

T. W. GLEESON & W. H. GILMAN.

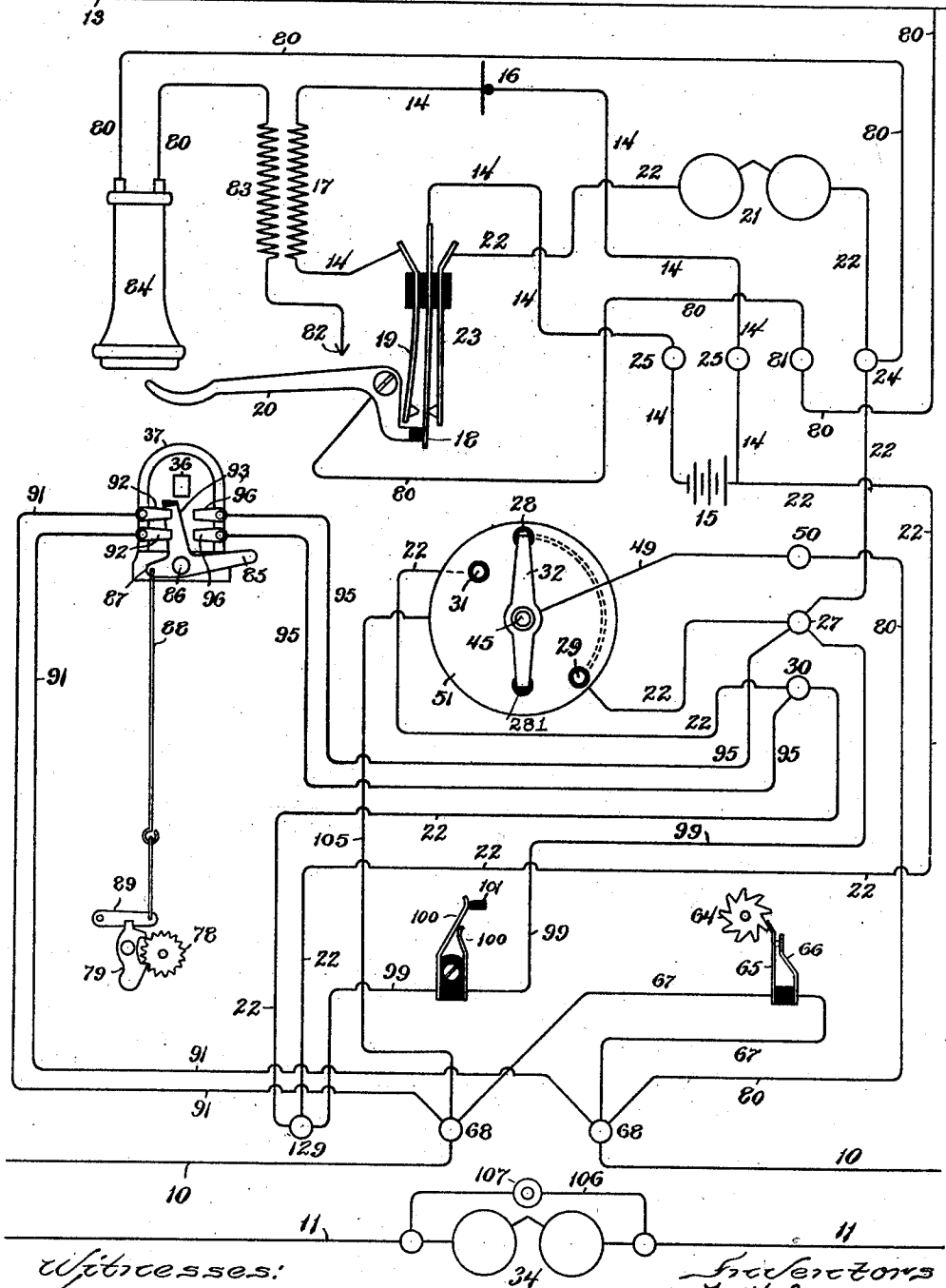
TELEPHONE SYSTEM.

APPLICATION FILED AUG. 5, 1907.

1,005,194.

Patented Oct. 10, 1911.

