

E. STOUT & J. S. KUPKA.
 PARTY LINE TELEPHONE SYSTEM.
 APPLICATION FILED JULY 19, 1910.

1,008,216.

Patented Nov. 7, 1911.

6 SHEETS-SHEET 1.

Fig. 1.

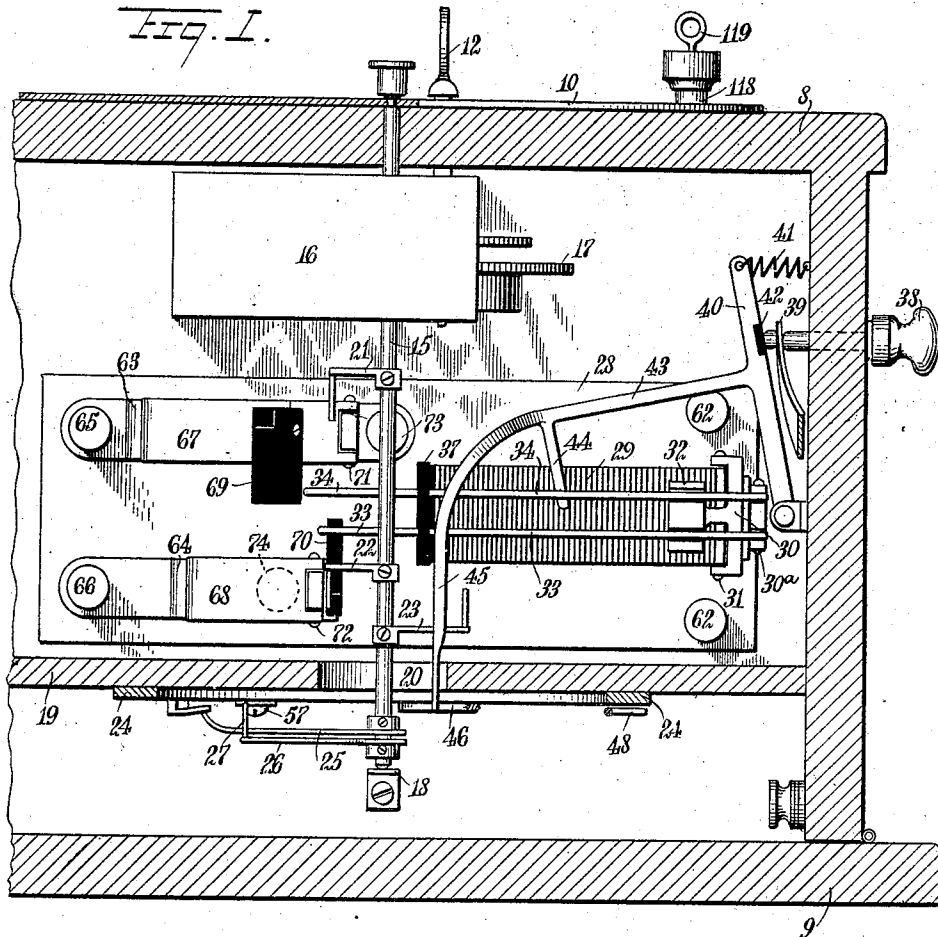
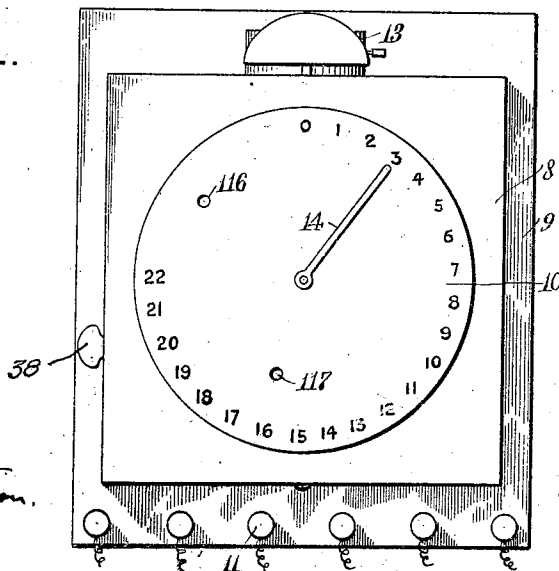


Fig. 2.



