O. B. SCHNERRE.

PARTY TELEPHONE LINE.

APPLICATION FILED AUG. 28, 1914.

1,182,932.

Patented May 16, 1916.

3 SHEETS—SHEET 1.

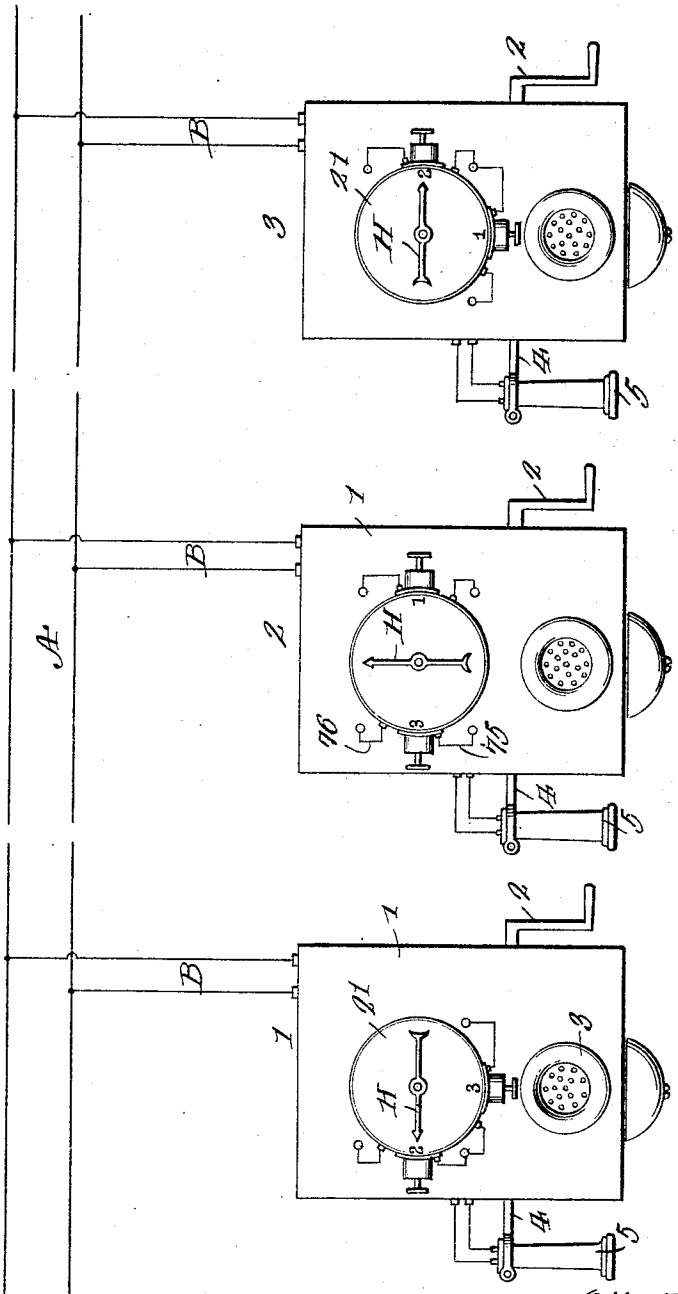


Fig. 1.

