

No. 880,537.

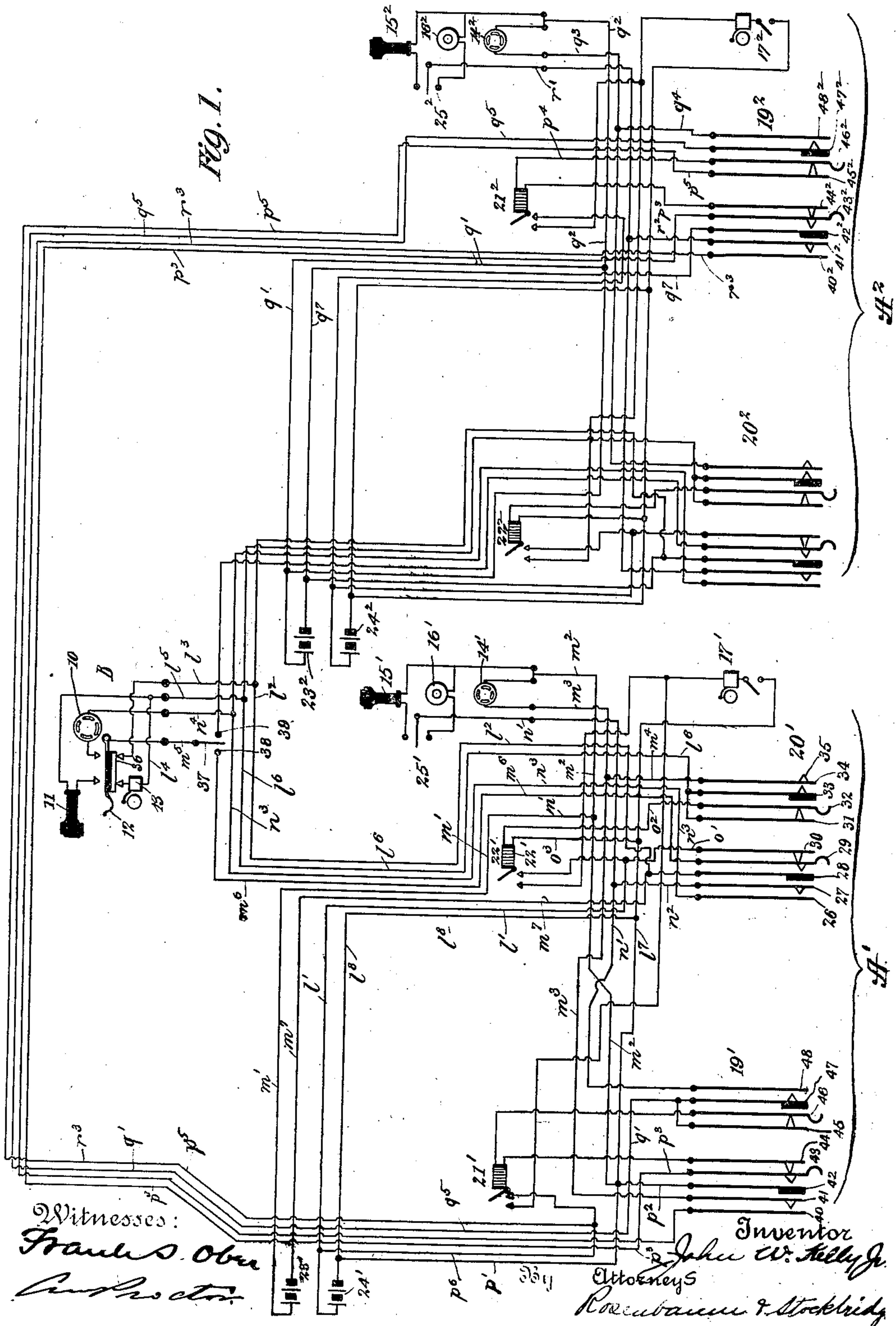
J. W. KELLY, JR.

PATENTED MAR. 3, 1908.

TELEPHONE DICTATING SYSTEM OR APPARATUS.

APPLICATION FILED APR. 27, 1907.