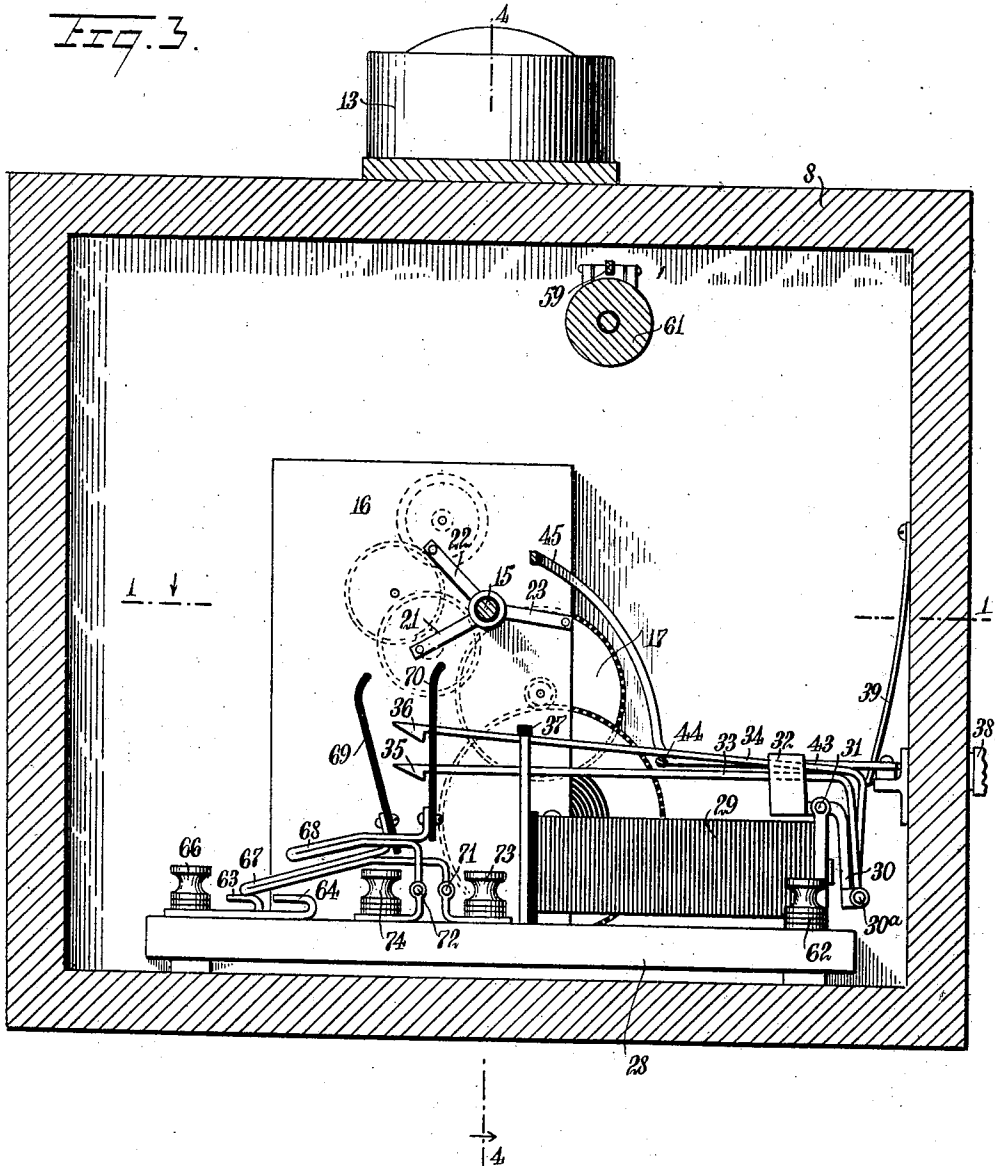
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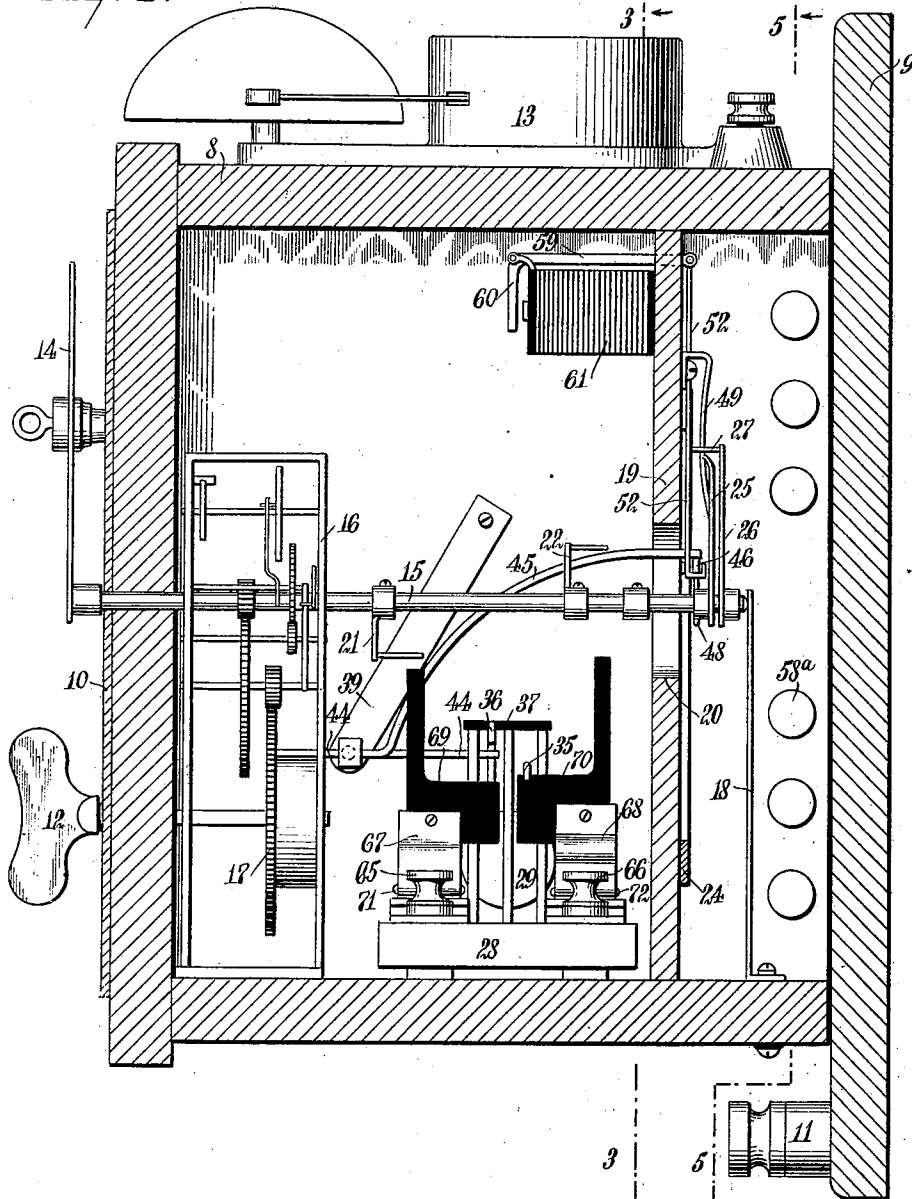
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6 SHEETS—SHEET 3.

Fig. 4.



