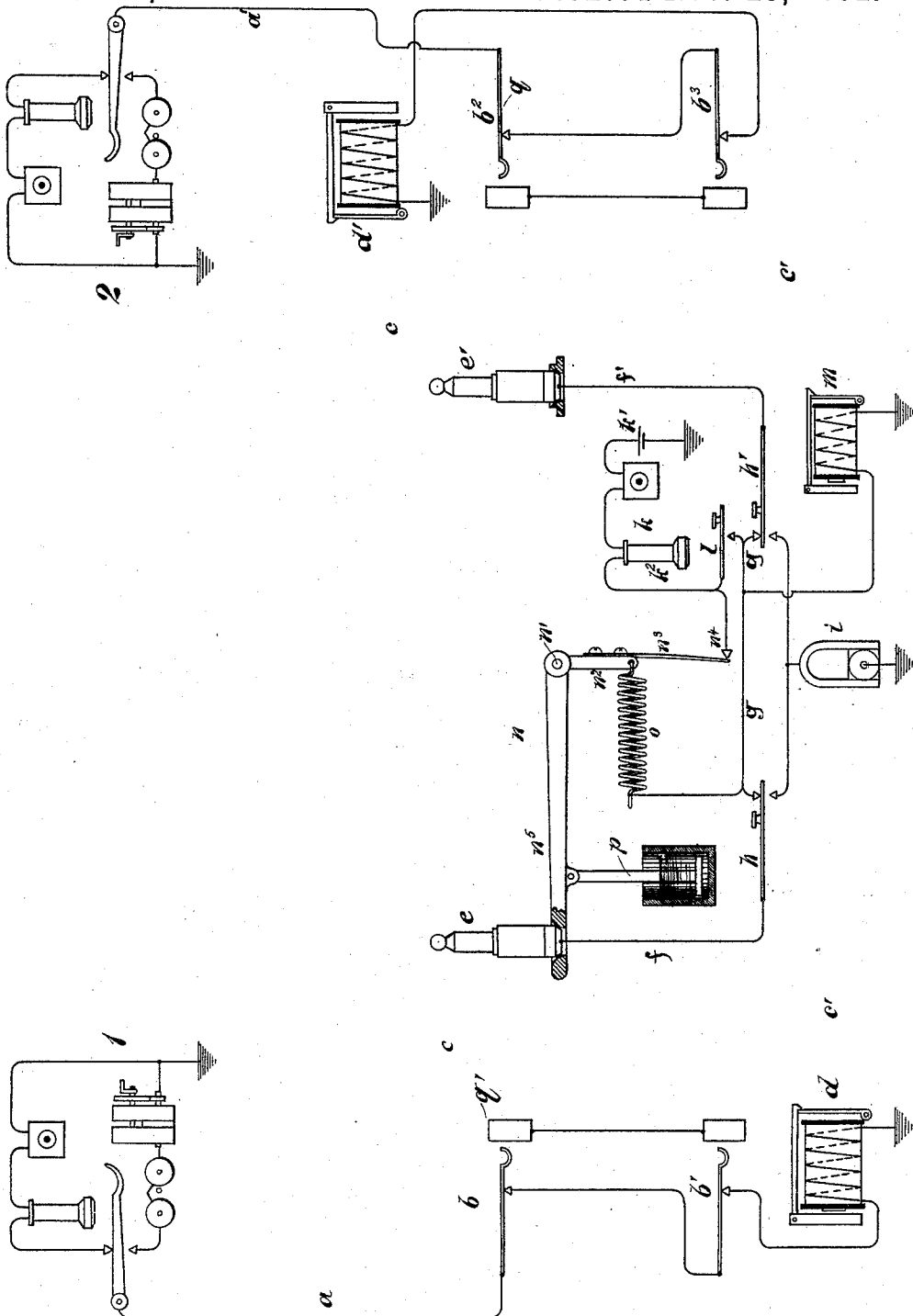


(No Model.)

C. E. SCRIBNER.
TELEPHONE SWITCHBOARD APPARATUS.

No. 487,098.

Patented Nov. 29, 1892.



WITNESSES
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UNITED STATES PATENT OFFICE

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN
ELECTRIC COMPANY, OF SAME PLACE.

TELEPHONE-SWITCHBOARD APPARATUS.

SPECIFICATION forming part of Letters Patent No. 487,098, dated November 29, 1892.

Application filed April 21, 1892. Serial No. 430,152. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone-Switchboard Apparatus, (Case No. 307,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to the operator's outfits for telephone-exchanges. Its object is to provide means for automatically disconnecting the operator's telephone set from a telephone line-circuit.

My invention consists in a pivoted lever, retarded in its motion by suitable means, provided with contact-points and circuit-connections, whereby it is adapted to connect the operator's telephone with the connecting-cord circuit when in one position, the switch or lever being normally held in such position by one of the connecting-plugs.

My invention is illustrated in the accompanying drawing. Therein I have shown two sub-stations, each connected by a line-circuit with spring-jacks upon two sections of multiple-switchboard and with an individual annunciator upon one of the boards, a pair of connecting-plugs of ordinary construction and their usual cord-circuit, and my improved automatic switch.

The apparatus at the sub-station—sub-station 1, for example—is of the usual character, comprising calling and signal-receiving apparatus, a telephone set, and a switch adapted to connect the signaling appliances or the telephone set with the line-circuit, according to its position. The apparatus at the sub-station is connected in a grounded circuit by means of the line *a* with spring-jack switches *bb'* upon two sections *cc'* of multiple-switchboard at the exchange and with an individual annunciator *d* at the section *c'* of switchboard. The individual annunciator *d'* of the line to station 2 is placed upon the other section *c* of switchboard, so as to be under the care of another attending operator.