2 SHEETS—SHEET 1.



Witnesses:  
*Francis Ober*  
*Arthur...*

Inventor  
*John W. Kelly Jr.*  
Attorneys  
*Rosenbaum & Stockbridge*

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Fig. 3.

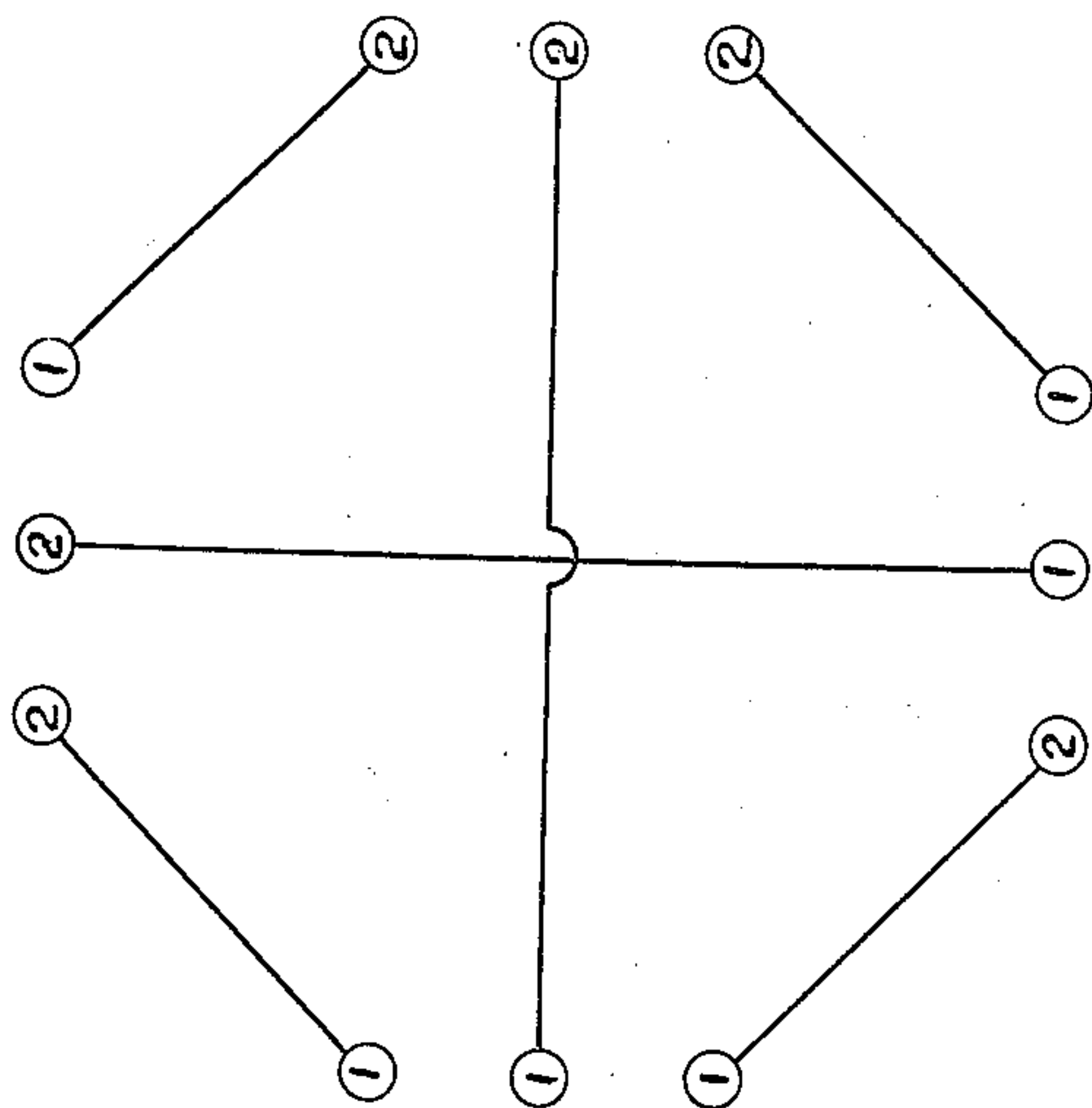
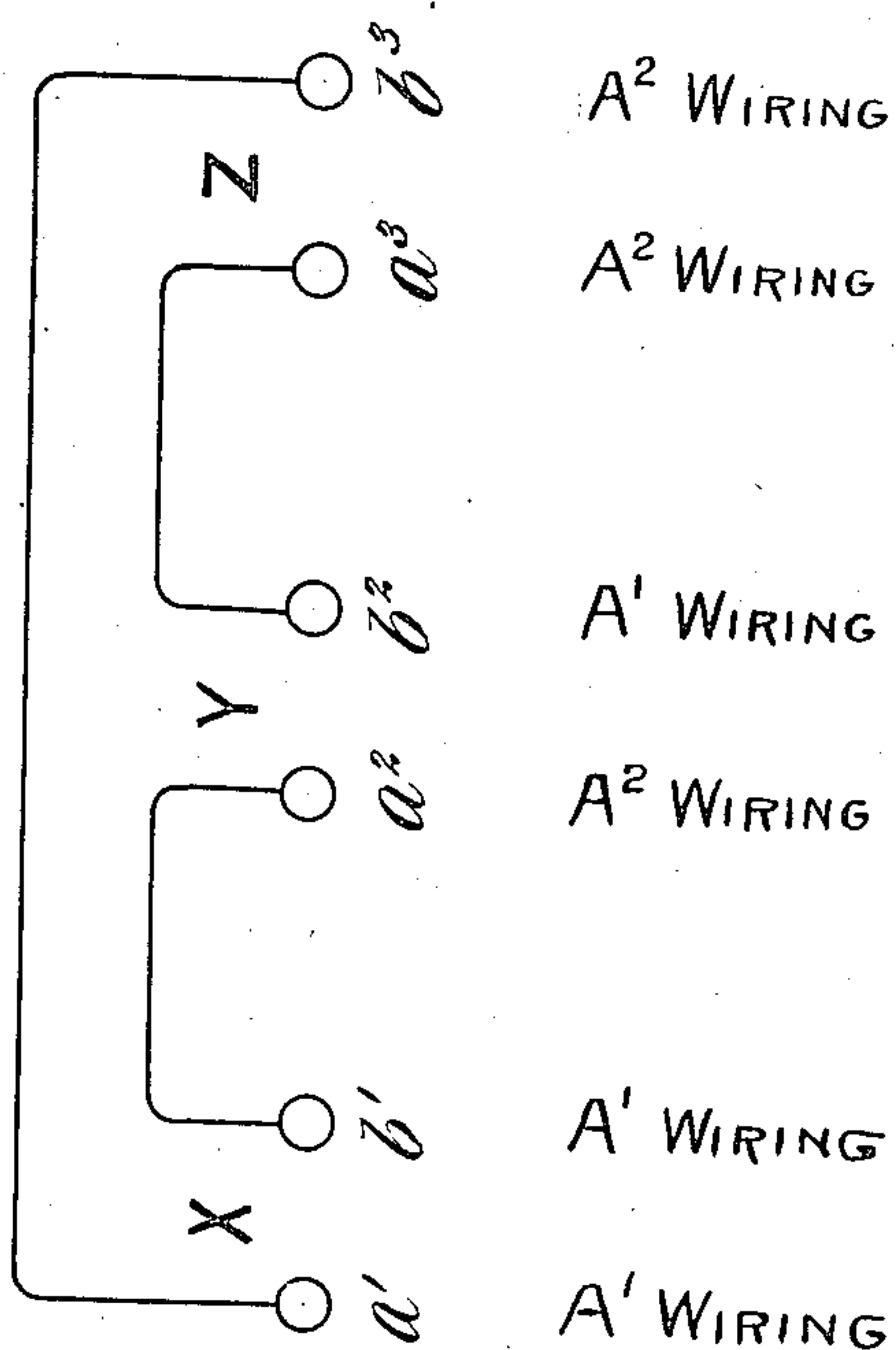


Fig. 2.