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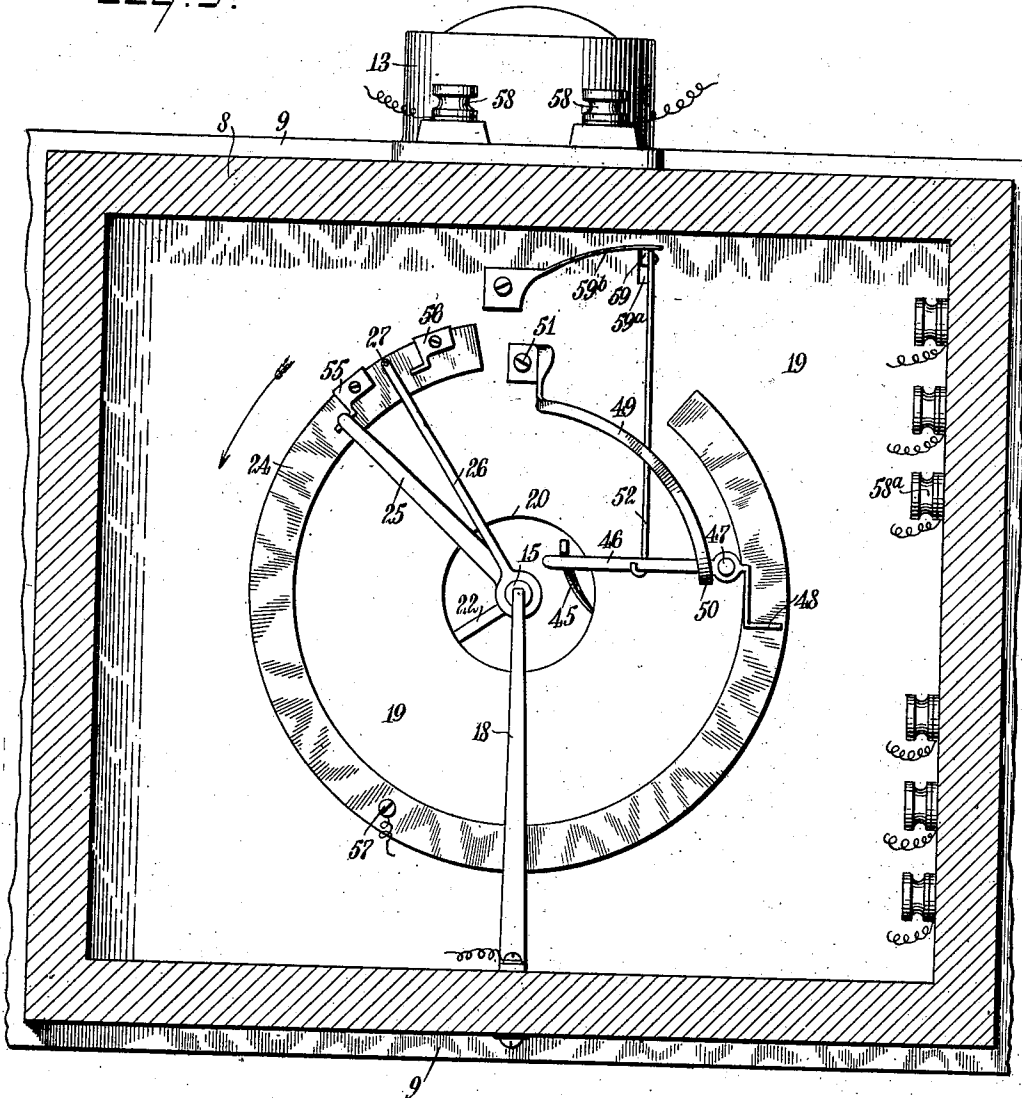
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 6 SHEETS-SHEET 4.

Fig. 5.



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6 SHEETS—SHEET 5.

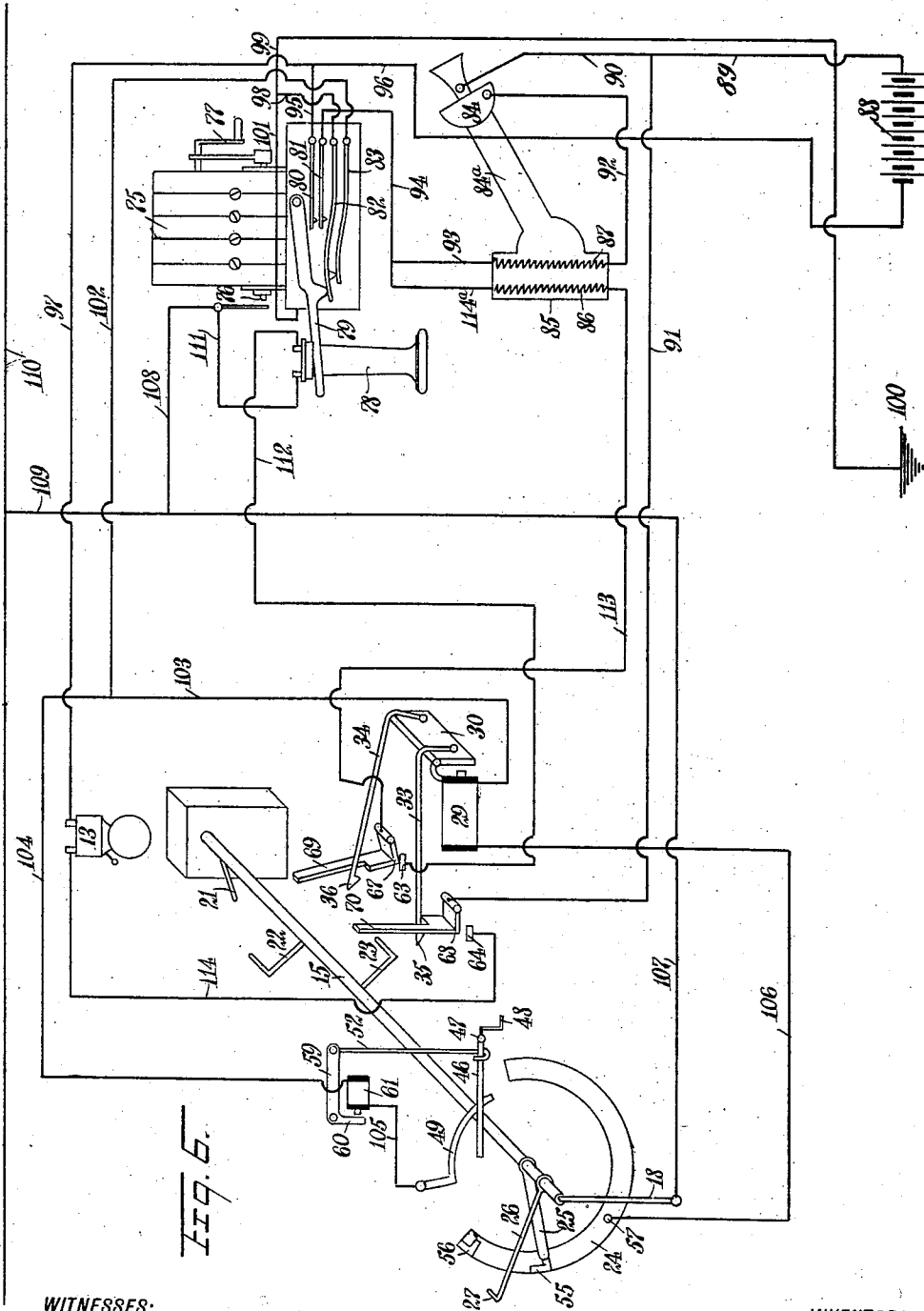


Fig. 6.

