

(No Model.)

2 Sheets—Sheet 1.

M. G. KELLOGG.

ANNUNCIATOR BOARD AND CIRCUIT FOR TELEPHONE EXCHANGES.
No. 258,234.

Patented May 23, 1882.

Fig 1

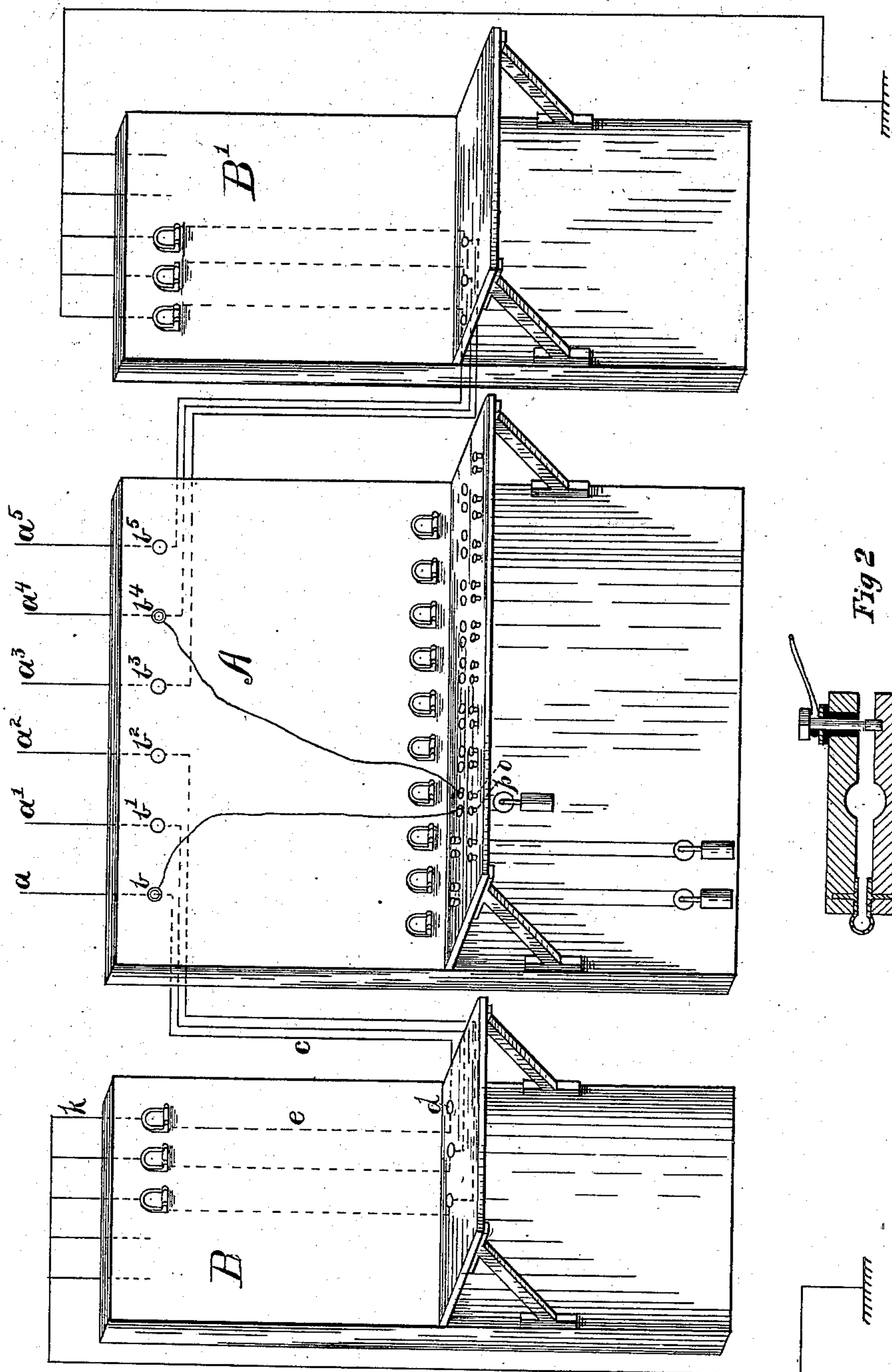
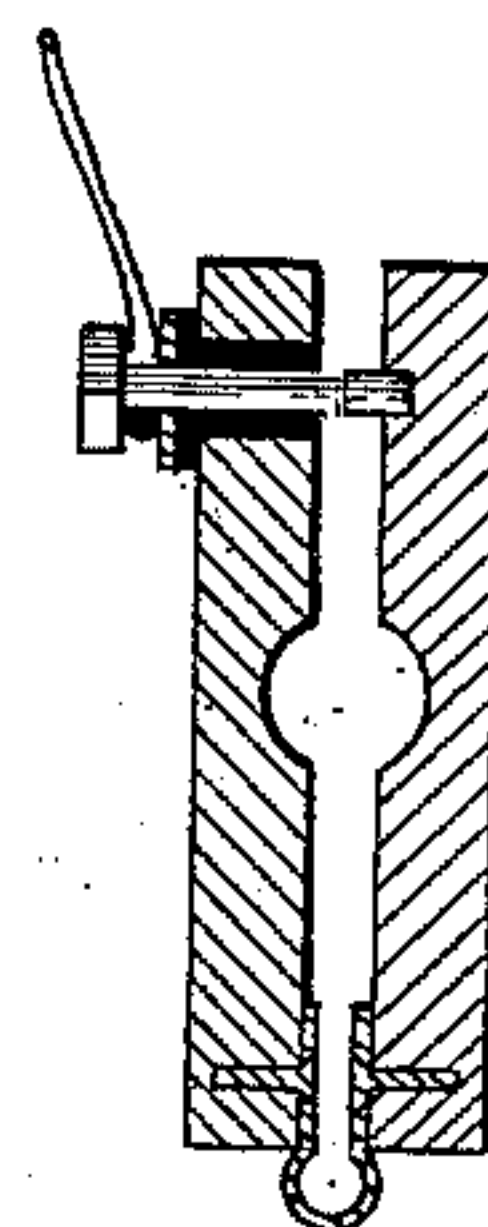