Witnesses:

*James O. Brown*  
*Arthur C. Brown*

Inventor

*John W. Kelly Jr.*

By Attorney

*Rosenbaum & Stockbridge*



# UNITED STATES PATENT OFFICE.

JOHN W. KELLY, JR., OF CAMDEN, NEW JERSEY, ASSIGNOR TO GENERAL ACOUSTIC COMPANY,  
A CORPORATION OF NEW YORK.

## TELEPHONE DICTATING SYSTEM OR APPARATUS.

No. 880,537.

Specification of Letters Patent.

Patented March 3, 1908.

Application filed April 27, 1907. Serial No. 370,649.

*To all whom it may concern:*

Be it known that I, JOHN W. KELLY, Jr., a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Telephone Dictating Systems or Apparatus, of which the following is a full, clear, and exact description.

My invention relates to what is known as a dictograph, being a telephonic system or apparatus by which a person, for example the manager of an office, may dictate letters to anyone of his corps of stenographers without requiring them to leave their places at their own desks. An apparatus of this character forms the subject of Letters Patent No. 843,186 dated February 5, 1907, in which a single manager's station is shown having connection with a plurality of stenographers' stations.

In the present application I have provided an installation where there are two or more managers' stations and any number of stenographers' stations. Under these circumstances it becomes desirable to obtain certain requirements and characteristics which are special to such a system. One of these is to be able to put any manager's station in communication with any particular stenographer's station of the entire system. Another requisite is to have means for putting any manager's station in connection with any other manager's station of the system. In carrying out the present invention I secure both of these requisites in a very simple, convenient and practical way.

With these objects in view the invention consists in the features of construction and combination hereinafter set forth and claimed.

In the drawings: Figure 1 is a diagrammatic view showing the circuits of a dictograph system having two managers' stations and embodying the principles of my invention. Fig. 2 is a view illustrating the principles involved in the talking circuits established between three managers' stations. Fig. 3 shows the same principle extended to four managers' stations.

As has been fully set forth in the patent above mentioned, one of the essential principles of a dictograph apparatus is the provision of separate talking circuits between any two communicating stations so that the conversation will not be echoed or thrown

back into the room from which it proceeds. In the said patent I have illustrated a plan making use of two entirely separate circuits including four wires in each line connection. In my companion application Serial No. 368,303, filed May 18, 1907, I have set forth an arrangement in which substantially separate talking circuits are established between stations over three line wires.

In the present case I have used the general principles of the three wire line connections of my said companion application, but have extended them to cover the new and special conditions of the present case, where there are a plurality of managers' stations instead of a single station. The communication between two managers' stations is more complex than that between a manager's station and a stenographer's station, because each manager's station is equipped with its separate battery for its own talking circuits, and when two managers' stations are in communication with one another it is clear that the battery of one must be cut out or silenced. If the batteries of two communicating managers' stations were both in the talking circuit at the same time, they would either neutralize one another to reduce the current flow, or assist one another to increase the current flow, both of which conditions are almost equally objectionable since the instruments are adjusted to work with a certain current and do not operate as well with other current values. Also in adapting the system so that any manager's station can communicate with any stenographer's station, it is apparent that some sort of switch or selecting means must be employed by which the stenographer's station can call any desired manager's station.

Referring to the drawings, and particularly Fig. 1 thereof, in which like parts are designated by the same reference sign, the managers' stations are shown and which are respectively designated A<sup>1</sup> and A<sup>2</sup>. B denotes a single stenographer's station. In practice, of course, a larger number of stenographers' stations would always be provided but one is sufficient to illustrate all the principles of the invention. With the above stations it is desirable to establish communication from either of the managers' stations to stenographer station B, or from station B to either manager's station selectively, or from either manager's station to the other manager's



ger's station. For these purposes each manager's station has two keys or jacks or suitable circuit controlling means and each stenographer's station has an appropriate switching device. The actual telephonic instruments of the stations may be of any desired character. For example they may be identical with those of the above mentioned patent. 10 denotes the transmitter and 11, the receiver at the stenographer's station. 12 is the usual switch hook and 13 is a call bell. 14' is the transmitter at the manager's station A' and 15' and 16' are a pair of telephone receivers, of which 15' is of the ordinary character while 16' is a very sensitive instrument and may be termed a loud ear piece. 17' is the call or night bell at the manager's station A'. The instruments and devices at manager's station A<sup>2</sup> are exactly like those of station A' and are denominated by the same reference characters, except that index 2 instead of the prime mark is used in denominating the parts at station A<sup>2</sup>. These particular instruments may be of any desired character but it is best to employ the acousticon transmitter and the other apparatus described in the above mentioned patent.