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By

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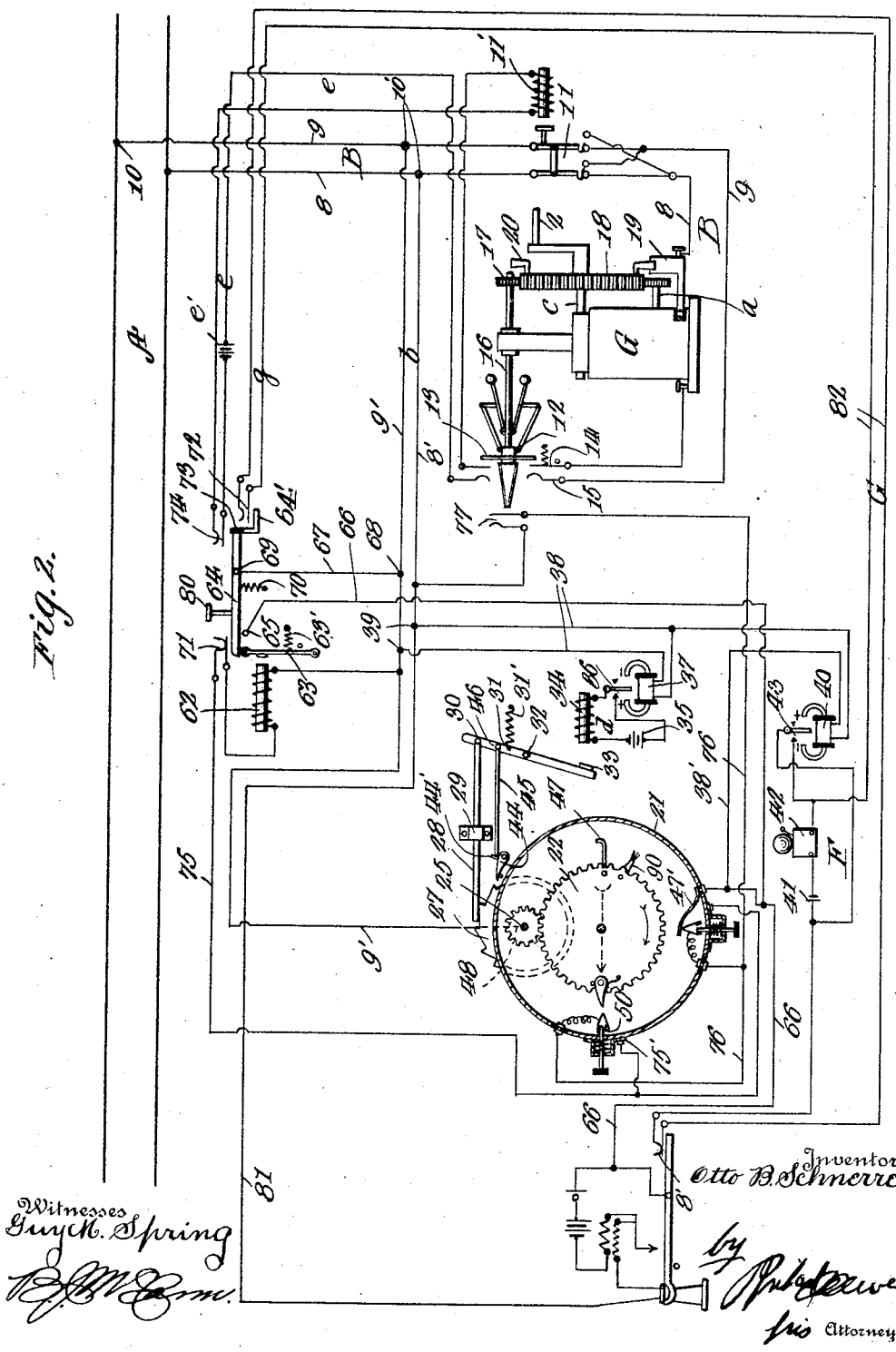


Fig. 2.

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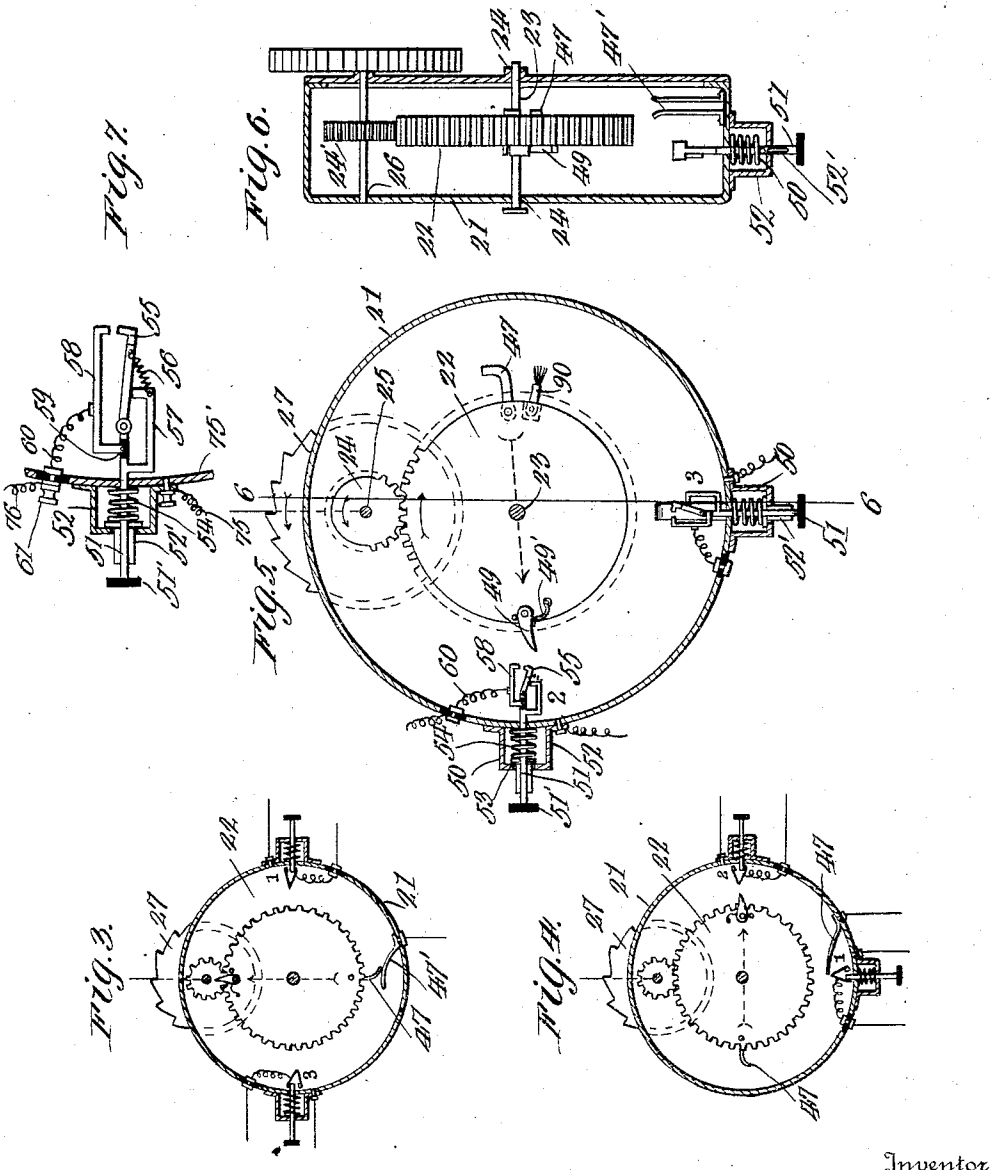