Fig 2



Witnesses

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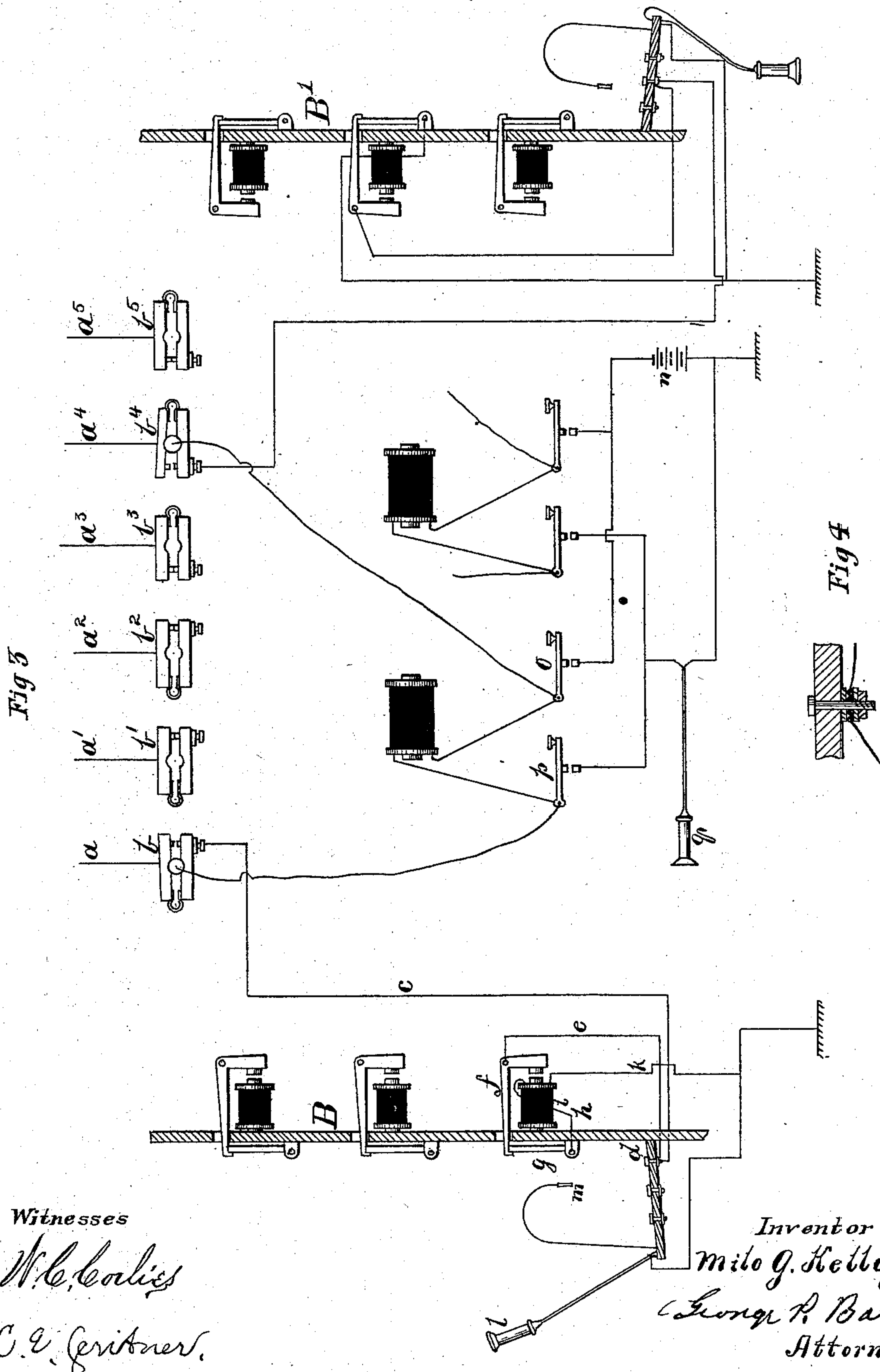
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No. 258,234.

Patented May 23, 1882.



UNITED STATES PATENT OFFICE.

MILO G. KELLOGG, OF HYDE PARK, ASSIGNOR TO THE WESTERN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

ANNUNCIATOR-BOARD AND CIRCUIT FOR TELEPHONE-EXCHANGES.

SPECIFICATION forming part of Letters Patent No. 258,234, dated May 23, 1882.

Application filed April 4, 1881. (No model.)

To all whom it may concern:

Be it known that I, MILO G. KELLOGG, of Hyde Park, county of Cook, Illinois, and doing business in Chicago, in said State, have discovered certain new and useful Improvements in Annunciator-Boards and Circuits of Telephone-Exchanges, of which the following is a full, clear, concise, and exact description.

In the drawings, Figure 1, Sheet 1, A is the switch-board at the central office. B and B' are annunciator-boards. Fig. 2 is a detail section of a modified form of the jack-knife switch. Fig. 3, Sheet 2, is a diagram of the circuits of the telephone-lines from the switch-board to the annunciator-boards. Fig. 4 is a detail of a connecting-bolt.

The telephone-lines a a' a^2 a^3 a^4 , &c., are connected in any well-known way at the stations of the subscribers, and converge to the central office, where they are connected with their respective switches b b' b^2 b^3 b^4 , &c., on the switch-board A in the usual manner. The lines are now divided into groups, each group containing as many lines as can be conveniently attended to upon an annunciator-board. The number of groups will depend upon the size of the exchange and the demands of the subscribers. An exchange of five hundred subscribers should be provided with five annunciator-boards under ordinary circumstances, while an exchange of a thousand subscribers would require from eight to ten annunciator-boards under the same conditions. An attendant is stationed at each annunciator-board, and one or more switchmen at the switch-board. The several telephone-lines run through their respective switches on the switch-board and through their respective annunciators on the annunciator-boards, and thence to ground, so that the call of a given subscriber is received by the attendant at the annunciator-board upon which is placed said subscriber's calling-annunciator. When the attendant has received a subscriber's order he informs the switchman what connection is wanted, and the switchman connects the switch of the calling subscriber with the switch of the subscriber called for through a clearing-out annunciator in the usual manner.