3 SHEETS-SHEET 1.



Witnesses:
A. L. Folsom.
E. B. Beldner

Fig. 1

Inventors
T. W. Gleeson
W. H. Gilman
by *Charles Brown Smith*
Attorneys

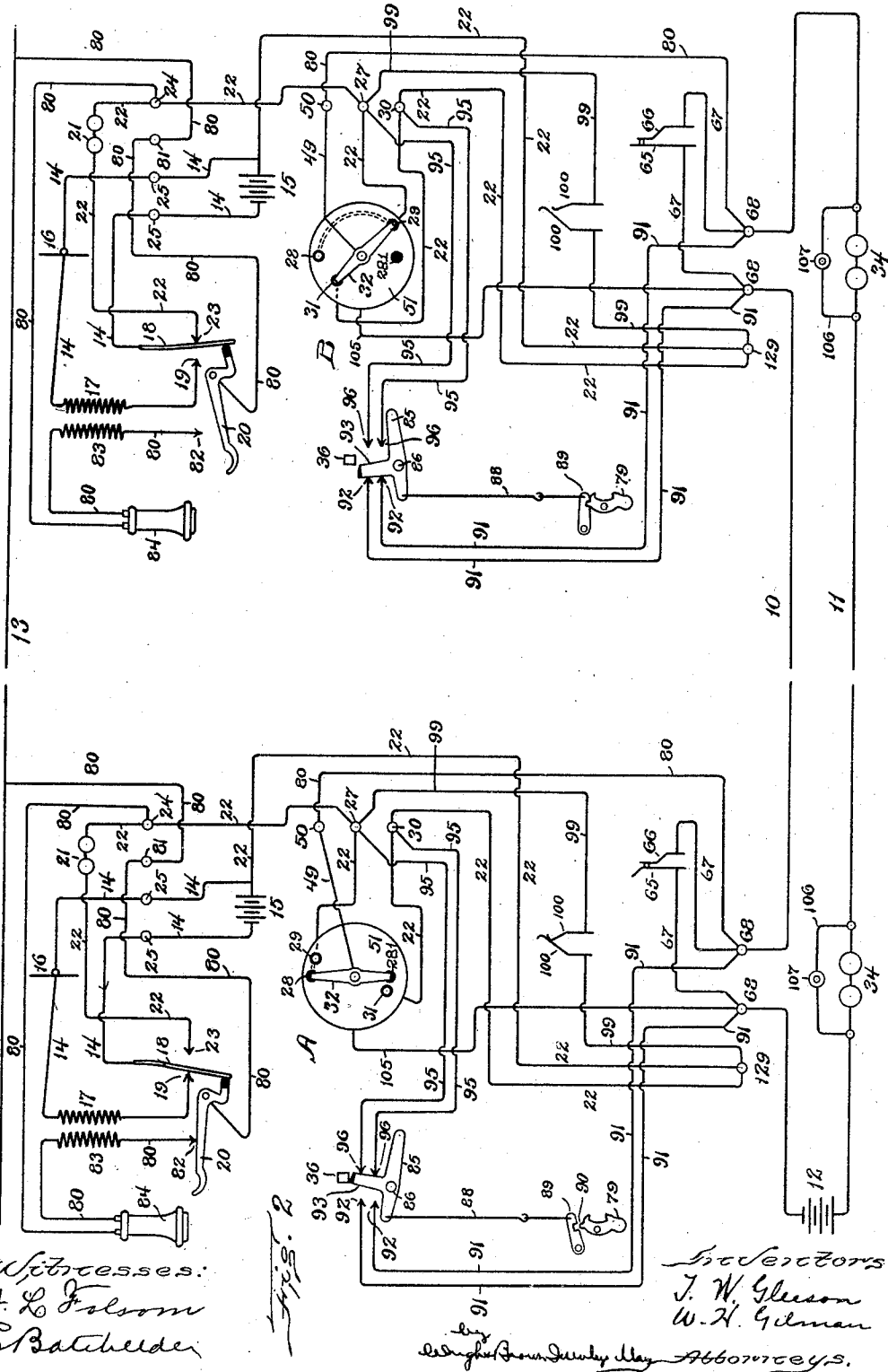
T. W. GLEESON & W. H. GILMAN.
TELEPHONE SYSTEM.

APPLICATION FILED AUG. 5, 1907.

1,005,194.

Patented Oct. 10, 1911.

3 SHEETS—SHEET 2.



T. W. GLEESON & W. H. GILMAN.

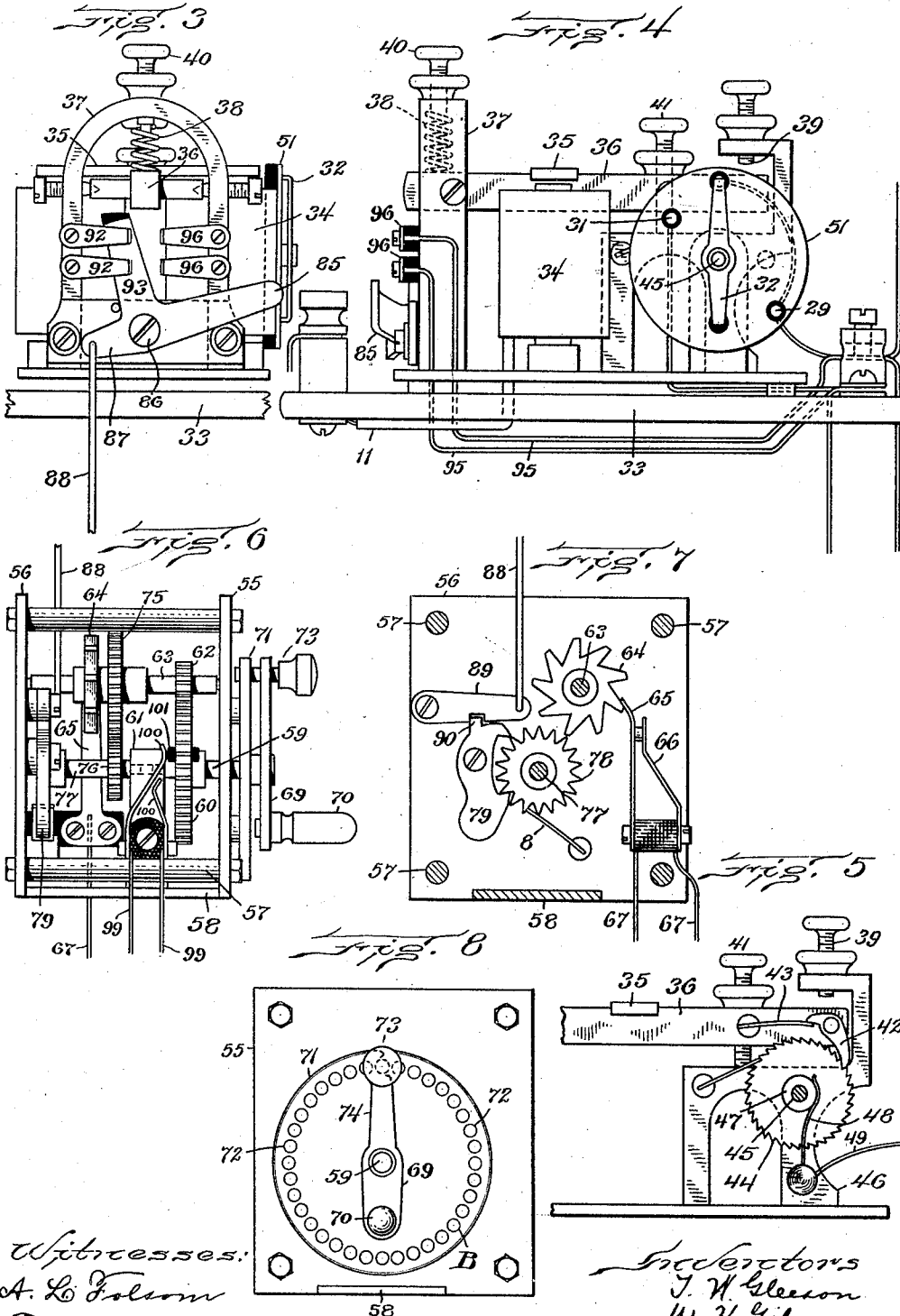
TELEPHONE SYSTEM.

