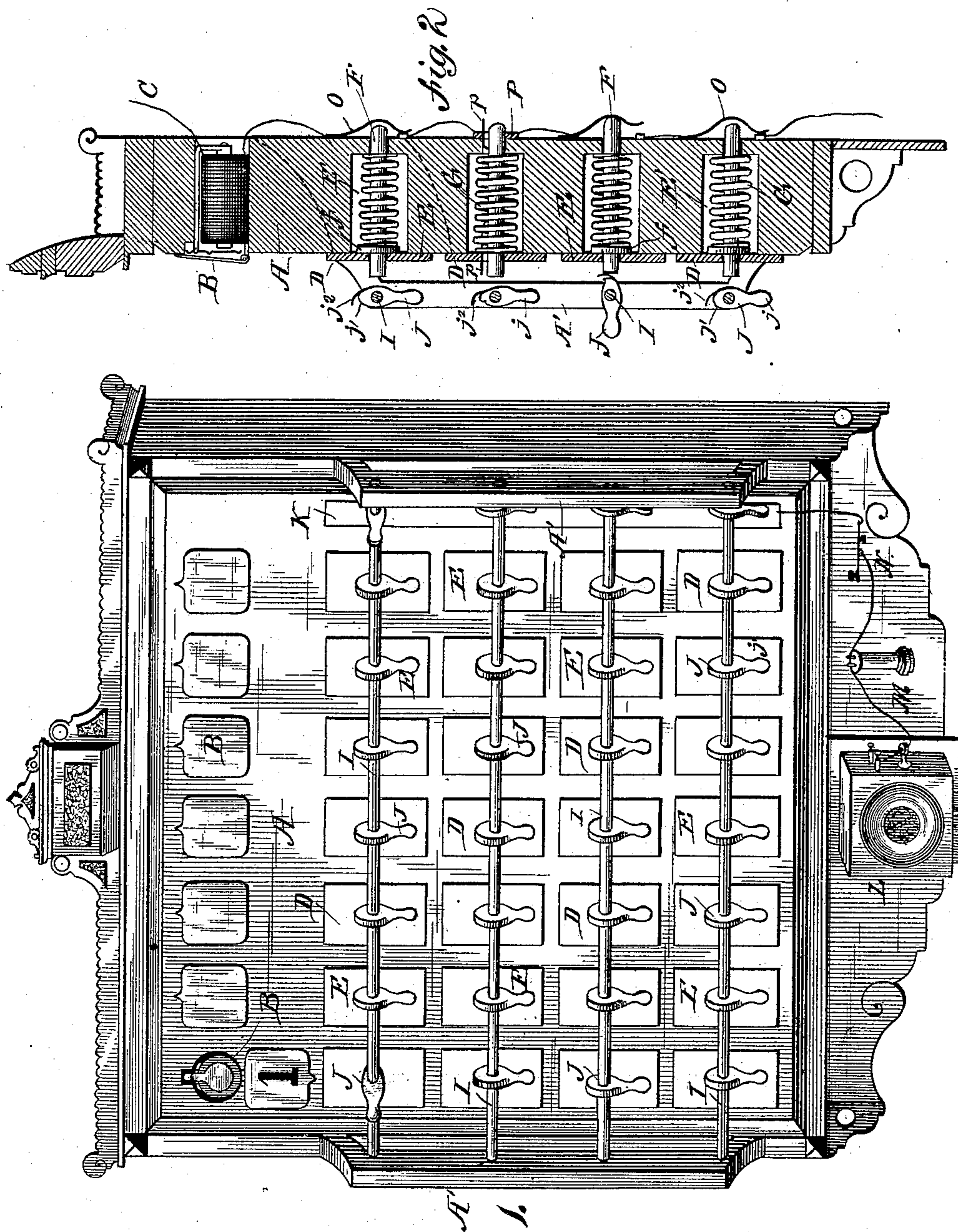
(No Model.)

H. E. WAITE.

SWITCH BOARD.

No. 312,410.

Patented Feb. 17, 1885.



Witnesses:
John G. Hinkel
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fig. 1.

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UNITED STATES PATENT OFFICE.

HENRY E. WAITE, OF NEW YORK, N. Y.

SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 312,410, dated February 17, 1885.

Application filed September 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. WAITE, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Switch-Boards, of which the following is a specification.

My invention relates to electric switch-boards, and more especially that class of switch-boards that are generally used in connection with a telephone central office or exchange; and it has for its object to simplify and cheapen the construction of such boards, and to render their operation or manipulation simple and effective, and prevent liability to get out of order; and to these ends my present invention consists in a switch-board constructed as more particularly pointed out hereinafter.

Referring to the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of a switch-board involving my invention, and Fig. 2 is a vertical section of the same.