Lines a and a^4 are shown thus connected by means of flexible cords and plugs. When the plugs are inserted, as shown, the annunciators and ground-connections are automatically removed. On removing the plugs the normal circuits of the lines are restored, and the subscribers are enabled to send in their calls, as before indicated.

The normal circuit of line a may be traced as follows: from switch b by line c to connecting-bolt d , and thence by line e to the armature f of the calling-annunciator of the line, and thence through the drop or shutter g to line h , and thence through the electro-magnet i and by line k to ground. When a current is sent over this circuit from line a the shutter g falls, and the attendant at board B is thereby notified of the call. The attendant thereupon connects his telephone l into the circuit in any suitable manner, preferably by holding plug m against the connecting-bolt d . The whole circuit of line a may be thus directed through the telephone of the listening attendant at annunciator-board B. The subscriber and attendant are thus in direct communication, and the subscriber gives the name of the one with whom he wishes to speak.

The normal circuit from the connecting-bolt, instead of passing through the armature and shutter, may pass directly through the electro-magnet, in which case the ground would not be taken off automatically when the shutter falls, and the circuit passing through the telephone would be a derived circuit. A circuit thus derived would be sufficient for all practical purposes.

A listening attendant's outfit and calling-battery n is provided at the switch-board. When two subscribers are connected, as shown, a current is sent to line by depressing key o . The subscriber called for is thus summoned, while the caller is notified that the office is doing its duty. By connecting the key p to line a , as shown, and depressing the key o the clearing-out annunciator may be used to indicate whether the line called for—that is to say, line a —is open or closed. In case both subscribers should forget to send in the clearing-out sig-

nal the listening operator by depressing key *p* may tap their circuit, and by means of the derived circuit passing through his telephone *q* determine whether the subscribers have stopped talking.

By the use of my system it will be seen that a large exchange may be successively worked upon a single switch-board, the duty of the switchmen being confined to connecting and disconnecting the switches in response to the orders of the attendants at the annunciator-boards. In case a subscriber called for is already connected the switchman sees the plug inserted in his switch and the caller is notified that the one asked for is busy, and thus all confusion is avoided.

I claim—

1. In a telephone-exchange, two lines connected together for conversation, in combination with two keys, one of which, on being depressed, grounds the lines through the central-office telephone, and the other of which, on being depressed, grounds the lines through the central-office signaling-battery.

2. In a telephone-exchange, the combination of a switch-board at the central office, provided with spring jack-switches, one switch for each line which enters the central office, two or more annunciator-boards, upon which the lines are grouped, annunciators upon each of the annunciator-boards, one annunciator for each line of the group, and telephone-lines, each line passing first to its switch on the switch-board, thence to its annunciator of its group, and to ground, whereby an annunciator of a group is disconnected from its line when a line is connected at the switch-board with another line, substantially as shown and described.

3. In a telephone-exchange system, the com-

bination of two lines connected together for conversation, a clearing-out annunciator in the circuit of said lines, and a battery and calling-key at the central office, so connected that when the calling-key is operated so as to signal to line the clearing-out annunciator responds or indicates that the signal has been sent.

4. In a telephone-exchange system, the combination, at the central office, of a switch-board at which is performed the switching between all the lines which center at the office, two or more calling-annunciator boards, among which the wires are grouped and at which the calling-signals are received, and clearing-out annunciators, on which the clearing-out signals are received when the lines are connected together for conversation.

5. In a telephone-exchange system, the combination, at the central office, of a switch-board at which is performed the switching between all the lines which center at the office, two or more annunciator-boards upon which the wires are grouped, each annunciator-board having annunciators and contact-plates, one annunciator and one contact-plate for each line of its group, operators' telephones, one for each annunciator-board, each operator's telephone being grounded on one side and connected on the other side by a flexible cord with a metallic contact-peg, and telephone-lines, each line passing first to the switch-board, thence to its contact-plate on the annunciator-board, and thence to its annunciator-magnet and to ground, as and for the purpose specified.

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Witnesses:

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