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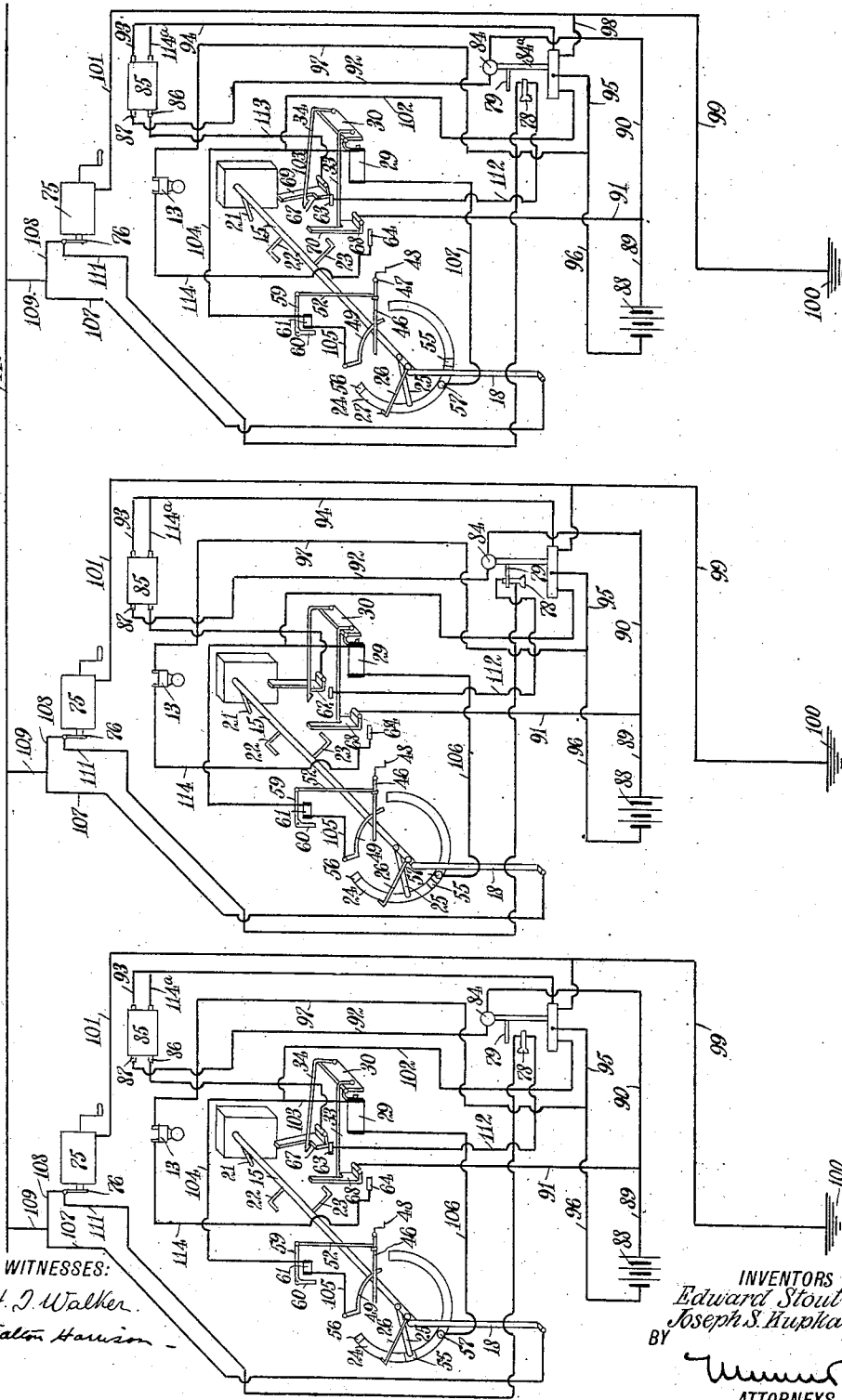
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6 SHEETS—SHEET 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

EDWARD STOUT AND JOSEPH S. KUPKA, OF MARTINSBURG, IOWA.

PARTY-LINE TELEPHONE SYSTEM.

1,008,216.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed July 19, 1910. Serial No. 572,675.

To all whom it may concern:

Be it known that we, EDWARD STOUT and JOSEPH S. KUPKA, both citizens of the United States, and residents of Martinsburg, in the county of Keokuk and State of Iowa, have invented a new and Improved Party-Line Telephone System, of which the following is a full, clear, and exact description.

Our invention relates to party line telephone systems, our more particular purpose being to produce a reliable system of this character, in which the number of telephones may be considerable and in which the selectivity of the particular station or stations to be called is rendered comparatively certain.

Our invention further relates to provision for calling one or any larger number of subscribers, to the exclusion of all other subscribers upon the line.

Our system further comprehends means whereby a single station may call up simultaneously all other stations on the line.

Our invention also relates to lock-out mechanism, whereby when any two or more stations are connected up for talking, all other stations are excluded and are unable to interfere with business being transacted over the line.

Our invention contemplates further the use of a busy signal whereby when the line is busy warning to this effect is given at each station, and also shows at each station when the line is clear, if such is the case.

Our invention still further contemplates various improvements in the mechanism and electrical connections whereby the efficiency of party line systems of this character is greatly improved.

Our invention further comprises means whereby a slight change may be made in the mechanism, the result being that the ringers will ring selectively as desired and yet the talking and hearing circuits remain open, as is the case with ordinary telephones.

Our invention may be employed in connection with ordinary telephone lines in instances where it is desirable to change the same, so as to employ selective ringers, a minimum of change in the construction being necessary for this purpose.

Our invention also contemplates a connection of party lines with a central office, in such manner as to attain a number of advantages, as hereinafter described.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a fragmentary section taken on the line 1—1 of Fig. 3, looking in the direction of the arrow and showing part of the mechanism employed in our improved selective switch; Fig. 2 is a reduced elevation showing complete our selective switch, one of which is employed at each station; Fig. 3 is a section on the line 3—3 of Fig. 4, looking in the direction of the arrow and showing more particularly the electrically-operated contact mechanism forming part of the switch and controlling various circuits; Fig. 4 is a section on the line 4—4 of Fig. 3, looking in the direction of the arrow; Fig. 5 is a section on the line 5—5 of Fig. 4, looking in the direction of the arrow and showing a portion of the time-controlled selective contact mechanism; Fig. 6 is a diagram of the wiring and electrical connections at one of the stations; and Fig. 7 is a diagram showing the wiring at three stations, two of which are temporarily connected up for ringing and talking.

