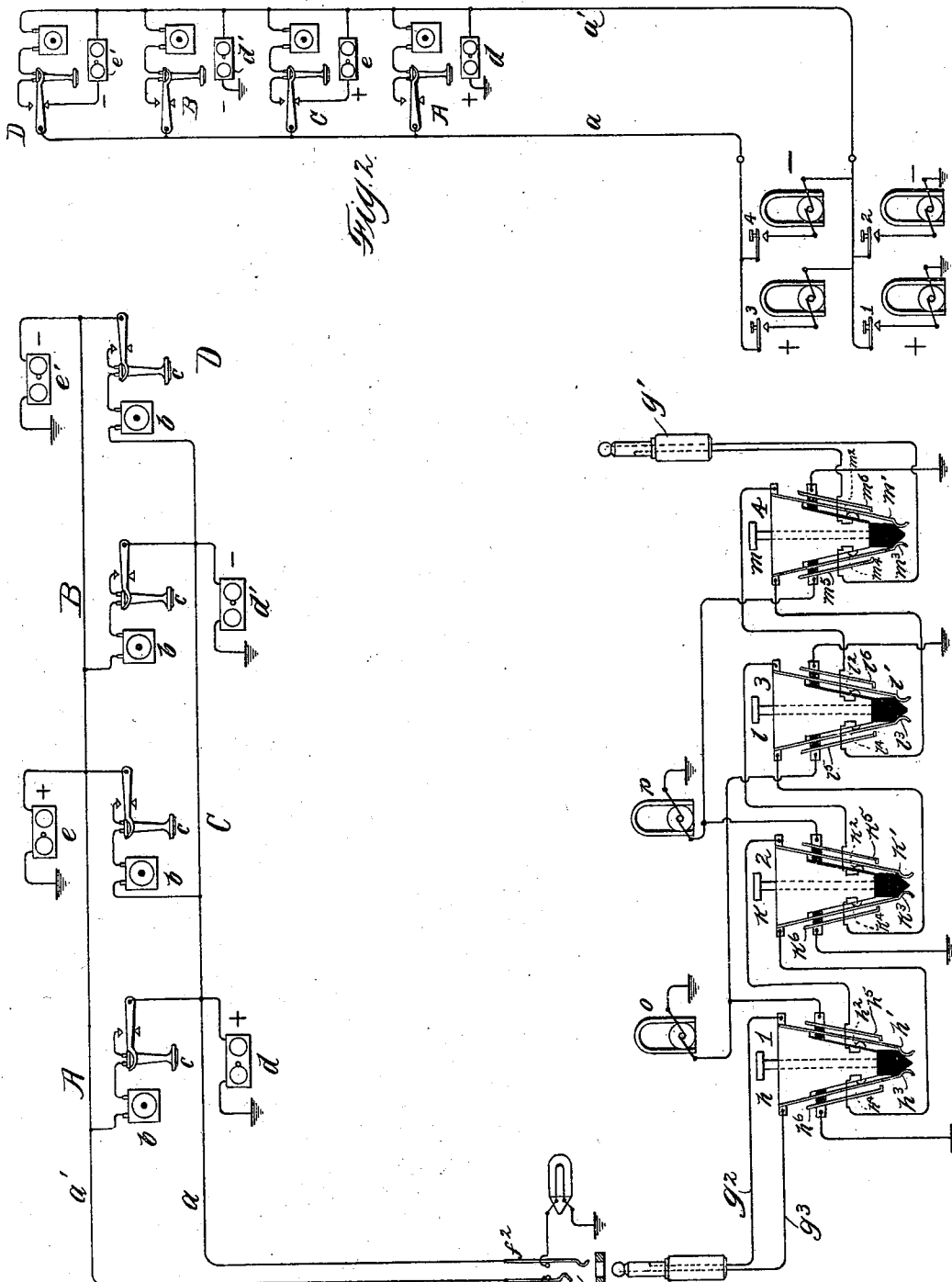


(No Model.)

A. S. HIBBARD.
PARTY TELEPHONE LINE APPARATUS.

No. 555,725.

Patented Mar. 3, 1896.



Witnesses:

George L. Bragg

W. Clyde Jones

Fig. 1

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UNITED STATES PATENT OFFICE.

