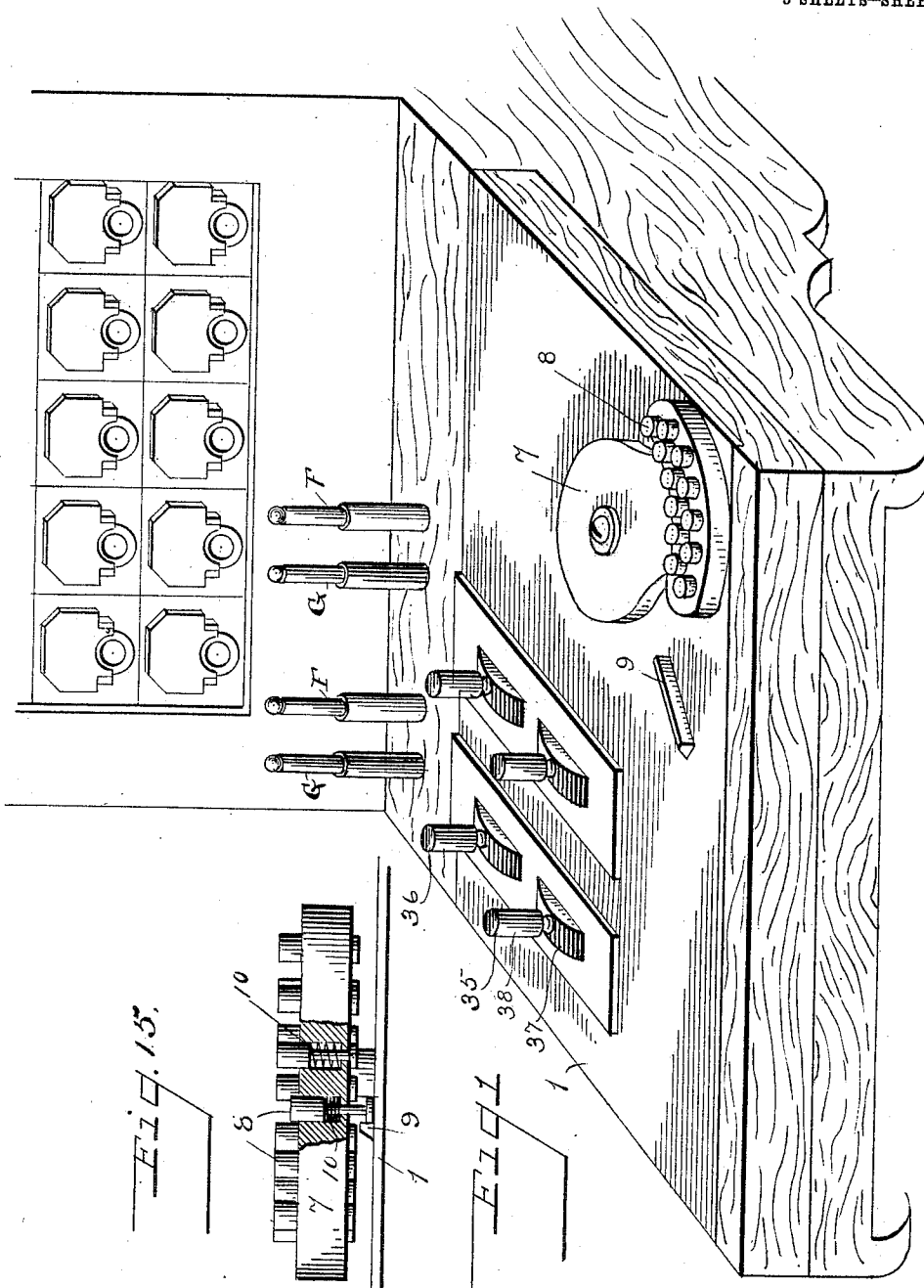


D. W. KNEISLY.
SELECTIVE APPARATUS FOR PARTY TELEPHONES.
APPLICATION FILED FEB. 8, 1908.

1,044,538.

Patented Nov. 19, 1912.