At each station is a casing 8 provided with a wall board 9 and containing a switch mechanism which is controllable electrically from a distance. Mounted upon the outside of the casing 8 is a dial 10 and below this dial are binding posts 11 to facilitate making the electrical connections.

At 12 is a winding stem for winding the clockwork, as hereinafter described.

At 13 is an electrical bell which is conveniently placed upon the top of the casing.

A revoluble hand 14 is mounted rigidly upon one end of a revoluble shaft 15, the latter extending through a motor 16 and being driven by the gearing 17 of said motor. This motor is wound by aid of the winding stem 12 and consists merely of ordinary clockwork so arranged as to turn the shaft 15 at the rate of, say, one revolution per minute, the rate, however, being dependent upon the motor. One end of the shaft 15 is engaged by a leaf spring 18, which being of metal is also an electrical conductor. The casing 8 is provided with a partition 19 having an opening 20 through it. The shaft 15 extends through this opening, and mount-

ed rigidly upon the shaft 15 are three cranks 21, 22, 23 for shifting various movable parts, as hereinafter described. Supported upon the partition 19 is a contact ring 24 made of copper or other suitable metal. A contact arm 25 and a stop arm 26 are mounted rigidly upon the shaft 15, the stop arm 26 being provided with a pin 27, this stop arm and pin being used, as hereinafter described, for starting and stopping movements of the shaft 15.

Disposed centrally within the casing 8 is a supporting plate 28 and mounted upon the latter is a magnet 29. This magnet is provided with an armature lever 30 which is mounted upon pivots 31 and carries a rest 32. Two arms 33, 34 are mounted upon the armature lever 30 by aid of pivots 30^a and are bent backward over the magnet 29 and adapted to engage the rest 32, as will be understood from Figs. 1 and 3. The arms 33, 34 carry barbs 35, 36, and over these arms extends a beam 37 of insulating material which serves as a limiting stop and prevents excessive travel of these arms, as will be understood from Fig. 3.

At 38 is a push pin and connected with the same, inside of the casing, is a leaf spring 39 which tends to maintain the push pin in its normal position—that is, extending outwardly from the casing. Journaled within the casing and disposed adjacent to the inner end of the push pin 38 is an arm 40, and connected with the same is a tensile spring 41. The arm 40 carries a plate 42 of insulating material against which the push pin 38 presses. The arm 40 is provided with an extending portion 43 having a finger 44 integral therewith, and is further provided with a portion 45 bent slightly in relation to the portion 43 and extending through the opening 20, as will be understood from Fig. 1.

When the push pin is pressed in, the portion 45 engages a lever 46 which is mounted upon a pin 47 and is provided with a portion 48 disposed adjacent to the contact ring 24, as shown in Fig. 5. A contact bar 49 is provided with a rounded portion 50 and is secured upon the partition 19 by aid of a screw 51 which also serves the purpose of an electrical connection. Engaging the lever 46 is a hook 52. Adjustably but rigidly mounted upon the contact ring 24 are contact springs 55, 56.

At the different stations (see Fig. 7) the contact springs 55 are placed in different angular positions relatively to the contact ring 24. At the several stations, however, the contact springs 56 all have the same relative position. The purpose of this arrangement is that when at the various stations the several motors are started into action, so that the several contact arms 25 start to travel, these contact arms will all

engage their respective contact springs 56 at the same moment, but at the different stations the various contact arms 25 will reach their corresponding contact springs 55 at different moments. Connected with the contact ring 24 is a binding post 57 for facilitating electrical connections. The bell 13 is also provided with binding posts 58.

Pivotally connected with the hook 52 is an armature lever 59 integral with an armature 60, and adjacent to this armature is a magnet 61. Because of the office of this magnet we designate it as a starting magnet. The arm 59 extends through a slot 59^a and is engaged by a leaf spring 59^b which normally presses it downward, as will be understood from Fig. 5.

Mounted upon the board 28 are binding posts 62, and stationary contact members 63, 64 connected respectively with binding posts 65, 66, and disposed adjacent to these stationary contact members are swinging contact members 67, 68. Connected rigidly with these swinging contact members and extending upwardly therefrom are plates 69, 70 of insulating material and having the shapes indicated particularly in Fig. 4. These plates are adapted to lodge against the barbs 35, 36, and thus hold the respective contact members 67, 68 out of engagement with their mating contact members 63, 64.

Whenever the magnet 29 is energized so as to lift the arms 33, 34, as above described, the barbs 35 and 36 disengage the plates 69, 70 (or either of them which happens to be in engagement) and by allowing the swinging contact members 67, 68 (or either of them) to fall, cause them to engage with their respective stationary contact members 63, 64. The swinging contact members 67, 68 are mounted respectively upon pivots 71, 72, the latter being in metallic communication with binding posts 73, 74, as will be understood from Fig. 3.

A magneto which may be of ordinary construction, is shown at 75, and is provided with a contact 76 controllable by pressure upon the actuating crank 77, as will be understood from Fig. 6.

At 78 is a telephonic receiver which normally rests upon a switch hook 79. Below this switch hook are four contact springs 80, 81, 82, 83 arranged as indicated in Fig. 6. A transmitter is shown at 84 and is conveniently mounted upon a stand 84^a.

At 85 is an induction coil which is provided with the usual primary winding 86 and secondary winding 87.