ANGUS S. HIBBARD, OF CHICAGO, ILLINOIS.

PARTY-TELEPHONE-LINE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 555,725, dated March 3, 1896.

Application filed September 16, 1895. Serial No. 562,614. (No model.)

To all whom it may concern:

Be it known that I, ANGUS S. HIBBARD, 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 Party-Telephone-Line Apparatus, (Case No. 6,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a party telephone-line with non-interfering bells.

The object of my invention is to provide means whereby a number of telephone sets may be connected with a party-line and selective signals sent over the line to ring the bell at any one of the sub-stations without affecting the remaining bells.

As employed in practice, I connect the transmitters and receivers at the several sub-stations between the two limbs of the metallic-circuit party telephone-line. A bell or call device is provided at each of the sub-stations, the bells at two of the sub-stations being connected between one limb of the metallic circuit and ground, one of the bells being adapted to respond to currents sent over the line in one direction, while the other bell is adapted to respond to currents sent over the line in the opposite direction. The bells at the other two stations are connected between the opposite limb of the metallic circuit and ground, one of the bells being constructed to respond to currents sent over the line in one direction, while the other bell is constructed to respond to currents sent over the line in the opposite direction. At the central station are provided two generators or sources of electricity, one adapted to send current over either of the limbs of the metallic circuit and ground in one direction and the other adapted to send current in the opposite direction. Keys are provided upon the operator's switch-board, one corresponding to each of the sub-stations connected with the party-line, whereby when depressed the key serves to connect one of the generators into circuit to direct current over the proper limb and in the proper direction to ring the bell of the subscriber whose key is depressed.

Instead of providing the bells between the

metallic limbs and ground, one pair of bells may be connected between one of the metallic limbs and ground, while the other pair of bells may be connected directly across the two metallic limbs.

The party telephone-line as thus constructed in accordance with my invention is adapted for any number of sub-stations up to and including four. The sub-stations are preferably given numbers ending in 1, 2, 3, and 4—such as 51, 52, 53, and 54, 61, 62, 63, and 64, &c.—the operator's keys being numbered 1, 2, 3, and 4, whereby when the operator's ringing set is connected with any particular party-line the depression of a key will ring the bell of a subscriber whose number ends in the number corresponding to the number of the key.

Referring to the accompanying drawings, Figure 1 is a diagrammatic view of a telephone system constructed after the manner of my invention. Fig. 2 is a similar view of a modification thereof.

Like letters refer to like parts in both figures.

The limbs *a a'* of the party telephone-line extend to the several sub-stations, and the transmitters *b b* and receivers *c c* are connected between the metallic limbs *a a'*, the receiver being adapted when hung upon its hook to open the circuit and thus cut the telephone-instruments out of circuit in the usual manner.

At sub-stations A and B are provided bells or call devices *d d'* respectively, the bells being connected between the limb *a* and ground. One of the bells, *d*, is polarized to respond to currents sent over the line in one direction—that is, for instance, to current sent from the central station over the metallic circuit with ground return. The other bell, *d'*, is polarized to respond to current sent over the line in the opposite direction—that is, say, from central station to ground and with return over the limb *a*. At sub-stations C and D are provided bells *e e'*, the bells being connected between the limb *a'* and ground. One of the bells, *e*, is adapted to respond to current sent over the line in one direction, while the other bell, *e'*, is adapted to respond to current sent over the line in the opposite direction.

The limbs $a a'$ of the telephone-line terminate in the usual spring-jack f at the central station, which, in this instance, comprises springs $f' f^2$, with which the terminals of a plug g are adapted to make contact when the plug is inserted in the spring-jack. The opposite member g' of the pair of plugs is adapted to be inserted into the spring-jack of another telephone-line to thus loop two telephone-lines together for conversation. The operator's ringing-in key and telephone set have been omitted from the drawings for clearness, but they may be of the usual construction. In the operator's cord set are provided four keys $h k l m$, which for ready identification are preferably numbered 1, 2, 3, and 4. The keys are provided with contact-springs $h' k' l' m'$ respectively, normally resting against contacts $h^2 k^2 l^2 m^2$ respectively, the springs and contacts being connected in circuit with one of the strands g^2 of the cord set. The keys are also provided with springs $h^3 k^3 l^3 m^3$ respectively, normally resting against contacts $h^4 k^4 l^4 m^4$ respectively, the springs and contacts being connected in circuit with the strand g^3 of the cord set. A grounded generator o is connected with a contact h^5 upon the key h , with which the spring h' is adapted to engage when the key is depressed, and also with a contact l^5 , with which the spring l' is adapted to engage when the key l is depressed. A second generator p is provided at the central station having one pole grounded, the grounded pole being the one opposite to that grounded in the generator o . The generator p is connected with a contact k^5 , against which the spring k' is adapted to be moved when the key k is depressed, and with a contact m^5 , with which the spring m' is adapted to engage when the key m is depressed. Upon the several keys are provided contacts $h^6 k^6 l^6 m^6$ respectively, which are connected to ground, the contacts being adapted to be engaged by the springs $h^3 k^3 l^3 m^3$ of the several keys when the respective keys are depressed.