Fig. 7.

Fig. 6.

Fig. 5.

Fig. 3.

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

OTTO B. SCHNERRE, OF GALENA, ILLINOIS.

PARTY TELEPHONE-LINE.

1,182,932. Specification of Letters Patent. Patented May 16, 1916.

Application filed August 28, 1914. Serial No. 859,097.

To all whom it may concern:

Be it known that I, OTTO B. SCHNERRE, a citizen of the United States, residing at Galena, in the county of Jo Daviess and State of Illinois, have invented certain new and useful Improvements in Party Telephone-Lines, of which the following is a specification.

This invention relates to telephone systems and more particularly to that class of telephone systems known as party lines, in which more than two subscribers are connected on the same line.

The system as at present used presents a number of inconveniences and disadvantages which makes the use of the same undesirable, the principal disadvantage being the fact that while two subscribers are talking on the line a third subscriber may listen in or eavesdrop, and also can interrupt the conversation by raising and lowering the receiver hook at his station.

Another disadvantage of the present system is that in calling a subscriber other subscribers on the same line are very often called due to the fact that the calling or ringing current actuates more than one of the bells on the same line at the same time.

The object of my invention is to overcome the above set forth disadvantages of the system as at present employed. I provide a means whereby one subscriber may call another subscriber without affecting a third subscriber on the same line.

Another object of my invention is to lock out intervening subscribers when two subscribers are talking so as to prevent eavesdropping or listening in or interruption by other subscribers on the same line.

While this invention may be applied under almost any condition where the present system is installed it is particularly adapted to rural telephone service where there are a plurality of subscribers on a single line, and who use as a means of calling each other a code system, that is, one ring for one subscriber, two rings for another and three rings for a third subscriber. This system has its disadvantage in that it calls all of the subscribers at the same time, and also allows of listening in on the line while two subscribers are carrying on a conversation.

The object of my invention is to provide means for calling which shall automatically lock out other parties on the same line so as to avoid calling all of the parties on the line when desiring to call only one of them.

A still further object of my invention is to provide means for automatically cutting out the selective call mechanism which I employ when the talking circuit is closed.

A still further object of my invention is to provide means for returning all of the circuits to normal condition after a subscriber is finished using his telephone, and also to provide means for warning a subscriber when he neglects to return the circuits to normal condition.

With the above and other objects in view my invention preferably resides in the construction, combination and arrangement of parts and circuits as set forth in the following specification and illustrated in the accompanying drawings, in which:

Figure 1 is a view of a telephone system in which three subscribers' telephones are shown on a metallic circuit, a portion of the circuit being shown diagrammatically. Fig. 2 is a diagrammatical view of the wiring of a subscriber's telephone and illustrating the arrangements of the circuits therein. Fig. 3 is a transverse sectional view of the preferred form of selective switch which I employ. Fig. 4 is a similar view to Fig. 3 showing the parts in a slightly different position. Fig. 5 is a view similar to Fig. 3 slightly enlarged, showing the parts enlarged. Fig. 6 is a detailed view showing one of the circuit closing elements which I employ in the selective call mechanism. Fig. 7 is a vertical sectional view taken on the line 7—7 of Fig. 5.