Each station is provided with a battery 88 and from the latter extends a wire 89 which is connected with a wire 90 leading to the transmitter. A wire 91 is connected with the wires 89, 90 and leads to the swinging contact member 68. A wire 92 is con-

nected with the transmitter 84 and with the
 primary winding 87. Connected with this
 primary winding is a wire 93 which leads
 to a wire 94, the latter being connected with
 the contact spring 81. The contact spring
 80 is connected by a wire 95 with wires 96,
 97, the wire 96 leading to the battery 88
 and the wire 97 to the bell 13. A wire 98
 is connected with the contact spring 82 and
 with the wires 99, 101. The wire 99 leads
 to the ground 100, the wire 101 being con-
 nected with the generator 75, as shown more
 particularly in Fig. 7. A wire 102 leads
 from the contact spring 83 to a wire 104, the
 latter being connected with the starting
 magnet 61. A wire 103 leads to the magnet
 29 which, because of its office, we designate
 as the drop magnet. A wire 105 leads from
 the starting magnet 61 to the contact bar
 49. A wire 106 is connected with the bind-
 ing post 57 and with the drop magnet 29.
 A wire 107 is connected with the leaf spring
 18 and also with two wires 108, 109, the
 wire 108 being connected with a wire 111
 and with the contact 76 and the magneto,
 and the wire 109 being connected with the
 line wire which is shown at 110 and extends
 from station to station. The wire 111 ex-
 tends from the contact 76 to the receiver 78,
 and a wire 112 is connected with the re-
 ceiver and also with the stationary member
 63. A wire 113 is connected with the swing-
 ing contact member 67 and also with the
 secondary winding 86 of the induction coil
 85. This secondary winding is connected by
 a wire 114* with the wires 93, 94. A wire
 114 extends from the bell 13 to the station-
 ary contact member 64. The dial is pro-
 vided with two holes 116, 117, into the for-
 mer of which may be inserted a plug 118,
 provided with a cord 119, connecting it to
 the casing. This plug holds the hand 14
 until the party has finished the conversa-
 tion; the hole 117 is for the purpose of re-
 ceiving the winding stem 12.
 At the several stations the various motors
 16 are wound up separately and independ-
 ently by hand. When, however, the line is
 in use, the motors are inactive, because at each
 station the pin 27 carried by the arm 25
 lodges against the portion 48 of the lever
 46 at that station, and this normally pre-
 vents the motor from running. When the
 various movable parts occupy their respec-
 tive normal positions, the contact arm 25
 extends directly upward. When the motors
 are running, each arm 25 has no metallic
 communication with its corresponding con-
 tact ring 24 except when the arm is passing
 over the contact springs 56, 55. These, as
 above explained, are so located that shortly
 after the motors are all thrown into action,
 the various arms 25 engage the respective
 contact springs 56, this being done simul-
 taneously; but as the motors continue run-

ning, each arm 25 reaches its particular con-
 tact spring 55 at a moment of time differing
 from the moment at which other similar
 arms located at other stations reach their re-
 spective contact springs 55.

As in other systems, whenever a receiver
 78 rests upon its switch hook 79, the switch
 hook occupies its lowermost position, as in-
 dicated in Fig. 6.

The operation of our device is as follows:
 We will assume that at all the stations the
 movable parts are in normal position. In
 this event, each magnet 29 remains deenerg-
 ized; the arms 33, 34, are in engagement
 with the plates 69, 70, the swinging contact
 members 67, 68 are out of engagement with
 the respective stationary contacts 63, 64,
 the arm 25 of each selective switch is upper-
 most, and at each station the pin 27 is lodg-
 ing against the portion 48 of the lever 46.
 Suppose, now, that the central operator, or
 a particular subscriber, wishes to send out
 what we designate as a general call; that is,
 he wishes to attract the attention of all the
 other stations on the line. To do this, he
 proceeds by first pressing the push pin 33
 inward. This causes the portion 44 of the
 arm 43 to extend under the arm 34 (see Fig.
 4). The portion 45, however, passes over
 the lever 46, and with the same impulse
 that starts the motor will cause the arm 34
 to rise as indicated in Fig. 7, so that contact
 is made (at the calling subscriber's station
 only) between the swinging contact member
 67 and the fixed contact member 63. While
 pushing in on the push pin 33, the operator
 now grasps the handle 77 of his generator
 75, and pressing this handle to the left in
 the usual manner, so as to close the contact
 76, he turns the handle and throws the im-
 pulse into the line that releases the motors
 and lifts the arm 34 of the calling station
 as just described. At the calling subscriber's
 station the following circuit is thus ener-
 gized by the generator: ground 100, wires
 99, 101, generator 75, contact 76, wires 108,
 109, to line 110; this circuit is continued at
 each of the other stations on the line, as
 follows: line 110, wires 109, 107, leaf spring
 18, shaft 15, contact arm 25 (now extending
 directly upward in its normal position of
 idleness), contact bar 49, wire 105, magnet
 61, wires 104, 102, contact springs 83, 82
 (these springs being now in engagement),
 wires 98, 99, ground 100. This energizes the
 magnet 61 and causes a movement of its
 armature 60 to raise the armature 59, thus
 releasing the stop pin 27, which rests against
 the point of the armature lever 59 in all
 motors, when in normal position. This
 frees the motor mechanism and as the move-
 ments described take place at each of the
 other stations, all of the motors start to
 work simultaneously. Consequently the
 various hands 14 (see Fig. 2) start to travel

over the ordinals representing the various stations. There is, however, no station numbered 2, and at the point where the hand 14 shown in Fig. 2, reaches the ordinal 2 in said figure, all of the contact arms 25 at the other stations rest respectively upon the contact springs 56. Each of the several call stations remains connected with the line by virtue of the contact arm 25 at each station resting upon the contact spring 56 at that station, as just stated. This connection is simultaneous at all of the call stations, for the reason that at each station the contact spring 56 has the same relative position.

The calling operator, watching the hand 14 of the switch at his station and noting the instant when this hand comes to the ordinal 2 in Fig. 2 (representing the instant when all of the other stations are momentarily in connection with the line), now grasps the handle 77 of his generator, and by turning it sends an impulse into the line. At the sending station the impulse passes over a portion of a circuit, as follows: ground 100, wires 99, 101, generator 75, contact 76, wires 108, 109, to line; at each of the other stations this circuit is continued as follows: line 110, wires 109, 107, contact spring 18, shaft 15, contact arm 25, contact spring 56, contact ring 24, binding post 57, wire 106, drop magnet 29, wires 103, 102, contact springs 83, 82, wires 98, 99, to ground 100, thence back through ground to the starting point. This circuit energizes the drop magnet 29 at each station, thereby swinging the armature 30 and raising the arms 33, 34 at each of the called stations, the result being that at each called station the swinging contact members 67, 68 now drop down upon the respective fixed contact members 63, 64. The dropping of each swinging contact 68 completes at each of the called stations the following circuit: battery 88, wires 89, 91, swinging contact member 68, fixed contact member 64, wire 114, continuous ring bell 13, wires 97, 96, back to battery 88. By virtue of this circuit an alarm is sounded at each of the several called stations. The called subscribers hearing the respective alarms take down their receivers 78. If any one or more of the subscribers fail to do this, it matters not; those who fail simply do not open their respective talking circuits. Those who do remove their receivers, however, by so doing place their receivers in connection with the line. At the calling subscriber's station a local circuit through the primary winding of the induction coil may be traced as follows: battery 88, wires 89, 90, transmitter 84, wire 92, primary winding 87 of induction coil 85, wires 93, 94, contact springs 81, 80, wires 95, 96, back to battery 88. This circuit causes the primary winding 87 to act inductively upon the secondary winding 86, so that at