APPLICATION FILED AUG. 5, 1907.

1,005,194.

Patented Oct. 10, 1911.

3 SHEETS—SHEET 3.



Witnesses:
A. L. Folson
E. Batheider

Inventors
T. W. Gleeson
W. H. Gilman
By *Wm. H. Brown* Attorney

UNITED STATES PATENT OFFICE.

THOMAS W. GLEESON, OF BOSTON, AND WILLARD H. GILMAN, OF MEDFORD, MASSACHUSETTS, ASSIGNORS TO INTERNATIONAL TELEMETER COMPANY, A CORPORATION OF ARIZONA TERRITORY.

TELEPHONE SYSTEM.

1,005,194.

Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed August 5, 1907. Serial No. 387,194.

To all whom it may concern:

Be it known that we, THOMAS W. GLEESON, of Boston, in the county of Suffolk, State of Massachusetts, and WILLARD H. GILMAN, of Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Telephone Systems, of which the following is a specification.

This invention has relation to telephone systems and more particularly to those systems employing party lines, such as are known in the art as "farmers' lines", in which a relatively large number of subscribers' stations are all connected with or included in a long loop.

The object of the present invention is to provide such systems with means by which each subscriber may signal any other subscriber's station on the line to the exclusion of the others, and by which, when two subscribers' stations are in telephonic communication, all of the other subscribers' stations are cut out or disabled so that the other subscribers cannot hear the conversation which is being carried on, or cut in on the line to signal a station.

In addition thereto, the invention has further for its object to provide means for insuring that each subscriber, after completing a conversation, shall set the instruments in their normal positions so that the line is then in condition for use by any of the other subscribers.

Referring to the accompanying drawings,—Figure 1 represents diagrammatically and conventionally a subscriber's station with the apparatus or instruments which are there installed. Fig. 2 represents diagrammatically and conventionally two stations connected to the line, the instruments at the station A to the left being in position for the subscriber to communicate with the subscriber at the station B to the right as soon as the latter removes the receiver from the hook. Figs. 3 and 4 represent respectively end and side elevations of an instrument, of which one is located at each subscriber's station for controlling the signal and receiver circuits thereat. Fig. 5 represents a detailed view of a portion of the instrument. Fig. 6 represents a primary selecting instrument of which one is located at each station. Fig. 7 represents a section through the same and

illustrates the make and break mechanism. Fig. 8 represents a side elevation of the instrument shown in Fig. 6.

On the accompanying drawings, referring particularly to Figs. 1 and 2, A and B represent two subscribers' stations, but it will be understood that there may be a large number of other stations, for instance, thirty-five, which are similar to those shown. These stations are all connected by a main line or circuit comprising metallic conductors 10 11 receiving their current from a battery or other suitable source of energy as indicated at 12. There is a neutral line consisting of a third conductor 13, which is utilized for the telephonic current. At each station there is a local circuit having transmitter and signal branches, the transmitter circuit being indicated at 14. This local circuit includes a battery 15, a transmitter 16, and the primary 17 of an induction coil and it also includes the spring switch or contact member 18 which engages a contact 19 when the receiver hook 20 is raised upon the removal of the receiver therefrom. At each station there is a signaling device which is preferably a bell 21 of the vibratory type which is sounded when a direct current is passed through the electromagnetic coils thereof. This bell is placed in a branch circuit having conductors 22 connected with the contact 23 with which the spring contact 18 normally engages when the receiver is on the hook 20.