The operator's connecting apparatus comprises the connecting-plugs *e e'*, which are connected together by flexible cords *ff'* and

a conductor *g*, calling-keys *h h'*, each adapted to disconnect one of the plugs from the other and to connect it with a grounded calling-generator *i*, and the telephone set *k*. A key *l* is provided, by which the operator is enabled to connect one terminal of her telephone set *k* with the conductor *g* and thus with the circuit of two subscribers in connection. A clearing-out annunciator *m* is included in a branch between the conductor *g* and earth to respond to the signal for disconnection. The bell-crank lever *n* is pivoted at the point *n'*. One arm *n²* of the lever carries a flexible contact-spring *n³*, adapted to make contact with an anvil *n⁴*, which is connected with the operator's telephone set *k*. A spiral spring *o* tends to withdraw the contact-spring *n³* from its anvil *n⁴*. The motion of the lever is retarded by a piston *p*, moving in a dash-pot. The arm *n⁵* of the lever is provided with a socket to receive one of the connecting-plugs *e*, which normally rests therein, the weight of the plug being sufficient to close the contact-spring *n³* upon the anvil *n⁴* in opposition to the tension of the spring *o*. The lever *n* is connected through the medium of the spring *o* with the conductor *g*.

In the operation of the system shown a subscriber—for example, at station 2—desiring connection rotates his calling-generator, as usual, sending signaling-current through the line-circuit *a'* and the different spring-jacks *b² b³* through the annunciator *d'* to earth, operating the annunciator and announcing the signal to the attendant at the switchboard *c*. The operator, seeing the signal, inserts the answering-plug *e'* of a pair of connecting-plugs into the spring-jack *b²* at her switchboard, whereby the circuit is extended from station 2 over the line *a'* to the line-spring *q* of the spring-jack *b²*, thence to the plug *e*, through the cord *f'*, key *h'*, conductor *g* to the lever *n*, thence through the contacts *n³ n⁴* to the operator's telephone set *k*, thence to earth, and returning to station 2. The operator is thus enabled to communicate with the subscriber at station 2 and to receive his order, say, for connection with station 1. The operator then proceeds to test the spring-jack of line to station 1 to determine whether the line is already in use or not in the usual man-

ner—that is, by applying to the test-ring q' of the spring-jack b at her board the tip of the other connecting-plug e of the pair. If the line to station 1 were in use, the test-ring q' would be connected through the connecting-plug, by means of which connection already existed with the line a , and thence to earth, and at each application of the test-plug e to the test-ring the testing operator's battery k' would find circuit through her telephone set, through the contact-pieces $n^4 n^3$ to the lever n , thence to the conductor g through the key h and cord f to the plug, thence to the test-ring to which it was applied, thence over the line-circuit to earth, and at each such application a click would be produced in the operator's telephone-receiver k^2 , which would indicate to her that the line was already in use. When the plug e was removed from its socket in the lever n , the lever at once began to rise in response to the tension of the spring o ; but being retarded in its movement by the piston and dash-pot p it would rise so slowly as to allow the operator sufficient time to make the test with the plug e before separating the contacts $n^3 n^4$ and disconnecting her telephone from the plug-circuit. Having found the line to station 1 not already in use, the operator inserts the plug e fully into spring-jack b , thereby completing a continuous loop circuit, including both the substations 1 and 2. The circuit may be traced, as before, as far as the conductor g , whence it is now extended through the key h , cord f , and the plug e to the spring-jack b , then through the line-spring q thereof to the line a , and thence to sub-station 1. The operator now depresses the calling-key h , disconnecting the cord f from the conductor g and connecting it with one terminal of the calling-generator i , whose other terminal is grounded, and thus sending a call signal to station 1, to which the signal-bell thereat responds.

If at any time the operator desires to connect her telephone set with the circuit joining the two subscribers, she may do so by depressing the listening-key l .

When the subscribers have completed their conversation, one of them by rotating his

calling-generator—his telephone-switch being in its lowest position—sends a signal for disconnection over the line-circuit, which finds circuit to the conductor g , and thence through the clearing-out annunciator m to earth, operating the annunciator and indicating to the attending operator that the connection is no longer desired.

I do not limit myself to the details of the construction herein shown and described, since numerous modifications of my invention will readily occur to those skilled in the art.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a connecting-plug, of a switch-lever held in one position by the plug when out of use, switch-contacts thereon, and means for retarding the motion of the switch-lever, substantially as described.

2. The combination, with a connecting-plug, of a switch-lever held in one position by the plug when out of use, switch-contacts thereon adapted to be separated when said plug is removed for use, a telephone set connected with one of said switch-contacts, the other switch-contact being connected with the plug-circuit, and means for retarding the motion of said switch-lever, substantially as specified.

3. The combination, with a connecting-plug, of a switch-lever normally held in one position by the weight of the connecting-plug, switch-contacts upon the said lever adapted to be separated when said plug is removed for use, circuit connections with said plug, a telephone set and other circuit connections, whereby the telephone set is normally connected through the switch-contacts with the plug-circuit, and means for retarding the said lever in its motion, substantially as specified.

In witness whereof I hereunto subscribe my name this 5th day of April, A. D. 1892.

CHARLES E. SCRIBNER.

Witnesses:

F. R. MCBERTY,
GEORGE L. CRAGG.