the calling subscriber's station a part of a talking circuit is completed as follows: ground 100, wires 99, 98, contact springs 82, 81, wires 94, 114, secondary winding 86, wire 113, contact members 67, 63, wire 112, receiver 78, wires 111, 108, 109, to line 110; at each of the called stations the circuit thus partially traced as continued as follows: line 110, wires 109, 108, 111, receiver 78, wire 112, contact members 63, 67, wire 113, secondary winding 86 of induction coil 85, wires 114, 94, contact springs 81, 82, wires 98, 99, to ground 100, thence back to the starting point. The various subscribers thus called, or at least such of them as care to listen, now hear any conversation uttered at the calling station. It will be noted, however, that although the connections are made as described at the beginning of the conversations, the motors are all in action. Consequently, at each station the shaft 15 is turning. This continues until the stop pin 27 lodges against the portion 48 of the lever 46, which brings all of the motors to rest. They continue at rest so long as the talking continues, or at least until some subscriber rings off. During the time that the line is being used, and the hand 14 shows the line to be in use, it is impossible for any one to disconnect the parties who are holding their receivers off the hook, as it will be noted that the circuit is broken with the ground between 82, 83. The plug 118 placed in the hole 116 will hold the hand 14 to the "line busy" position, until the party is ready to give up the line, and even if the motor has been released it can not operate until the plug 118 is removed.

Suppose, now, that the calling subscriber, having finished his conversation, rings off. He does this by grasping the handle 77 of his generator and pressing this handle to the left in the usual manner actuates the generator and throws an impulse into the line. A circuit is thus partially completed as follows: ground 100, wires 99, 101, generator 75, contact 76, wires 108, 109, to line; this circuit is continued at each subscriber's station as follows: line 110, wires 109, 107, contact spring 18, shaft 15, contact arm 25, contact bar 49, wire 105, magnet 61, wires 104, 102, contact springs 83, 82, wires 98, 99, ground 100, thence back to source at the calling station. This energizes the magnet 61 and by causing the armature lever 59 and hook 52 to tilt the lever 46, causes the portion 48 of said lever to release the pin 27. The motors are thus all released and being thus set in motion they run until the movable parts are in normal position, the various hands 14 at the respective stations indicating that the line is clear, by now standing at zero, and the stop pin 27 will now be resting against the portion 48 of the lever 46 ready to be released for another round

of service. It will be noted that the turning of the shaft 15 under the action of the motors, sooner or later carries the various cranks 21, 22, 23 around. The crank 21 is employed to replace the swinging contact 67 while the motors are passing from "line busy" position to normal position; the crank 22 is used for the purpose of replacing the swinging contact 68, when the general call is given at station No. 2 or the number assigned; and the crank 23 acts to replace the swinging contact 68 when a private call is given. The crank 21 at the proper point of its rotation therefore trips the plate 69 and causes the arm 34 to hold this plate in its vertical position, so as to break engagement between the movable contact member 67 and the fixed contact member 63. This opens the talking circuit—that is, through the receiver 78. The crank 22 will stop the bell when the ring is given at the general call number 2, and the crank 23 will do likewise at the private or selective number. Similarly the crank 23 trips the plate 70 upward, so that this plate is now held by the arm 33. This lifts the contact member 68 out of engagement with the contact member 64 and opens the ringing circuit. It will also be noticed that the opening of the ringing circuit takes place at a very early period during the revolution of the shaft 15. The ringing circuit thus being opened, it is obvious that no alarm can be sounded at any station while the line is being restored. By moving the crank arm 21 so as to render it inoperative, the system may be employed under conditions where privacy is not desired; consequently the line will always be open for talking and hearing, as is the case with the ordinary telephone, but the ringing will remain selective as before outlined. It can be so arranged in a case where the talking and hearing circuit is always made, that the dial will show "line busy" or "clear," as the case may be, or if this is not wanted, by moving the point 48 in such a way that the stop pin 27 will not come in contact with it, the motors will make a complete revolution each time that the stop pin 27 lodges against the lever 59.

If after using the line, it happens that any number of subscribers have their receivers off the hooks, and one of the subscribers fails to hang his receiver back on the hook before the "ring-off" impulse is given, the movable parts at the station where this happens will remain for the moment in a false position; that is to say, the negligence of a subscriber in failing to hang up his receiver in time will cause his station to be left out when the other stations affected are restored to normal condition. If the subscriber in question happens to hang his receiver back on the hook during any part on the time while the other stations are in the act of

being restored and will operate his generator, this will release the moving parts at his station and they will be restored to normal condition. They will be a little later than the corresponding parts at the other stations in arriving at their normal condition, but this is a matter of little or no consequence. Suppose again that at the particular station a called subscriber fails to hang his receiver on the hook until after all of the other call stations have been restored to normal condition. The subscriber whose station is thus left out can easily restore his station to normal condition by pursuing the following course:—He operates his generator which starts into action the motor mechanism at two or more of the stations, or at all of the stations as the case may be. The subscriber in question now watches his indicator until the step by step movement brings his apparatus apparently into normal position. He then quickly presses his push-button 38. This stops the motor mechanism and throws into circuit the talking connections. He now operates his generator again. This releases his motor mechanism and the latter soon arrives in such position as to indicate that the line is busy, though the station under consideration is a little later than other stations in arriving in the so called "busy position." If, however, sufficient time be allowed, this makes no difference, all of the stations now being in the condition generally known as "busy." The subscriber whose station is more particularly under consideration now rings off. This clears the entire line including his station. All of the stations are thus restored to normal condition.

It may sometimes happen that a subscriber in restoring his station in normal condition may accidentally ring up some other subscriber, but when this occurs he simply explains to the other subscriber that he is merely restoring his station to normal condition.