At each station there is a controlling instrument which we prefer to call a telemeter which closes the local circuit through the signaling device at the particular station which is selected by the subscriber and which also closes the receiver circuit as will be explained. For convenience, the conductor 22 is shown as connected to a binding post 24 and the conductors 14 14 to binding posts 25. A conductor, which is indicated at 22 because it is in the signal circuit, extends from the binding post 24 to the binding post 27, and thence to two insulated contacts 28, 29 on the telemeter. A conductor 22, also in the signal circuit, extends from the battery to a binding post 129, thence to a binding post 30 and thence to an insulated contact 31 on the telemeter. The telemeter has a rotatable contact 32, as will be explained, which may be caused to connect the con-

tacts 29 and 31 to close the circuit there-through and thus completely close the signal circuit and the receiver circuit.

It will now be necessary to explain the
 5 telemeter which is controlled by the selecting mechanism. This is illustrated in Figs. 3, 4 and 5 to which reference may now be had. It comprises a base 33 upon which is mounted an electromagnet 34, the coils of which
 10 are shown in Figs. 1 and 2 as being connected in series in the main circuit 10 11. Coöperating with this magnet is an armature 35 carried by a lever 36 trunnioned upon a yoke or double standard 37 rising from the base. The free end of the lever is held upward by a spring 38 into contact with a back stop 39. An adjusting screw 40, having its inner end co-acting with the spring, allows the tension of the latter to be varied.
 20 Another adjusting screw 41 passed through the lever engages an abutment, the adjustability of the screws 39 and 41 permitting the play of the lever to be varied as circumstances require. Pivoted upon the inner end
 25 of the armature lever is a pawl 42 which is forced by a spring 43 against the teeth of a ratchet wheel 44 fast upon a spindle 45, this being journaled in a standerd 46 fixed to the base, said standard serving to receive the back stop 39 and act as an abutment for the stop 41. Secured to or formed on the spindle is a collar 47 against which impinges a spring contact brush or flexible member 48 with which is connected a conductor 49 extending to a binding post 50 as shown in Figs. 1 and 2. Mounted adjacent to the end of the spindle 45 and insulated therefrom is a metallic disk 51 which is provided with two diametrically opposite contacts 29 and 31 which are insulated from the disk as shown and are arranged at different radial distances from the center of the disk. These contact pins of the various instruments are all situated in different circumferential positions about the disks at the various stations so that contacts therewith by the movable or traveling contacts 32, which are affixed to the ends of the spindles 45, are successively made. It is presumed that there may be
 50 thirty-five stations on the line and hence each ratchet 44 has thirty-six teeth, and the various contact pins 29 31 are arranged in thirty-five circumferential positions (there being a zero point in each instrument). By making and breaking the main circuit, which includes the electromagnets of the telemeters, the rotary contacts 32 will be advanced simultaneously step by step until the rotary arm at the station to be called engages the contact pins 29 31 at that station. The springs of the bells 21 are stiff enough and the main circuit is broken and closed rapidly enough so that the various signal circuits, which are successively closed at the several stations, will not

be closed long enough for the signals to be sounded until the particular station to be called is reached, where the rotary contact remains stationary and permits the current in the signal circuit thereat to effect the sounding of the signal. At the station B in Fig. 2 the rotary contact 32 is shown as engaged with the contact pins 29 31 and the circuit 22 through the signal 21 is closed and the signal is therefore being sounded.

The selecting or transmitting instruments, by which the various telemeters are controlled, comprise make and break mechanism as will now be explained, reference being had to Figs. 6, 7 and 8. In these figures, a frame is shown comprising front and rear plates 55 56 connected by crossbars 57 and by a base-plate 58. In the front plate 55 and in the standard 61, intermediate of said plates, is journaled a spindle 59 on which is secured a gear 60 intermeshing with and driving a pinion 62 on a shaft or spindle 63 journaled in the said plates 55 56. Secured to the said spindle is a star wheel 64, the teeth of which intermittently engage and move a spring-contact brush 65 into contact with another contact member 66 as shown in Figs. 1 and 2. These contacts 65 66 are connected in series with the conductor 10 by conductors 67, 67 and binding posts 68 68, so that at each station the circuit through the main line may be broken to effect the actuation of the telemeters at the other stations. The spindle 59 is rotated by a hand lever 69 having a handle 70. This handle is located outside of the plate 55 and between it and the plate there is a disk 71 which is secured to the front of the plate. This disk has a series of apertures 72 near its circumference which are equal in number to the teeth on the ratchet wheel 44 hereinbefore described. A pin 73, which is illustrated in Fig. 8 as in the zero position, may be inserted in any one of the apertures 72 so as to be engaged by an extension 74 on the hand lever 69 and thereby limit the movement thereof. The ratio of the gears 60 to 62 is illustrated as 4 to 1 and the make and break wheel 64 is shown as having nine teeth, this simply being as a matter of convenience. The rotation of the spindle 63 is controlled by an escapement mechanism which causes it to rotate at a regular speed. To this end there is secured to the spindle 63 a gear 75 intermeshing with and driving a pinion 76 on a spindle 77. This spindle carries the escapement wheel 78 with which the weighted escapement pawl 79 engages. As a detail of construction, a spring 8 engages the teeth of the escapement wheel.