Similar reference characters indicate similar parts throughout the various views of the drawings.

Referring more particularly to the drawings in which the preferred embodiment of my invention is illustrated, the numeral 1 serves to indicate the casing for reception of the telephone and connections.

2 indicates the ringing crank, and the transmitter is indicated by the numeral 3.

The numeral 4 indicates the hook and 5 the receiver of the usual construction employed in telephones of this character.

No change is made in the arrangement of the telephone circuits proper, the usual pivoted hook being employed and the trans-

former, condenser, and battery of the usual type being shown in Fig. 2 and indicated by the numeral 6.

In the preferred form of my invention the telephone sets together with the mechanism which I provide are arranged in parallel relation on an all-metallic circuit indicated by the letter A. In Fig. 1 there are three subscribers shown on the line, however, the number of subscribers which may be used has no limit. For the purpose of convenience I have indicated the three subscribers by the numerals 1, 2 and 3.

While I have shown an all-metallic circuit it will be readily understood by those skilled in the art that I may employ a ground return using only one line wire.

The mechanism of the various telephones of the subscribers is duplicated in every case, the only difference being that the circuit closing elements of each of the selective call mechanisms are necessarily placed at different positions so as to be actuated properly.

I will now proceed to describe the circuits and arrangement of apparatus which is used in each of the subscribers' telephones, however, for the purpose of convenience I shall describe only one of the stations, it being understood that the said station is duplicated in each of the subscribers' stations so far as the electrical connections and arrangement of parts are concerned.

The following is a description of the calling or ringing circuit and its operation, the talking circuit making itself apparent when an understanding of the ringing circuit has been acquired. I provide a source of pulsating direct current which in the present instance comprises a generator G having an armature shaft C driven from a crank shaft *c*, said crank shaft *c* being rotated by means of a crank 7. The circuit indicated by the letter B comprising the wires 8 and 9 is the main circuit which carries the calling current, said wires or conductors 8 and 9 joining the main line wires at 10. The pole changer 11 is interposed in the circuit B for a purpose which shall be hereinafter set forth. A spring or other suitable means may be utilized for returning the pole changer to normal position.

The circuit B is controlled by means of a centrifugal switch actuator 12, the said switch 12 being of the usual construction and having a disk 13 which is adapted to contact with one terminal of the circuit B indicated by the numeral 14, to force the same into contact with the other terminal of the circuit B indicated by the numeral 15. Any suitable form of circuit closing element may be used at this point. The said centrifugal switch actuator is mounted upon a shaft 16 and motion is imparted thereto by means of a pinion 17, said pinion 17 being in engagement with the large gear wheel 18 mounted on the shaft C. In order to provide a pulsating current one side of the circuit leading from the armature of the generator is grounded to the frame thereof and an insulating bracket 19 is supported on the generator frame. The wire 8 is connected to the said insulated bracket 19. Lugs 20 are provided at predetermined points adjacent the periphery of the gear wheel 18, said lugs 20 being in electrical connection from the grounded portion of the generator circuit. When the crank 7 is turned the lugs 20 make and break the circuit between the grounded portion of the generator circuit and the insulated contact 19, thereby providing a pulsating current.

Referring now to the selective call mechanism I provide a casing 21 which, as shown to advantage in Fig. 1, is mounted upon the front of the telephone box 1. The casing 21 contains the selective call mechanism, which in the present instance comprises a large gear 22 mounted upon a shaft 23, said shaft 23 being mounted in bearings 24 in the casing 21. The large gear 22 is in mesh with a small pinion 24, said small pinion 24 being mounted upon a shaft 25, and said shaft 25 being mounted in bearings 26 in the casing 21. Disposed exteriorly of the casing 21 and mounted upon the shaft 25 is a ratchet wheel 27. A pawl 28 is in engagement with the ratchet wheel 27 and is mounted for slidable movement in a bracket 29, the outer end of said pawl 28 being pivotally connected as shown at 30 to a rocking lever 31 said rocking lever 31 being pivoted at 32, and the lower end of the said rocking lever 31 is provided with a tip 33 of magnetic material, said lever 31 serving as an armature for an electro-magnet 34. In order to hold the lower end of lever 31 away from the electro-magnet 34 a coil spring 31′ is provided, said coil spring 31′ being attached to the upper portion of the pivoted lever 31. The electro-magnet 34 is energized from a local circuit *d* having a battery 35 disposed therein, and a make and break contacting element 36 for the purpose of successfully energizing and deënergizing the electro-magnet 34. The contacting element 36 forms the armature for a relay, the electro-magnet of the said relay being indicated by the numeral 37. The electro-magnet 37 is acted upon by the pulsating current in the generator G and current is fed to the electro-magnet 37 by means of the wires 8′ and 9′ of a branch circuit *b*, said wires 8′ and 9′ being connected to the main conductor wires 8 and 9 at the points 10′. From the wires 8′ and 9′ of the circuit *b* branch wires 38 connected at the points 39 to the wires 8′ and 9′ lead to the electro-magnet 37. The electro-magnet 37 is of the polarized type, that is, in order for the contact to be closed the current passes through