The keys or jacks at manager's station A' are denominated 19' and 20' and each is associated with corresponding drop signals 21' and 22'. Manager's station A<sup>2</sup> has corresponding keys 19<sup>2</sup> and 20<sup>2</sup> and drop signals 21<sup>2</sup> and 22<sup>2</sup>. The manager's stations have talking batteries respectively denominated 23<sup>1</sup> and 23<sup>2</sup> and signal batteries respectively denominated 24<sup>1</sup> and 24<sup>2</sup>. There are also switches 25<sup>1</sup> and 25<sup>2</sup> at the respective managers' stations for throwing the ordinary receiver or loud ear piece into the talking circuit.

I will now describe the various conditions and operations which take place and the electrical circuits which are completed in the normal operation of the apparatus. The diagram of circuit shows the apparatus in its normal or passive condition when no one is talking. I will suppose the manager at station A' wishes to dictate a letter to the stenographer at station B. Under these circumstances the key or jack 20' is operated so as to separate the blades 29 and 32 thereof. This breaks the connection of these blades with the inside blades 30 and 31 but causes new contacts to be established between the blades 26 and 27, 28 and 29 and 33 and 34. This first causes a current to flow to stenographer's station B so as to ring the call bell thereat and notify the stenographer that a connection is desired. The circuit is as follows: from battery 23', wire M', wire M<sup>2</sup>, transmitter 14', wire M<sup>3</sup>, blade 34, blade 33, wire 1<sup>6</sup>, wire 1<sup>5</sup>, stenographer's signal bell 13, plate 36, wire 1<sup>3</sup>, wire 1<sup>2</sup>, wire M<sup>7</sup>, back to battery 23'. This circuit therefore rings the stenographer's bell and notifies her that a connection

is desired. The managers by previous agreement have certain individual predetermined signals; for example manager's station A' may signal with a single ring, while station A<sup>2</sup> may signal with two rings. According to the signal received the stenographer at station B moves the switch lever 37 either to the left or to the right so as to complete the selected circuit at the points 38 or 39. In the present case she will move the lever 38 into engagement with contact 38 at the same time taking her receiver off the hook and a talking circuit will thereupon be completed from manager A' to station B as follows: from battery 23' through wire M', wire M<sup>2</sup>, manager's transmitter 14', wire M<sup>3</sup>, connection M<sup>4</sup>, blade 34, blade 33, wire 1<sup>6</sup>, wire 1<sup>5</sup>, stenographer's receiver 11, hook 12, wire M<sup>5</sup>, switch 37, contact 38, wire M<sup>6</sup>, blade 29, blade 28, wire M<sup>7</sup> back to battery 23'. This talking circuit includes only the manager's transmitter and the stenographer's receiver. A separate talking circuit is formed from the stenographer to the manager as follows: from battery 23', wire M' wire M<sup>2</sup>, manager's receiver 15; (or 16') wire N', connection n<sup>2</sup>, blade 27, blade 26, wire n<sup>3</sup>, wire n<sup>4</sup>, stenographer's transmitter 10, switch hook 12, wire m<sup>5</sup>, switch 37, contact 38, wire m<sup>6</sup>, blade 29, blade 28, wire m<sup>7</sup>, back to battery 23'. This completes the stenographer's talking circuit to the manager's station. Separate talking circuits are therefore established in both directions which are the requirements of this class of apparatus. I will now assume that stenographer B desires to call up manager A'. She takes the receiver off the hook and removes switch 37 to the left. This closes the signaling circuit through the manager's drop 22' as follows: from the battery 24', wire 1', connection 0', blade 30, blade 29, wire m<sup>6</sup>, switch 37, wire m<sup>5</sup>, switch hook 12 (which was raised to complete this circuit) receiver 11, wire 1<sup>5</sup>, wire 1<sup>6</sup>, blade 31, blade 32, wire 0<sup>2</sup>, drop signal 22', wire 0<sup>3</sup>, wires 1<sup>7</sup> and 1<sup>8</sup> back to battery 24'. The signal 22' therefore operates and notifies the manager A' to make the connection at his key 20.