A subscriber at the station A, for instance, in calling the station B, inserts the pin 73 in the aperture 72 and then rotates the handle 70 in the direction of movement of the hands of a clock until the extension 74 en-

gages said pin. As said handle moves, it rotates the spindle 59 and consequently the spindle 63, and the star wheel 64 breaks and makes or interrupts the main circuit 10 11 the proper number of times to bring the rotary contact 32 at station B into the position there shown through the medium of the telemeter at said station. (In this connection it will be understood that all of the telemeters, except that at the calling station are simultaneously operated and their rotary contacts are advanced simultaneously step by step.) The receiver being on the hook at station B, the bell circuit 22 is closed and the signal 21 at station B is therefore sounded. The called subscriber then removes the receiver from the hook and the system is in condition for telephonic communication between stations A and B. The receiver circuit at each of the said stations may be traced as follows: A conductor 80 extends from the line 13 to a binding post 81; thence to the hook 20 which makes contact, when the receiver is removed, with a contact 82. The conductor 80, which is connected with the last-mentioned contact, is connected with the secondary coil 83 and then extends to the receiver 84; and thence the conductor 80 extends to the binding post 24. The remainder of the receiver circuit then includes the conductor 22 as far as the binding post 27, and thence to the contact 29 on the telemeter disk, the movable contact 32, the spindle on which the contact is mounted and the conductor 49 to the binding post 50, and a conductor 80 extending to one of the binding posts 68 which is connected with the conductor 67 and the contacts 65 66 to the line 10. In order that the receiver circuit may be closed at the calling station, the disk 51 at each of the telemeters is provided with an insulated contact pin 28, hereinbefore referred to, which is electrically connected with the contact 29, as indicated by dotted lines, so that the movable contact 32 at the sending station, which is held against movement as will be explained, remains in continued engagement with the contact and therefore closes the receiver circuit at that station. The contact pin 28 is located at zero in each one of the disks 51.

The selecting instrument at each station is normally locked against actuation and is under the control of a lever which is indicated at 85. This lever 85 is fulcrumed at 86 on the standard 37 of the telemeter as shown in Fig. 3. It has an arm 87 which is connected by a rod 88 with a notched arm 89 (see Fig. 7) which may engage a projection 90 on the escapement pawl 79 and thus hold said pawl against movement. The said arm constitutes a lock for the selecting mechanism. The arm 85 also serves to perform another function, to wit,— to normally close the main circuit 10 11. Connected

with the binding posts 68 at each station are conductors 91 91 which extend to insulated contacts 92 92 attached to the standard or yoke 37 of the telemeter at said station. The lever 85 has an arm 93, which, when the lever is in its normal position, engages said contacts 92 and thus closes the circuit between them.

In order that a subscriber shall not leave the selecting instrument with the lever 85 lowered, thus breaking the gap between the posts 68 68 in the main circuit, we connect to the two binding posts 27 and 30 a branch circuit, the conductors of which are indicated at 95 95 and which are respectively connected to contacts 96 96 also attached to the standard 37 of the telemeter in position to be engaged when the lever 85 is moved downward. Should a subscriber, after calling a station, hang up his receiver upon the hook without shifting the lever 85 to its normal position, the bell circuit will be closed through the branch 95 95 and the bell will ring to call his attention to his omission. This circuit 95 95 is in parallel with that portion of the bell circuit between the binding posts 27 and 30 and including the contacts 28, 29 and 31.

The end of the arm 93 of the lever 85 is covered with insulating material and is arranged to engage the short projecting end of the lever 36 of the telemeter when the lever 85 is thrown downward so as to hold it against movement and thus maintain the rotary contact 32 at the calling station in engagement with the contact pin 28 so as to keep the receiver closed, said contact in this position also engaging a contact 281 which is made of insulating material and is opposite the contact 28.

It is necessary that each selector should be returned to its normal position after the telephonic communication has been completed, so as to bring all of the rotary contacts 32 to zero position (with the exception of that at the calling station which is already in zero position having been locked by the arm 93 as just explained). To remind the subscriber at the calling station to do this, we provide what we term a tell-tale branch circuit, which closes the signal circuit and causes the ringing of the bell 21 at the calling station after the receiver has been returned to its hook, unless the selector has been set at zero position. This tell-tale circuit includes a conductor 99 which extends from the binding post 27 to the binding post 129 of the bell circuit. It includes two spring-contacts 100 which are normally separated when the selector at that station is set to zero. To this end, the gear wheel 60 of each selecting instrument is provided with an insulating projection 101, and, when said gear wheel is in zero position, said projection engages the longer contact 100 and

moves it away from the shorter contact. These contacts are secured to a piece of insulating material which is attached to the standard 61 of each selecting instrument.

5 As soon as a calling subscriber causes the rotation of the gear wheel by turning the handle 70, the longer contact 100 is released and engages the shorter contact so as to close the branch circuit 99 and hence, when

10 he places his receiver on the hook without setting his selector to zero, a circuit will be closed through the signal 21 to call his attention to the fact that he has omitted to restore his instrument to its normal position.

15 The circuit through the signal may then be traced as follows: from the battery 15, the conductor 14, the contact 18, the contact 23, the conductor 22, the signal 21, the binding post 27; thence through conductor 99 and

20 binding post 129; and thence from conductor 22 to the battery,— thus short-circuiting the telemeter.

In Fig. 1 the circuits are all shown in their normal positions as when the line is not in use. The gap between the binding posts 68 68 is closed by the circuit 67 and also by the circuit 91, but the circuit 99, which short-circuits the telemeter, is opened by the projection 101 engaging the longer contact

30 100.