the electro-magnet 37 in a predetermined direction. A similar relay or electro-magnet 40 is provided, said relay 40 being polarized and adapted to operate with the relay 37, that is, the polarity of the relay 40 is opposite to the polarity of the relay 37 so that only one if the relays operates at a single moment. The purpose of the relay 40 is to close a local circuit *f* which serves as the ringing circuit, said circuit having therein a battery 41 and a bell 42, a contacting element 43 being acted upon by the electro-magnet 40. The relays 37 and 40 may be of any approved construction, as the construction of the same does not enter into the invention.

From the above it will be seen that when the generator is in operation a pulsating direct current will be fed to the relays 37 and 40. The relay 37 only, will operate, alternately closing and opening the circuit *b* thereby energizing and deënergizing the electro-magnet 34 and causing reciprocation of the pawl 28 thereby causing rotation of the ratchet wheel 27. Rotation of the ratchet wheel 27 will cause the large gear wheel 22 to rotate by virtue of the engagement of the same with the pinion 24 for a purpose which will be hereinafter described. In order to prevent reverse rotation of the ratchet wheel 27 I provide a pawl 44, said pawl 44 being provided with a projection 44′, and a rod 45 connected at the point 46 to the lever 31 engages with the ratchet wheel 27 and prevents reverse rotation of the same.

Referring now to the selective call mechanism and the circuit closing elements employed therein I provide, as shown to advantage in Figs. 5 and 6, upon the large gear wheel 22 a circuit closing element comprising an arm 47. Disposed on the inner surface of the casing 21 and at a predetermined position I provide a stationary contact 47′, said contact 47′ being adapted to be electrically connected with the arm 47 at a predetermined time, said arm 47 and contact 47′ serving to close the circuit and the relay 40 hereinbefore described for a purpose which will be hereinafter set forth. In the preferred form of my invention the terminal 47′ comprises a pair of spaced arms and the contact element 47 is adapted to pass between the arms and thereby close the circuit, this feature being shown to advantage in Fig. 6. One side of the ringing circuit is connected to the gear wheel 24 as shown at 48. Disposed at a point substantially diametrically opposite to the circuit closing element 47 I provide a pivoted pawl 49, said pawl 49 being held in a position pointing radially of the gear wheel 22 by means of a spring 49′, for a purpose which will be hereinafter described.

As will be noted in Fig. 5 of the drawings I have provided a contact cleaning element comprising a brush indicated by the numeral 90 which is adapted to pass between the spaced contacts 47′ and clean the same prior to the contact therewith of the arm 47, so as to insure a good contact.

In order to automatically change the ringing circuit and connect the talking circuit I provide a plurality of circuit closing elements indicated generally by the numerals 50, it being understood that the construction of each of the said circuit closing elements 50 is substantially the same throughout. These circuit closing elements 50 are disposed upon the inner face of the wall of the casing 21 which incloses the selective call mechanism. For the purpose of convenience I will describe only one of the circuit closing elements it being understood as set forth above that all of the circuit closing elements are substantially the same in construction. I provide a rod 51 slidably mounted in a bracket 52 mounted on the exterior of the casing 21. Laterally extending projections 52′ are formed upon the rod 51 and are adapted to engage in complemental groove in the bracket 52 whereby to prevent rotation of the rod when the same is reciprocated. A pin or any other suitable means 53 is provided upon the rod 51 and a spring 54 is interposed between the pin 53 and the casing 21 so as to always tend to force the rod 51 in an outward direction from the casing 21. The outer end of the rod 51 is provided with an insulated handle 51′. The opposite end of the rod 51 is provided with a circuit closing element which I desire to employ and which comprises, as shown to advantage in Fig. 7, a pivoted element 55, said pivoted element 55 being in electrical connection with the casing 1 and grounded thereto. A spring 56 serves to retain the pivoted element 55 in the position shown in Fig. 7, a stop 57 being provided to limit the downward movement of the pivoted switch element 55.