Suppose, now, that it be desired to use the system for selectivity. Reference is here made to Figs. 6, 7, showing the diagram. The calling subscriber, we will say, wishes to call up a particular subscriber—say Number 9—and starts with the various parts in their respective normal positions. He presses upon the push pin 38, as before, thereby causing the portion 44 of the arm 43 to extend beneath the arm 34, the portion 45 being now placed across the lever 46, and while holding this push button in he next actuates his generator and by throwing an impulse into the line energizes all of the various magnets 61, thus starting all the motors into action, as described. The same impulse that started the motor of the calling station will, by the portion 45 being pushed over the lever 46, lift the arm 34 and release

the swinging contact 67 and complete the calling station hearing circuit only. The operator then watches the hand 14 at his station, and when this hand arrives at the proper ordinal indicating the particular station he wishes to call, he again actuates his generator, which will operate the magnet 29 of the station called, as described. Since the various contact springs 55 are disposed in different relative positions around the contact ring 24, it follows that the contact arms 25, moving exactly alike at all of the stations, make contact with their respective contact springs 55 at different moments for different stations. At station numbered 4, for instance, the contact arm 25 engages the contact spring 55 at one interval of time, whereas at station 6 the contact arm engages the contact spring 55 a little later. The operator watches the hand 14, as above stated, until it points to the ordinal indicating the station he wishes to call (say, for instance, station 9). Then upon actuating the generator again, a circuit is partially completed at this station as follows: ground 100, wires 99, 101, generator 75, contact 76, wires 108, 109, to line 110; thence, at station numbered 9 only. (this being the only station where the arm 25 is in engagement with its contact spring 55) the circuit is completed as follows: line 110, wires 109, 107, leaf spring 18, shaft 15, contact arm 25, contact spring 55, contact ring 24, binding post 57, wire 106, drop magnet 29, wires 103, 102, contact springs 83, 82, (now in engagement), wires 98, 99, ground 100, thence back to point of beginning. This energizes the drop 29 at station 9 only. The arms 33, 34 being raised by action of the armature 30, the movable swinging contact members 67, 68, are dropped upon the fixed contact members 63, 64. The engagement of the contact members 68, 64 causes the bell to ring, the circuit being the same as above described for ringing the bell when a number of subscribers are called. The engagement of the contact members 67, 63, together with the removal of the receiver 78 from the switch hook 79 at the station 9, completes the talking circuit for that station, the circuit being the same as above traced for any one of the stations called collectively, as above described. The busy signal is displayed at every station, for the reason that at each station the operator notices the position of the hand 14. The ringing off is accomplished in the manner above described with reference to ringing off at other stations. The plug 118 may, if desired, be inserted in the hole 116, for the purpose of stopping the hand 14, as desired.

Our system may be used in an immense variety of relations. With comparatively little alteration our system may be employed in connection with ordinary telephones with-

out molesting the communicating parties, and enable any one on the line to select any other party and ring that station alone, or by using the general call number anyone can call all stations at the same turn of the generator crank. Its chief use is on lines where selectivity is desired. It is highly beneficial, too, in relations where it may be desired to call up and talk to a considerable number of subscribers, the general action of the system being for this purpose rendered independent of whether any single subscriber, or any number of subscribers, answer the call.

Under our system unless a station generates on the number assigned to the central office, the line drop does not fall there. It also prevents molesting the night alarm at the central office, should any one on the line wish to talk to a station on the line at night. On the other hand, any station that has occasion may ring the night alarm at the central office at night, and not molest any other station by causing the bells to ring. The central office will have a private number just the same as any other party on the line. This system will, when it is desired, allow the central operator to hear at all times on any line, by plugging in as in ordinary cases. This makes it possible to clear the line by the central operator, should anyone carelessly leave the system showing "line busy". Or the ringer at the central office can be arranged as all others and not be allowed to hear any conversations on the line unless that office has been called. This can be done by moving the crank 21 over so that it will replace the drop arm 34 over the swinging contact 67.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. A selector switch, comprising a ringing circuit, a talking circuit, a contact for opening and closing said ringing circuit, a contact for opening and closing said talking circuit, a revoluble member provided with cranks for opening said contacts, means operated electrically from a distance for controlling said revoluble member, and means including magnetic mechanism controllable from a distance for closing said contacts.

2. In a selector switch, the combination of a motor, a revoluble shaft connected therewith and turned thereby, a contact ring, a contact member mounted thereupon, an arm carried by said shaft and adapted to engage and disengage said contact member for the purpose of opening and closing an electric circuit, another arm mounted upon said shaft, a lever provided with a portion disposed partially within the path of travel of said last-mentioned arm for the purpose of arresting the rotation of said shaft, and means controllable electrically from a dis-

tance for actuating said lever, thereby liberating said arm and allowing said motor to start.

3. In a selective switch, the combination
5 of a revoluble shaft, motor mechanism for turning the same, an arm carried by said shaft, contact mechanism to be engaged and disengaged by said arm in order to open and close an electric circuit, a second arm
10 mounted upon said shaft, a member disposed partially within the path of travel of said last-mentioned arm, and means controllable electrically from a distance for actuating said member in order to stop and
15 release said arm.

4. In a selector switch, the combination of a drop magnet, a contact controllable thereby for closing a ringing circuit, another contact controllable by said drop magnet for
20 closing a talking circuit, and means controllable at will for temporarily closing one of said contacts independently of the condition of said magnet.

5. In a selector switch, the combination
25 of a motor, gearing including a revoluble shaft to be turned by said motor, an arm mounted upon said revoluble shaft, a movable lever provided with a portion for temporarily holding said arm, thereby rendering the motor inactive, mechanism control-
30 lable electrically from a distance for actuating said lever in order to release said arm, selective contact mechanism controllable by the rotation of said shaft for throwing cir-
35 cuits into and out of action, and means con-

trollable at the will of the subscriber for temporarily preventing the movement of said arm.

6. A selector switch, comprising a motor, a revoluble shaft connected with said motor
40 and driven thereby, selective contact mechanism controllable by rotation of said revoluble member for opening and closing circuits, a motor circuit provided with means for
45 stopping and starting said motor, means controllable electrically from a distance for opening said motor circuit when said motor is in action, and mechanism controllable by
50 a subscriber for temporarily preventing said revoluble shaft from turning.

7. In a selector switch, the combination
of a contact ring, contact members mounted thereupon, one of said contact members being fixed and another being movable, and a
55 movable contact member for engaging and disengaging said contact members, a plurality of circuits connected with said contact members, and means controllable alternately at the will of the operator for employing said circuits either for a general call
60 or for a particular selective call, as desired.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWARD STOUT.
JOSEPH S. KUPKA.

Witnesses:

HERMAN C. WOLFERT,
W. J. CRAIG.