Assuming that the stations are all in a condition similar to that shown in Fig. 1, and that a subscriber at station A is desirous of communicating with the subscriber at station B, he takes the following steps: He swings the lever 85 downward so as to break the circuit 91 across the gap between the binding posts 68. He then places the pin 73 in the proper aperture 72 in the disk 71 of his selecting instrument. The shifting of the lever 85 has released the escape mechanism in his selecting instrument and has also locked the lever 36 of his telemeter against movement. By hand, he then rotates the handle 70 until the arm extension 74 engages the pin 73. As he does so, the star wheel 64 breaks the circuit 67 across the gap between the binding posts 68 and interrupts the current through the circuit 10 11 a predetermined number of times. As the current is broken through the magnets 34 of all of the telemeters, the spindles 45 thereof are rotated step by step and simultaneously in practical synchronism with the rotation of the spindle 59 on the selecting instrument until the rotary contacts 32 of the telemeters have assumed the positions shown at the station B in Fig. 2. When the calling selector started its operation, the projection 101 released the longer contact 100 so as to close the branch circuit 99 at the calling station, but the similar branch circuits in all the other stations remain opened because the selecting instruments at said stations are not

35 actuated. As soon as the rotary contact 32

reaches the position shown at station B in Fig. 2, the signal circuit at that station remains closed long enough for the bell to sound and it continues ringing until the called subscriber removes his receiver from the hook. His signal circuit is then broken as the contact 18 moves away from the contact 23 into engagement with the contact 19 of the transmitter circuit. A telephone circuit is thus established between the two stations, and the alternating current induced by the transmitter circuits passes from one station to the other as previously described through the conductors 10 and 13. At this time, it is impossible for anyone at any other station to listen to the conversation which is taking place between the two subscribers' stations or to break in on the line and call another station. This is accomplished by connecting to the disk 51 of each telemeter a conductor 105 which extends therefrom to the binding post 68 opposite that to which the conductor 80 is connected, so that when the rotary contact is in engagement with the disk 51, there is a circuit across the gap between the contacts 68 and consequently the actuation of the contact 65 (which is thus disabled from operation) does not interrupt the current through the main line. At every station, therefore, except at the station calling and the station being called, the contacts 32 are in engagement with the disks, and the circuit across the gaps in the main line is closed. Hence it is impossible for any other subscriber to interrupt the main line circuit and effect the actuation of the telemeters. It is impossible for anyone to listen to the conversation occurring between the two stations in telephonic communication for the reason that the receiver circuit in each station includes that portion of the receiver circuit which extends from the contacts 28 29 to the binding post 27, and, as in every other subscriber's station except those in telephonic communication, the movable contact 32 is out of registration with those two contacts, the receiver circuit at said stations are therefore broken and disabled from operation.

Assuming that, after the telephonic communication between stations A and B has ceased and that the subscriber at station A hangs the receiver on the hook without setting his selecting instrument at zero and thus returning all the other telemeters to zero position, or without returning the switch lever 85 to normal position, his bell 21 will ring, since the branch 95 and the branch 99 of the signal circuit will both remain closed. If he should then return the handle of his selecting instrument to zero by carrying it around through the remainder of the arc of 360° and should attempt to leave his instrument, the bell would still continue to ring, for, although he had broken

the branch or tell-tale circuit 99, the branch circuit 95 would still remain closed, showing that he had forgotten to return the lever 85 to proper position. If he should then
 5 move the lever 85 to its normal position so as to break the circuit 95 and close the circuit 91, the bell would stop ringing and his station would be returned to its normal condition. At the called station, there is nothing
 10 for the subscriber to do after he has completed his conversation except to return the receiver to its hook. At the calling station the subscriber must first set his selecting instrument to zero before he throws the
 15 switch 85 for the reason that, if the switch is thrown first, it locks the escapement mechanism and prevents the operation of the selector.

In case any one of the telemeters should
 20 get out of step, it would be desirable to advance it to bring it into step again or to return it to its zero position when all the other telemeters are at zero, and we therefore provide means for interrupting the circuit
 25 through the electromagnet of each telemeter without affecting the others. Hence around each electromagnet 34 in the main line we arrange a circuit 106 having a press-button switch 107 which is normally open but which
 30 may be closed so as to short-circuit the magnet 34 as many times as may be desired to operate the telemeter and bring it into step.

From the foregoing description it will be observed that we provide at each station a
 35 local signal circuit which may be closed by a telemeter located at said station but arranged in the main circuit. This bell circuit has two tell-tale branch circuits, one controlled by the selecting mechanism and
 40 the other controlled by the switch which locks the telemeter at that station against movement. These tell-tale branch circuits indicate to the subscriber an improper condition at his station. At each station there is provision
 45 for interrupting the receiver circuit except when the subscriber is calling or being called, and there is furthermore at each station a branch circuit which prevents the interruption of the main circuit except when
 50 said station is calling or being called. The electromagnets of the telemeters are all in series connection with the main circuit, but the receiver circuits are connected in parallelism with the main circuit and the third or
 55 neutral conductor 13.

The invention is not limited to the particular arrangement of circuits illustrated nor to the particular construction of the controlling and selecting instruments shown
 60 and hereinbefore described. Furthermore the invention is capable of other embodiments and is capable of a variety of other uses, such as in intercommunicating telephone systems.