From the above it will be seen that the pivoted element 55 forms one side of an electrical circuit. The opposite side of the electrical circuit is connected to a stationary electrode 58, said electrode 58 being mounted upon the rod 51 at the point 59 and insulated therefrom. Current is fed to the member 58 by means of a lead wire 60, said lead wire being in an electrical connection with an insulated binding post 61 to which the opposite side of the electrical circuit is connected. The operation of this device is as follows:—We will assume that the gear wheel 22 is being rotated by means of the pawl 28. Forcing one of the contacting or circuit closing elements 50 inwardly by means of the insulated handle or button 51′ into the path of the pawl 49 on the wheel

22 will cause the pivoted element 55 to be forced into contact with the stationary switch element 58 when the pawl 49 engages the under side thereof. The purpose of the circuit closing elements 50 is to energize the electro-magnet 62, said electro-magnet 62 serving to act upon the pivoted armature 63 which allows the pivoted contact arm 64 to be drawn down into contact with one terminal 65 of a wire 66, said wire 66 being one of the wires of the talking circuit of the telephone set 6. A wire 67 is connected at 68 to the wire 9′ of the circuit *b*, said wire 67 being connected to the pivoted arm 64 at the point 69. A spring 70 serves to assist the arm 64 in contacting with the terminal 65 of the wire 66. The circuit of the electro-magnet 62 is not only controlled by the contacting element 50 but is also controlled by the arm 64, a switch means being provided at 71 and adapted to open when the arm 64 is moved into contact with the terminal 65. The opposite end of the pivoted arm 64 is provided with a lug 64′ said lug 64′ serving to close a circuit *g* as indicated at 72 for a purpose which will be hereinafter set forth. The portion 64′ is insulated from the arm 64, said insulated portion, indicated by the numeral 73 extending slightly beyond the end of the pivoted arm 64 and adapted to close a local circuit *e* at the point 74, said circuit *e* serving a purpose which will be set forth in the operation of the device, but referring to the same in a general way, serves to energize the electro-magnet 11′ of the pole changer 11.

From the above it will be seen that when the electromagnet 62 is energized the armature 63 thereof will be attracted releasing the pivoted arm 64 and allowing the same to come into contact with the terminal 65. This will break the circuit of the electro-magnet 62 and at the same time close the talking circuit and operate the pole changer 11. It will be understood that the arm 64 only closes the circuit for the calling station, the selective call mechanism comprising the gear wheel 22 and the circuit closers 50 serving to close the circuit at the called station. The contacting element 47 has no function at the calling station as the same is not in contact with the stationary contact 47′, however, at the station called the contact element 47 will be in electrical contact with the stationary contact 47′ completing the talking circuit for the station called, this being through the wire 9′ and the shaft 25 to the pinion 24 and gear 22, through the arm 47 to the arm 47′ through the wire 66 to the telephone set 6 and thence through the wire 8′ returning to the other side of the line. The apparatus as shown in Figs. 1 and 4 indicate the position of stations # 1 and 3. All of the gears 22 rotate in synchronism, that is, when station # 1 moves through a quarter turn stations numbered 2 and 3 move through the same distance. At the moment that the circuit is made in the called station the talking circuit for that station is complete and also the ringing circuit, that is the relay 40 will be energized closing the circuit indicated by the letter F and ringing the bell 42. All of the relays operate simultaneously, and also are adapted to change when the pole changer at the calling station is actuated.

The circuit of the electro-magnet 62 is completed through the wire 75 joining the casing 21 at the point 75′ through one of the contact members 50 to the wire 76 and thence to the opposite side of the circuit *b*. In order to prevent the operation of the electro-magnet 62 after it has performed its function and while the parties are talking the circuit has not only been broken at 71 but is broken at 77 so that at no time after the parties have been called is there a possibility of short circuit due to the electro-magnet 62 becoming energized. A short wire 38′ connects the relay 40 with the opposite side of the circuit, one of the wires 38 forming the other side of the circuit. In order to indicate the position at which the various gears 22 are I provide hands H which are carried on the end of the shaft 23 and are disposed exteriorly of the casing 21.

The operation of my invention is as follows, it being understood that the various selective call mechanisms are in the position as indicated in Figs. 2, 3 and 4 and when the same are at normal, Fig. 2 indicating the conditions at station #1, Fig. 3 indicating the conditions at station #2 and Fig. 4 indicating the conditions existing at station #3. We will assume that station #1 desires to communicate with station #3 and to do so without appraising station #2 of the fact. To attain this object at the calling station, in this instance station #1, the button or switch 3, as shown in Fig. 1, will be pushed. The crank 2 will now be rotated causing the centrifugal switch 12 to close the circuits at 14 and 77. The lugs 20 contacting against the stationary member 19 will cause a pulsating current to be delivered to the main line wires A, thereby energizing all of the relays, in this case relays 37 throughout the line. In this manner all of the selective calling mechanisms will be rotated synchronously, until the pawl 49 on the wheel 22 at station #1 contacts with the pivoted switch closing element 55 of the button 3. At the time that the circuit which the button 3 controls is closed the gear 22 at station #3 carrying the contact arm 47 will have completed three-quarters of a revolution thereby contacting with the stationary element 47′ and completing the ringing circuit for station #3. The talking circuit has not yet been completed because the receiver at sta-