The switch-board may be varied in size and style to suit the circumstances of the case; and it consists, essentially, of a base or board, A, into and upon which the various parts of the switch mechanism is placed. At the upper part of the board are arranged a number of annunciators, B, one for each subscriber's line C. This annunciator may be of any suitable form and design; but I prefer such as are described and claimed by me in my application previously filed, and bearing Serial No. 137,468, which is simple, cheap, and effective, and requires a minimum of room. Below each annunciator is placed a series of switch-connectors, D, four being shown in the drawings. Each of the connectors is constructed as follows: A face-plate, E, is secured to the board A in any suitable manner over an opening or recess, E', bored or otherwise formed therein. Passing through an orifice in the plate is a pin, F, having a collar or stud, *f*, and between this and the end of the recess is placed some sort of a spring, a coiled spring, G, embracing the pin, being shown. The end of the pin F projects through a small orifice to and beyond the rear of the board, and normally is out of contact with a spring or plate, O, which is connected to and forms part of the line-wire lead-

ing to ground. In front of each horizontal series of switch-connecters is placed a bar or rod, I, properly supported upon the plate A by brackets or by the projecting sides or edges A'. Upon these bars or rods are spring jacks or levers J, consisting each of a plate or body having a handle, *j*, and a rounded or cam-shaped end, *j'*. Upon this end is fixed a spring, *j''*, being secured thereto at one end by pins, screws, or other suitable means, the other end being left free. There may be as many of these levers on each rod as there are subscribers' lines, or only a few, as two or more may be used on each rod, they being adapted to slide thereon and be brought opposite the desired plate corresponding to the line with which connection is desired. At one side of the board, as at K, is placed a continuous metallic strip, and this is electrically connected with the operator's telephone-instruments L M N, and through them to ground. The spring jacks or levers J, that are over this strip, may be made each with a slightly longer end, *j'*, or spring, *j''*, thereon. The ground-terminals to the lines may be constructed with spring-plates O, adapted to be operated by the pins F, or may include perforated disks P, in which case the pins may have springs *p*, which are adapted to make or break contact with the plates.

Various other modifications of the details of construction may be made without departing from my invention.

From this construction the operation of the switch-board will be apparent. Normally all and each of the lines pass through the proper annunciator and thence to ground, including the circuit-opening devices O or P, or both. The spring jacks or levers normally are out of contact with the pins F, the weight of the handles causing them to assume a vertical position. If a subscriber calls by signaling to the operator at the switch-board, the annunciator drops—as, for instance, No. 1, Fig. 1.—and the operator immediately turns up the lever J on the rod I, and the spring *j''* bears upon the spring-pressed pin F and forces the latter backward, when its rear end impinges upon the circuit-opening device and breaks the subscriber's ground. The corresponding lever on the rod I over the strip K is turned up, and connection is made from

the subscriber through the operator's instruments and to ground. The operator, having ascertained with whom the calling subscriber desires to talk, signals that subscriber by turning up the lever corresponding to the line desired, breaking that ground, when the operator is put in connection with the called subscriber, and as soon as he responds the two subscribers will be in proper electrical communication for conversation through the bar I, the pins F, and levers J. The operator may then use his lever to throw in and out his telephone to listen to ascertain when the subscribers are through using the line. If another subscriber calls, the same operation is gone through with, only some other bar I and levers J are used. Of course the number of bars will be governed by the amount of use of the various lines and the number of communications necessary to be maintained at a time.

It will be seen that all the contacts are made and broken by a rubbing frictional contact, thereby constantly keeping the surfaces clean and making good electrical connection.

In large switch-boards it may be preferred to have more than one strip K and set of operator's instruments, and this will be governed by the necessities of each particular case.

Instead of having the subscriber's line run directly to ground after passing the annunciator, it may be connected to the upper plate E, as shown in dotted lines, Fig. 2, and the contact of the upper spring, O, is connected with the next plate E, and so on to the bottom contact, which may go to ground.

It will be observed that by this arrangement I am enabled to construct a very simple and inexpensive switch-board, that is compact and readily operated, and not liable to get out of order.

Having thus described my invention, what I claim is—

1. The combination, in a switch-board, of a series of subscribers' lines, each provided with one or more circuit-opening devices, and a series of spring-supported pins normally out

of contact with said devices, and a series of levers, each adapted to operate the pins to break the subscriber's ground-line, substantially as described.

2. The combination, with a switch-board, of a series of circuit-breakers upon the rear of the board, a series of spring-supported pins passing through said board, a series of bars arranged opposite the pins, and a number of levers pivoted to the bars and adapted to bear against the pins and operate the circuit-breakers, substantially as described.

3. The combination, in a switch-board, of a number of spring-supported pins, and spring jacks or levers adapted to operate the pins, the levers being provided each with a curved spring upon the operating end, substantially as described.

4. The combination, with a switch-board, of a series of spring-supported pins, a continuous metal strip connected with the operator's instruments, a series of bars supported opposite the pins and strip, and a number of pendant spring-jacks supported on the bars, and adapted to make contact with the pins and strip, substantially as described.

5. A switch-board consisting of a board having a number of recesses in which are the annunciators connected to the several lines, a series of spring-supported pins, a series of horizontal bars in front of the board, and a number of spring jacks or levers supported upon each bar, said levers adapted to make contact with the pins and break the ground-connection of the subscribers' lines, and to place two subscribers in electrical connection through the bars, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY E. WAITE.

Witnesses:

F. L. FREEMAN,
WM. S. SAYERS.