When it is desired to ring the bell at sub-station A the key No. 1 is depressed, thus closing the circuit of generator o through contact h^5 , spring h' , strand g^2 , plug g , spring f^2 , limb a , bell d to ground and back to the generator. A portion of the current also passes through bell d' to ground, but as this bell is polarized to respond to currents in the opposite direction only it remains irresponsive. Should it be desired to ring the bell at sub-station B, key No. 2 is depressed, thus closing the circuit of generator p to ground through the bell d' to limb a , spring f^2 , plug g , strand g^2 , spring h' , contact h^2 , spring k' , contact k^5 and back to generator p . Should it be desired to ring the bell at sub-station C, key No. 3 is depressed, while if it is desired to ring the bell at sub-station D key No. 4 is depressed.

When the key h , for instance, is depressed to connect the generator o in circuit with the limb a and ring the bell d , the spring h^3 is

brought into engagement with grounded contact h^6 , thus grounding the strand g^3 and the limb a' and preventing the accidental ringing of the bell e , should, for instance, one of the telephone-receivers be removed from its hook and a path thus provided to the limb a' . The current thus finds a short path to ground over the limb a' , strand g^3 and grounded spring h^6 , and sufficient current will, therefore, not pass through the bell e to ring the same.

In Fig. 2 I have illustrated diagrammatically the manner in which one pair of bells $e e'$, for instance, may be connected between the metallic limbs $a a'$, a key No. 3 being provided which when depressed sends a current over the metallic limbs in one direction to ring the bell e , while when the key No. 4 is depressed current is sent over the metallic circuit in the opposite direction to ring the bell e' . When key No. 1 is depressed current is sent over the grounded circuit in one direction to ring the bell d , while when key No. 2 is depressed current is sent over the grounded circuit in the opposite direction to ring the bell d' .

It will be noted that three conductors extend from the central station to the sub-stations—that is, the two metallic limbs $a a'$ and ground—one pair of oppositely-polarized call devices being connected between one pair of conductors, while the second pair of oppositely-polarized call devices is connected between a second pair of conductors. In the arrangement shown in Fig. 1 the ground is common to both calling-circuits, while in the arrangement shown in Fig. 2 the limb a is common to both calling-circuits.

Instead of providing four keys in each cord set, a single set of keys may be provided adapted to be connected with any particular pair of cord conductors that may be for the time in use.

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

In a party telephone-line, the combination with two metallic limbs extending from the central station through four sub-stations, of a telephone set at each of said sub-stations connected in a normally-open bridge extending between the two metallic limbs, whereby the telephone set at any one of the sub-stations may be individually connected between the metallic limbs, a call device at each of said sub-stations, two of said call devices being oppositely polarized and connected between one of said metallic limbs and ground, the remaining two call devices being oppositely polarized and connected between the other metallic limb and ground, two generators at the central station, one having the positive pole grounded, the other having the negative pole grounded, two keys connected with one of said generators, one key constructed to connect the generator in circuit with one of the metallic limbs and the other

to connect the generator in circuit with the
other metallic limb, and two keys connected
with the second generator, one constructed to
connect the generator with one of the metal-
lic limbs while the other key is constructed
5 to connect the generator with the other me-
tallic limb; substantially as described.

In witness whereof I hereunto subscribe
my name this 13th day of September, A. D.
1895.

ANGUS S. HIBBARD.

Witnesses:

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W. CLYDE JONES.