tion #3 has not been raised from the hook. At the moment that the pawl 49 contacts with the member 55 a circuit is completed through the electromagnet 62, attracting the armature 63 and allowing the arm 64 to complete a circuit through the wires 66 thereby completing the talking circuit for the home or calling station. At this moment the insulated portion 74 on the arm 64 engages the circuit controlling switch 74 thereby closing the local circuit *e* which has a battery *e'* therein. This will energize the pole changer 11 and cause the same to reverse the polarity of the ringing current. All of the relays 37 will at this time cease to operate, thereby stopping all of the selective call mechanisms simultaneously, and the relay 40 at station #3 will be energized and cause the bell 42 to ring thereby appraising the subscriber at station #3 that he is being called. In order for the relay to operate it is necessary that the arm 47 being in connection with the arm 47' and since station #3 is the only station at which this condition exists relay 40 will be the only one actuated. Immediately upon ceasing to rotate the crank 2 the ringing circuit and also the main generating circuit is broken at station #1, the pole changer 11 returns to normal position at this time. The receivers at both stations may be now raised from their respective hooks and a conversation carried on. If station #2 desires to listen in while stations #1 and 3 are conversing he will find it impossible as, as shown to advantage in Fig. 3, the contact 47 will be at that time away from the contact 47' so that the talking circuit of the station #2 has not been completed thereby preventing the party from listening to the conversation from station #1 and 3. When the conversation has ceased and stations #1 and 3 desire to "hang up" the arm 64 must be reset and in order to provide for this a handle 80 has been provided, a slight upward pull on the handle 80 will bring the end of the arm 64 pass the armature 63 and allow the spring 63' which actuates the armature 63 to return the parts to normal position. Should the subscriber at station #1 neglect to return the arm 64 to normal position and place the receiver on the hook as indicated in the telephone set 6, a circuit will be closed at 8', this circuit being indicated by the letter G having wires 82. This circuit G has the bell 42 and battery 41 interposed therein and upon placing the receiver on the hook the bell will be immediately energized giving a warning and indicating that the arm 64 has not been returned to normal position.

When the subscriber at the calling station is through talking the said subscriber must ring off, and this will cause the pointer on the dial to move away from any number so that any other subscriber on the line may tell by looking at the dial whether the line is busy or not.

Any number of stations may be placed on the one line and it will be noticed that each station has as many circuit closing elements in the selective call mechanism as there are telephones, minus one. Should station #2 desire to call station #3 or #1 or vice-versa the same operation will be performed in each case.

From the above it is through that a clear and comprehensive understanding of my invention may be had and while I have shown and described a specific form for my invention I desire that it be understood that I may make such changes in the details thereof which shall not depart from the spirit and scope of the appended claims.

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

1. In a selective telephone system, a main line circuit embracing a plurality of stations and adapted to conduct talking and ringing currents alternately, means at each station for calling one of the other stations and automatically locking out the intervening stations comprising a selective call mechanism and a pair of oppositely polarized relays in multiple in a common circuit for controlling the ringing and talking circuits at each station, and a pole changer controlled by the selective call mechanism for reversing the polarity of the circuit leading to the relays.

2. In a selective telephone system, a main line talking and ringing circuit embracing a plurality of stations, sources of current at each station, a selective call mechanism associated with each station and interposed in the calling circuits, oppositely polarized relays, one of said relays at each station being adapted to actuate the selective call mechanism when the calling current is in a certain direction, the other of said relays being adapted to sound an alarm or calling bell when the polarity of the circuit is reversed, said selective call mechanism at each station operating synchronously from a calling station, each of said selective call mechanisms excepting the station called being adapted to automatically cut off the intervening stations not called.

3. In a selective telephone system, a main line talking and ringing circuit embracing a plurality of stations, sources of current at each station, a selective call mechanism associated with each station and interposed in the calling circuits, oppositely polarized relays, one of said relays at each station being adapted to actuate the selective call mechanism when the calling current is in a certain direction, the other of said relays being adapted to sound an alarm or calling bell when the

polarity of the circuit is reversed, said selective call mechanism at each station operating synchronously from a calling station, each of said selective call mechanisms excepting the station called being adapted to automatically cut off the intervening stations not called, and switch means associated with and actuated by a circuit controlled by the selective call mechanisms for returning the talking circuit to normal open position and cutting out thet telephone.

