

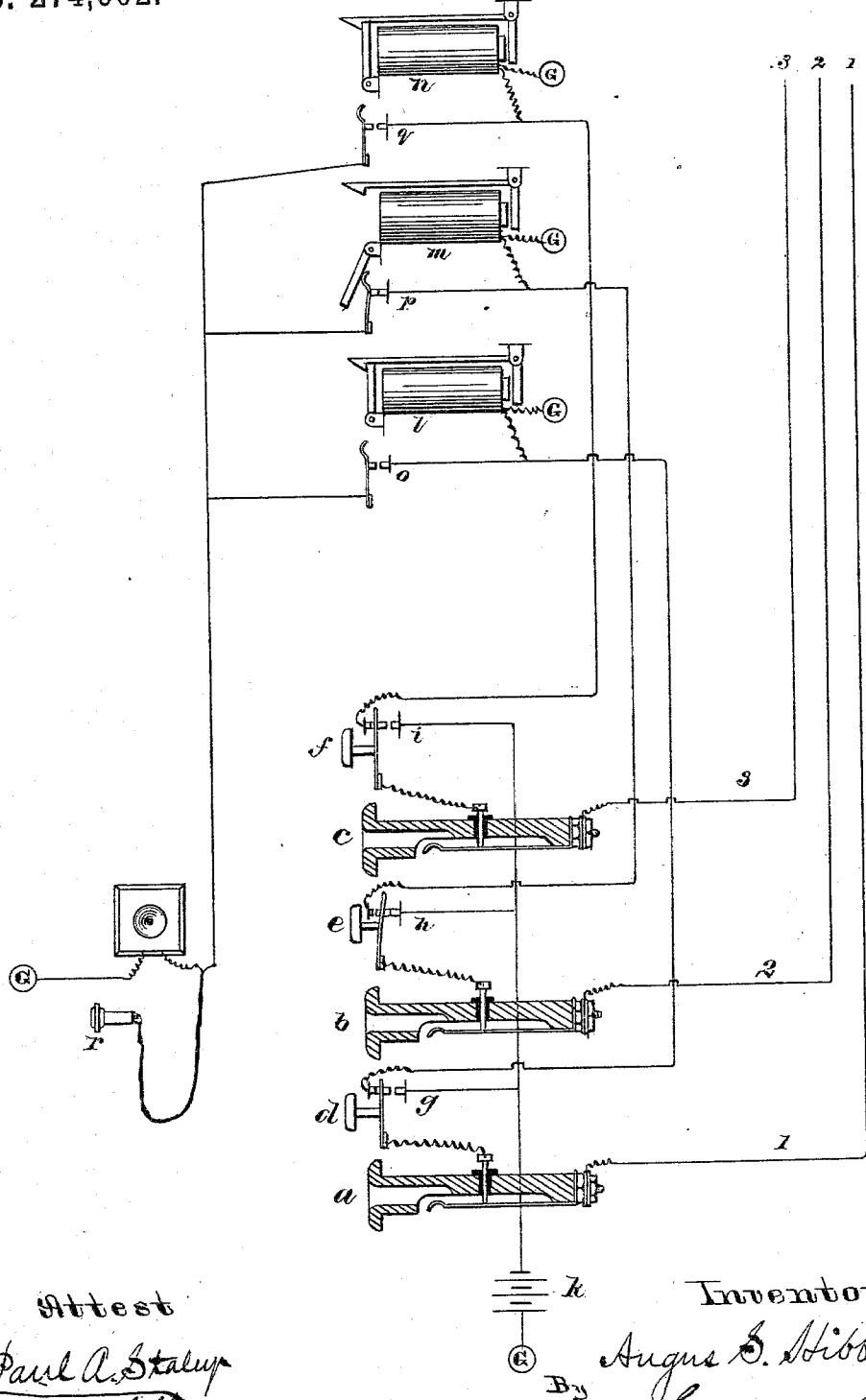
(No Model.)

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CIRCUIT FOR TELEPHONE EXCHANGES.

No. 274,602.

Patented Mar. 27, 1883.



Attest

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CIRCUIT FOR TELEPHONE-EXCHANGES.

SPECIFICATION forming part of Letters Patent No. 274,602, dated March 27, 1883.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, ANGUS S. HIBBARD, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Telephone-Circuits for Telephone-Exchanges, 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.