The above completes all of the circuit or traffic conditions which can occur between the manager's station A' and stenographer's station B. The circuits and the procedure are exactly the same in connection with manager's station A<sup>2</sup> and stenographer's station B except that the switch 37 is manipulated to the right instead of to the left. These circuits in connection with manager's station A<sup>2</sup> need not therefore be described. I will now assume that the manager at station A' desires to call up and talk to the manager at station A<sup>2</sup>. For this purpose manager A' operates his key or jack 19' so as to separate the blades 43 and 46. This breaks the connection between the blades 43 and 44, and 45 and 46 and establishes new connection be-



tween blades 40 41, 42 and 43 and 47 and 48. A signaling circuit to the manager's station  $A^2$  is completed as follows: from battery 24', wire  $p'$  connection  $p^2$ , blade 42, blade 43, wire  $p^3$  blade 43<sup>2</sup>, blade 44<sup>2</sup>, drop signal 21<sup>2</sup>, wire  $p^4$ , blade 46<sup>2</sup>, blade 45<sup>2</sup>, connection  $p^5$ , wire  $p^6$ , back to the battery 24'. The operation of signal 21<sup>2</sup> notifies manager  $A^2$  of the desired connection and he responds by operating his key or jack 19<sup>2</sup>. This completes the talking circuit between the two managers as follows: from battery 23<sup>2</sup> of manager's station  $A^2$ , wire  $q'$ , wire  $q^2$ , transmitter 14<sup>2</sup>, wire  $q^3$ , connection  $q^4$ , blade 48<sup>2</sup> blade 47<sup>2</sup>, wire  $q^5$ , blade 47, blade 48, wire  $n'$ , receiver 15', (or 16') wire  $m^2$ , wire  $p^2$ , blade 42, blade 43, line wire,  $p^3$ , blade 43<sup>2</sup>, blade 42<sup>2</sup>, wire  $q^7$  back to the battery 23<sup>2</sup>. This constitutes the talking circuit from station  $A^2$  to station  $A'$ .

The talking circuit from station  $A'$  to manager  $A^2$  is as follows: from battery 23<sup>2</sup>, wire  $q'$ , wire  $q^2$ , receiver 15<sup>2</sup> (or 16<sup>2</sup>) wire  $r'$ , wire  $r^2$ , blade 41<sup>2</sup>, blade 40<sup>2</sup>, line wire  $r^3$ , blade 40, blade 41, wire  $m^3$ , transmitter 14', wire  $m^2$ , connection  $p^2$ , blade 42, blade 43, line wire  $p^3$ , blade 43<sup>2</sup>, blade 42<sup>2</sup>, wire  $q^7$ , back to battery 23<sup>2</sup>. The talking circuits between two managers' stations are thereby completed in both directions over separate line circuits as is required. It will be observed that each of these talking circuits includes only a single battery namely battery 23<sup>2</sup> of station  $A^2$ . The battery 23' of station  $A'$  does not take part in any of the talking circuits between these two stations but is wholly excluded therefrom under all circumstances.

The operation of the signaling circuits from station  $A^2$  to station  $A^1$  are exactly like those from station  $A^1$  and  $A^2$  and need not be repeated. All of the talking circuits hereinbefore described are based on the three wire principle or system which forms the subject of my companion application above referred to, and the theoretical principles thereof need not accordingly be considered in this case.