4. A selective telephone system, including a main line circuit embracing a plurality of stations, a selective calling mechanism at each station having a source of pulsating current associated therewith for actuating all of said calling mechanisms and a circuit closing element at each station for controlling the talking and ringing circuits of the station called and calling, and a switch means associated with the source of electrical energy for closing the ringing circuit when the talking circuit is broken, said switch means comprising a pair of polarized relays in multiple.

5. In a selective telephone system, including a main line circuit embracing a plurality of stations, a selective call mechanism at each of said stations and operable from any one station, said selective call mechanisms operating synchronously, oppositely polarized relays at each station, one of said relays adapted to actuate the selective call mechanism, and the other of said relays being actuated by the said selective call mechanism for closing the ringing circuit at the station called, and means associated with said selective call mechanism and actuated thereby for closing the talking circuit at the station calling.

6. In a selective telephone system, a main line circuit embracing a plurality of stations, selective call mechanisms at each of said stations for calling the other stations on the same line, said selective call mechanisms comprising a rotary switch actuating element, circuit closing elements associated with said rotary switch actuating element and controllable thereby, said rotary switch actuating element being operated by step by step movement, a relay actuating said step by step movement, said relay being energized by means of a pulsating direct current of a predetermined polarity, said rotary switch actuating element adapted to close one of said circuit closing elements for connecting the talking circuit of the calling station and energizing the ringing circuit of the station called, and means associated with the selective calling mechanism for automatically stopping the same when a predetermined position has been reached.

7. In a selective telephone system, a main line circuit embracing a plurality of stations and adapted to conduct talking and ringing currents alternately, a switch means associated with the source of energy for closing the ringing circuit when the talking circuit is broken, and a pair of polarized relays in multiple associated with said switch means.

8. In a selective telephone system, a main line circuit embracing a plurality of stations and adapted to conduct talking and ringing currents alternately, means at each station for calling one of the other stations and automatically locking out the intervening stations, a switch means associated with the source of energy for closing the ringing circuit when the talking circuit is broken, and a pair of polarized relays in multiple associated with said switch means.

9. In a selective telephone system, a main line circuit embracing a plurality of stations adapted to conduct talking and ringing currents alternately, a selective call mechanism at each station operable from any one station for the purpose of calling another station and locking out the intervening stations, a switch means associated with the source of energy for closing the ringing circuit when the talking circuit is broken, and a pair of polarized relays in multiple associated with said switch means.

10. In a selective telephone system, a main line circuit embracing a plurality of stations, talking and ringing currents at each station, a circuit closing element at each station for controlling the ringing and talking circuits of the station called and calling, a switch means associated with the source of energy for closing the ringing circuit when the talking circuit is broken, and a pair of polarized relays in multiple associated with said switch means.

11. In a selective telephone system embracing a plurality of stations and adapted to conduct talking and ringing currents alternately, means at each station for calling one of the other stations and automatically locking out the intervening stations, and a pair of polarized relays in multiple for controlling the ringing and talking circuits at each station.

12. In a selective telephone system, a main line circuit embracing a plurality of stations, talking and ringing circuits at each station associated with the main line circuit, a selective call mechanism at each station operable from any one station for the purpose of calling another station and automatically locking out the intervening station, pawl and ratchet mechanism associated with the selective call mechanism, a pair of polarized relays in multiple for controlling the talking and ringing circuits at each station, and a source of pulsating uni-directional current at each station for actuating the respective pawl and ratchet mechanism of the selective call mechanism synchronously of the other station on the same line.

13. In a selective telephone system, a main line circuit embracing a plurality of stations, talking and ringing circuits associated with the main line circuit at each station, a selective call mechanism at each station operable from any one station for the purpose of calling another station and locking out the intervening station, pawl and ratchet means associated with the selective call mechanism and a source of pulsating uni-directional current at each station for actuating the respective pawl and ratchet mechanism of the selective call mechanism operating synchronously of the other stations on the same line, and a centrifugal switch associated with the source of pulsating current for controlling the main ringing circuit and opening the same when the talking circuit is in use.

14. A selective telephone system, including a main line circuit embracing a plurality of stations, selective call mechanism at each station synchronously actuated from a calling station, a circuit and a relay at each station for actuating each of said selective call mechanisms, a circuit controlled by each of said selective call mechanisms for energizing the talking circuits of each station called, means associated therewith for sounding the call bell of the station called, and a pair of polarized relays in multiple associated with the source of electrical energy for closing the ringing circuit when the talking circuit is broken.

In testimony whereof I affix my signature in presence of two witnesses.

OTTO B. SCHNERRE.

Witnesses:
T. H. SCHNEREE,
HENRY STROHMEYER.

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