65 Having thus explained the nature of our

said invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what we claim is:—

1. A party line telephone system, comprising a plurality of stations each having a local transmitter circuit and a signal circuit, a main line, and means at each station connected to said main line for conditioning
 70 for and causing automatic operation of the signal circuit at any other station to the exclusion of the remaining stations, while maintaining the manually operable parts of the apparatus at said remaining stations in
 75 normal operable condition. 80

2. A party line telephone system, comprising a plurality of stations each having a local transmitter circuit and a signal circuit, a main line, a receiver circuit at each station adapted for connection with the main line,
 85 and means at each station for conditioning for and causing automatic operation of the signal and receiver circuits at any other station and temporarily interrupting the similar
 90 circuits at the remaining stations, while maintaining the manually operable parts of the apparatus at said remaining stations in normal working condition.

3. A party line telephone system, comprising a main line connecting a plurality of
 95 stations, a neutral or third line connecting said stations, a local circuit at each station having transmitter and signal branches, a receiver circuit at each station for connecting
 100 the main line and the neutral line, and selecting means at each of the stations for conditioning for operation the signal and receiver circuits at any other station and disabling from operation the similar circuits
 105 at the remaining stations.

4. A party line telephone system, comprising a main line connecting a plurality of stations, a local circuit at each station having transmitter and signal branches, an electromagnetic
 110 controlling mechanism at each station for said signal branch circuit thereat rotatable step by step upon the opening and closing of the main line, each controlling mechanism being provided with a traveling
 115 contact for conditioning said signal branch circuit for operation and an electromagnet whose coils are connected with the main line for actuating said traveling contact, and a selecting instrument at each station for
 120 opening and closing said main line to effect the operation of said controlling mechanisms.

5. A party line telephone system, comprising a main line connecting a plurality of
 125 stations, a local circuit at each station having transmitter and signal branches, a neutral line connecting said stations, a receiver circuit at each station connected to said main and neutral lines, an instrument at
 130

each station arranged to be operated by signals on the main line for conditioning for and disabling from operation the signal and receiver circuits thereat, and a selecting instrument at each station for controlling said last-mentioned instruments at all the other stations.

6. A party line telephone system, comprising a main line provided with a plurality of stations, a local circuit at each station having transmitter and signal branches, a controlling instrument at each station and having electromagnetic actuating coils included in the main line, said instrument having stationary and traveling contacts, the stationary contacts being differently arranged at the several stations for closing the signal branch circuits at said stations successively, and a selecting instrument in said main line at each station for conditioning the controlling instruments for operation.

7. A party line telephone system, comprising a main line provided with a plurality of stations, a local circuit at each station having transmitter and signal branches, an electromagnetic controlling instrument at each station in series with the main line for conditioning the local signal circuit thereat for operation, provisions by which the local signal circuits are conditioned for operation at the stations successively, a selecting instrument at each station in series with the main line for causing the operation of the controlling instruments, a receiver circuit at each station conditioned for and disabled from operation by the controlling instrument thereat, and means controlled by the controlling instrument at each station for permitting but rendering ineffectual the operation of the selecting instrument at said station.

8. In a party line telephone system, a main line provided with a calling station and a called station, a local signal circuit at the called station, a main line interrupter at the calling station, an electromagnetic controlling instrument at the called station having operating coils in series with the main line, said instrument having stationary contacts in the local signal circuit, and a traveling contact actuated by the intermittent energization of said operating coils for controlling a portion of said signal circuit and adapted to contact simultaneously with two of said stationary contacts, and a receiver circuit at the called station conditioned for operation by said traveling contact which is included therein.

9. A party line telephone system, comprising a main line provided with a plurality of stations, a receiver circuit at each station, an electromagnetic controlling instrument at each station in series with the main line for conditioning said receiver circuits at said station for operation, said controlling instruments successively controlling

a portion of the respective receiver circuits, a selecting instrument in series with said main line at each station for causing the operation of said controlling instruments, a local signal circuit at each station conditioned for operation by the controlling instrument thereat, and means for closing the signal circuit of the calling station upon failure to return the selecting instrument to normal or starting position after having used the same.

10. A party line telephone system, comprising a main line, and a neutral line having a plurality of stations, a receiver circuit connecting said lines at each station, a local circuit at each station having transmitter and signal branches, a controlling instrument at each station for conditioning for operation the signal and receiver circuits thereat, said instruments being energized and operated by a variation of current in said main line, a selecting instrument at each station in series with the main line for selecting for operation the controlling instrument at any other station, and means at each station independent of the controlling instrument for conditioning for operation the signal circuit thereat.

11. A party line telephone system, comprising a main line, and a neutral line having a plurality of stations, a receiver circuit connecting said lines at each station, a local circuit at each station having transmitter and signal branches, a controlling instrument at each station for conditioning for operation the signal and receiver circuits thereat, said instruments being energized and operated by a variation of current in the main line, and having stationary contacts included in the signal and receiver circuits and a traveling contact, the stationary contacts being differently arranged at the various stations, and a circuit-interrupting selecting instrument in series with the main line at each station for selecting for operation the controlling instruments at the other stations, and a circuit at each station around the selecting instrument closed by the controlling instrument thereat.

12. A party line telephone system, comprising a main line, and a neutral line having a plurality of stations, a receiver circuit connecting said lines at each station, a local circuit at each station having transmitter and signal branches, a controlling instrument at each station for conditioning for operation the signal and receiver circuits thereat, said instruments being energized and operated by a variation of current in the main line, and having stationary contacts included in the signal and receiver circuits and a traveling contact, the stationary contacts being differently arranged at the various stations, and a circuit-closing selecting instrument in series with the main line at each

station for selecting for operation the controlling instruments at the other stations, and means at each station controlled by the controlling instrument thereat for disabling
 5 from operation the selecting instrument thereat.