It will be noted that the connections of manager's station  $A'$  are somewhat different from those of manager's station  $A^2$ . The differences involve certain arrangements in the circuits of the keys, so that the battery at only one end of the line is included in any talking circuit established between managers' stations. The difference in the wiring of the two stations consists essentially in the fact that while battery 23<sup>2</sup> has connections  $q'$  and  $q^7$  with the wire  $q^2$  and the blade 42<sup>2</sup> respectively at station  $A^2$ , these connections are omitted in station  $A^1$ . In this way, the battery 23' of station  $A^1$  is not in circuit when these two managers' stations are connected together, because of the omission of the battery connections at the key 19' through which key the connection is necessarily made

between these stations. This is the construction by which the important fact previously mentioned is secured, namely, that only one battery is used in any talking circuit established either between two managers' stations, or between a manager's station and a stenographer's station.

In case there are three managers' stations their respective connections and wiring must be made so as to secure the same effects as have been described in connection with the two stations  $A'$  and  $A^2$ .

In Fig. 2 I have illustrated diagrammatically the nature of the wiring when there are three managers' stations. It is evident that where there are three managers' stations each will have to have two keys to selectively call either of the other two. If X, Y and Z are the three stations, then each will have keys  $a'$   $b'$   $a^2$   $b^2$   $a^3$   $b^3$ . The line wires from key  $a'$  station X may run for example to key  $b^3$  of station Z as shown. The wires from key  $b^1$  of station X may run to key  $A^2$  of station Y. The wires from key  $b^2$  of station Y may run to key  $a^3$  of station Z. This arrangement will enable any station to get in connection with any other station of the set. Now by having certain of the keys wired according to the plan of manager's station  $A'$  as above described, and having the other keys wired according to the plan of manager's station  $A^2$  (above described) it will be possible to get all the effects of the circuit arrangements of Fig. 1 with the three stations. For example, if keys  $a'$   $b'$  station X are each wired according to diagram  $A'$  and keys  $a^3$  and  $b^3$  of station Z are each wired according to diagram  $A^2$  (Fig. 1) and keys  $a^2$  and  $b^2$  are respectively wired with  $A^2$  wire and  $A^1$  wiring, then every possible connection between any two managers' stations will have one style of wiring at one end and the other style at the other end, which is all that is required to secure the effects already described in connection with Fig. 1. It is merely necessary to start with the wiring at any station in any way desired and then proceed from that station as a starting point and adapt the wiring of the others to it. In this way the character of the wiring at every key at every station is determined.

In Fig. 3 is given a diagram having four managers' stations and illustrating the character of the wiring of the keys of each. The figures 1 and 2 within the circles denote whether  $A'$  wiring or  $A^2$  wiring is used for the corresponding keys.

What I claim, is:—

1. In a telephone system or apparatus, a plurality of managers' stations each having a talking battery, a stenographer's station, means for establishing talking circuits between said stenographer's station and any managers' station including the battery at such manager's station, and means for es-



tablishing a talking circuit between two managers' stations, said circuit including the battery at one such station only.

2. In a telephone system or apparatus, a plurality of managers' stations each having a battery, a stenographer's station, means for establishing a pair of separate talking circuits between said stenographers' station and any desired manager's station, said circuits including the battery at such manager's station, and means for establishing a pair of separate talking circuits between any two managers' stations, said circuits including the battery at one manager's station only.

3. In a telephone system or apparatus, two managers' stations each having its own battery, the circuit connections of one manager's station being different from those of the other, and circuits for putting said managers' stations into telephonic communication, said circuits including the battery at one manager's station only.

4. In a telephone system or apparatus, a plurality of managers' stations each having a battery, a stenographer's station, keys for establishing talking circuits between said

stenographer's station and any manager's station, said circuits including the battery at said manager's station, additional keys at the several managers' stations, the keys of certain managers' stations being disconnected from the battery at such station, and talking circuits completed by said keys between the managers' stations, whereby the battery at only one manager's station is included in any such talking circuit.

5. In a telephone system or apparatus, a plurality of managers' stations interconnected by separate circuits, a talking battery at each manager's station, only one terminal of said circuits having any connection with said batteries, and means for establishing telephonic communication over said circuits, whereby said telephonic communication circuits include only the battery at one manager's station in every case.

In witness whereof I subscribe my signature, in the presence of two witnesses.

JOHN W. KELLY, Jr.

Witnesses:

WALDO W. CHAPIN,  
JAMES D'ANTONIO.