The object of my invention is to facilitate the receiving and answering calls at the central office of a telephone-exchange.

Several systems of signaling have been heretofore employed. In one system with which I am familiar each telephone-line is connected from its spring-jack upon the switch-board to a ground-line including the listening-operator's telephone, in which case the subscriber speaks at once to the operator, who always stands listening. On learning what subscriber is wanted the operator can ring up said subscriber by sending a current to his line. The spring-jacks of the calling and called subscribers are then connected together by means of plugs and a flexible cord, in which should be included the usual clearing-out annunciator. In other systems now in common use each telephone-line is connected through its spring-jack and annunciator to ground. The operator, on seeing an annunciator-shutter fall, inserts one of a pair of plugs into the spring-jack of the line, and thus disconnects the annunciator. By means of a key the operator first throws a battery to line to inform the subscriber that his call has been received at the central office, and then by means of another key the operator connects his telephone to the line of the calling subscriber. The operator now listens to the subscriber and learns what other subscriber is wanted. Thereupon he inserts the other plug of the pair in the spring-jack of the called subscriber, and by means of another key throws a current to the called subscriber's line, who is thus notified by the ringing of his bell. In another system the shutter of the annunciator in a subscriber's line, as it falls, automatically cuts out the annunciator and at the same time connects the line to a normally-open ground-line including the listening-operator's outfit.

My system herein-described is an improvement on the systems heretofore mentioned; and it consists in a key included between the spring-jack and annunciator of each line, and a branch circuit between said key and the annunciator for connecting to the operator's telephone.

In the drawing, which is illustrative of my invention, 1, 2, and 3 are telephone-lines. *a*, *b*, and *c* are spring-jack switches, which are placed upon the switch-board at the central office and operated in the usual manner.

I have not shown the cords and plugs for connecting the spring-jacks together, as they are well known. I have placed upon the switch-board, near the different spring-jacks, the keys or switches *d e f*. I have also provided connections *g h i* with a battery, *k*. The annunciators *l m n* are included in the circuits of the telephone-lines, as shown.

I have provided the branches *o p q* for connecting the telephone-lines to the listening-operator's telephone *r*. The circuit of telephone-line 1 may thus be traced to the spring-jack *a*, and thence to switch *d* and through annunciator *l* to ground, as shown. When the subscriber sends current to line the shutter of the annunciator is thrown down. The shutter, when thus thrown down, automatically connects the line to the listening-operator's telephone. Thus line 2 is shown closed to the listening-operator's telephone *r* by shutter of annunciator *m* at branch *p*. As soon as the operator sees a shutter fall he answers the call by throwing current to line. Thus key *e* is shown depressed, and the battery *k* is connected to line 2 at branch *h*. A single impulse is sufficient to inform the subscriber that his call is received at the central office. Line 2 is therefore open to the annunciator *m* and telephone *r* at key *e* only for an instant. The operator listens at telephone *r* and finds out what other subscriber is wanted by subscriber of line 2. Suppose it to be the subscriber of line 3. The operator, by depressing key *f*, sends current to line 3, and then proceeds to connect spring-jacks *b c* by means of a pair of plugs and cords in the usual manner.

I claim as my invention—

1. The combination, in the circuit of a telephone-line, of a key for answering the sub-

scriber, included between the spring-jack and annunciator of the line, the battery and its connection, and a branch line between said key and the annunciator, whereby the line may be
5 connected to the listening-operator's telephone, substantially as and for the purpose specified.

2. In a telephone-exchange system, the combination of lines 1 2 3 with spring-jacks *a b c*, keys *d e f*, contacts *g h i*, battery *k*, annunciators *l m n*, branch connections *o p q*, and telephone *r*, substantially as shown and described.
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3. In a telephone-circuit closed to ground through a spring-jack and an annunciator at the central office of a telephone-exchange, the
15 combination, with a branch line adapted to be

automatically closed through a listening-telephone by the dropping of the annunciator, of a battery, and a signaling-key placed between the spring-jack and annunciator, whereby the calling subscriber may be notified that his call
20 is received and be immediately placed in direct communication with the listening operator, substantially as specified.

In witness whereof I hereunto subscribe my name this 9th day of December, A. D. 1882.

ANGUS S. HIBBARD.

Witnesses:

S. R. KEMPER,
GEO. F. ROHN.