13. A party line telephone system, comprising a main line, and a neutral line having a plurality of stations, a receiver circuit
 10 connecting said lines at each station, a local circuit at each station having transmitter and signal branches, a controlling instrument at each station for conditioning for operation the signal and receiver circuits thereat, said instruments being energized and
 15 operated by a variation of current in said main line, a selecting instrument at each station in series with the main line for selecting for operation the controlling instrument at any other station, and means at each
 20 station controlled by the selecting instrument thereat for conditioning for operation the signal branch circuit thereat for the purpose set forth.

25 14. A party line telephone system, comprising a normally closed main circuit having a source of energy, and provided with a plurality of stations, a local transmitter circuit at each station, a local signal circuit at
 30 each station, a receiver circuit at each station, an electromagnetic controlling instrument at each station in series with the main circuit for closing the signal and receiver circuits thereat, a circuit-closing selecting
 35 instrument at each station in series with the main circuit for operating said controlling instruments, a branch circuit at each station around the selecting instrument thereat, and a manually operatable switch for normally
 40 closing said branch circuit.

15. A party line telephone system, comprising a normally closed main circuit having a source of energy, and provided with a plurality of stations, a local transmitter circuit
 45 at each station, a local signal circuit at each station, a receiver circuit at each station, an electromagnetic controlling instrument at each station in series with the main circuit for closing the signal and receiver
 50 circuits thereat, a circuit-closing selecting instrument at each station in series with the main circuit for operating said controlling instruments, a branch circuit at each station around the selecting instrument thereat, a
 55 manually operatable switch for normally closing said branch circuit, and a lock for the selecting instrument at each station controlled by the switch at said station.

16. A party line telephone system, comprising a normally closed main circuit having a source of energy, and provided with a plurality of stations, a local transmitter circuit
 60 at each station, a local signal circuit at each station, a receiver circuit at each station, an electromagnetic controlling instru-

ment at each station in series with the main circuit for closing the signal and receiver circuits thereat, a circuit-closing selecting instrument at each station in series with the
 70 main circuit for operating said controlling instruments, a branch circuit at each station around the selecting instrument thereat, a manually operatable switch for normally closing said branch circuit, and a branch circuit
 75 at each station around the local-circuit controller, said circuit being controlled by said switch.

17. A party line telephone system, comprising a normally closed main circuit having a source of energy, and provided with
 80 a plurality of stations, a local transmitter circuit at each station, a local signal at each station, a receiver circuit at each station, an electromagnetic controlling instrument at each station in series with the
 85 main circuit for closing the signal and receiver circuits thereat, a circuit-closing selecting instrument at each station in series with the main circuit for operating said controlling instruments, a branch circuit at
 90 each station around the selecting instrument thereat, a manually operatable switch for normally closing said branch circuit, and means at each station for closing the signal circuit thereat when the said switch and the
 95 said selecting instruments are in abnormal condition.

18. A party line telephone system, comprising a normally closed main circuit provided with a source of power and a plurality
 100 of stations, a neutral line connecting said stations, a local transmitter circuit at each station, a local signal circuit at each station, a receiver circuit at each station connecting the main circuit and the neutral line,
 105 an electromagnetic controlling instrument whose coils are in series in the main circuit at each station, provided with a disk having stationary insulated contacts in the signal circuit and in the receiver circuit, and with
 110 a traveling contact in series with the receiver circuit, a circuit-closing selecting instrument at each station in series with the main circuit for causing the operation of said controlling instruments, a branch circuit
 115 at each station connecting the main line with said disk for short-circuiting the selecting instrument, a branch from the signal circuit at each station around the stationary signal-circuit-contacts of the controlling instrument thereat, a switch for closing the
 120 last-mentioned branch circuit, and a branch from the main circuit at each station around the selecting instrument thereat adapted to be closed by the last-mentioned switch.
 125

19. A party line telephone system, comprising a main line provided with a plurality of stations; a local signal circuit and a
 130 local transmitter circuit at each station; a receiver circuit at each station; a controlling

instrument at each station provided with an
electromagnet whose coils are in series with
the main line, a rotary contact connected to
said receiver circuit, and a disk having sta-
5 tionary insulated contacts in the signal and
receiver circuits, one of the receiver circuit
contacts of the disks at the several stations
being all in the same relative positions, and
all the signal circuit contacts and one of the
10 receiver circuit contacts of the disks being
differently arranged at the several stations,
whereby the said signal and receiver circuits
at the several stations are closed successively;
and a selecting instrument at each station
15 in series with the main line for controlling
the operation of the controlling instruments.
20. In a telephone system, a plurality of
controlling instruments for the subscriber's

stations, each comprising an electromagneti-
cally rotated spindle, a rotary contact there- 20
on, and a disk or plate having stationary in-
sulated contacts for connection with a cir-
cuit to be controlled, said stationary con-
tacts of the several instruments being ar-
ranged in different angular positions about 25
the axes of the spindles, and said rotary con-
tact being arranged to establish a short-cir-
cuit at the stations not called.

In testimony whereof we have affixed our
signatures, in presence of two witnesses.

THOMAS W. GLEESON.
WILLARD H. GILMAN.

Witnesses:

M. B. MAY,
P. W. PEZZETTI.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