5 SHEETS-SHEET 1.



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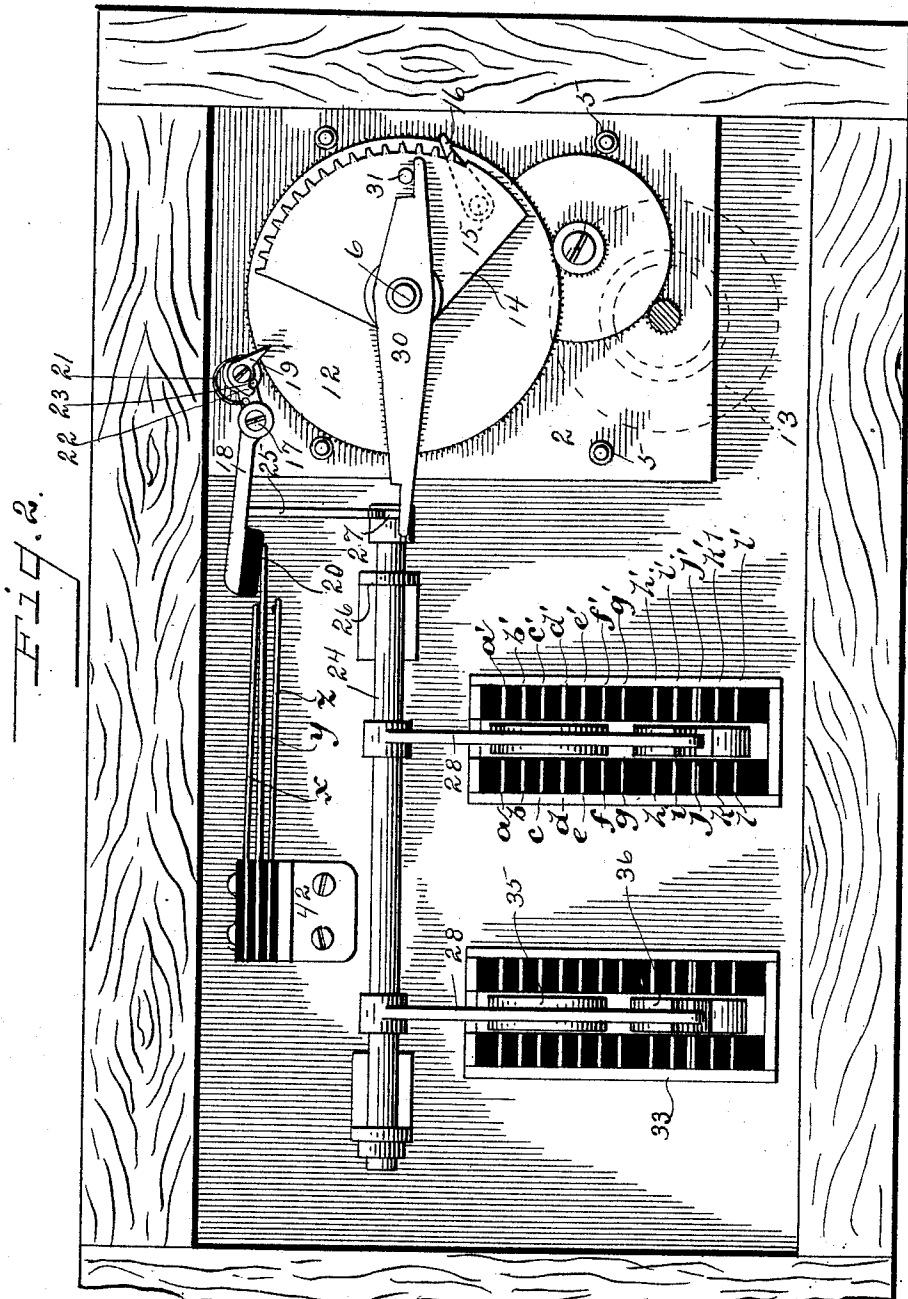
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5 SHEETS—SHEET 2.



WITNESSES:

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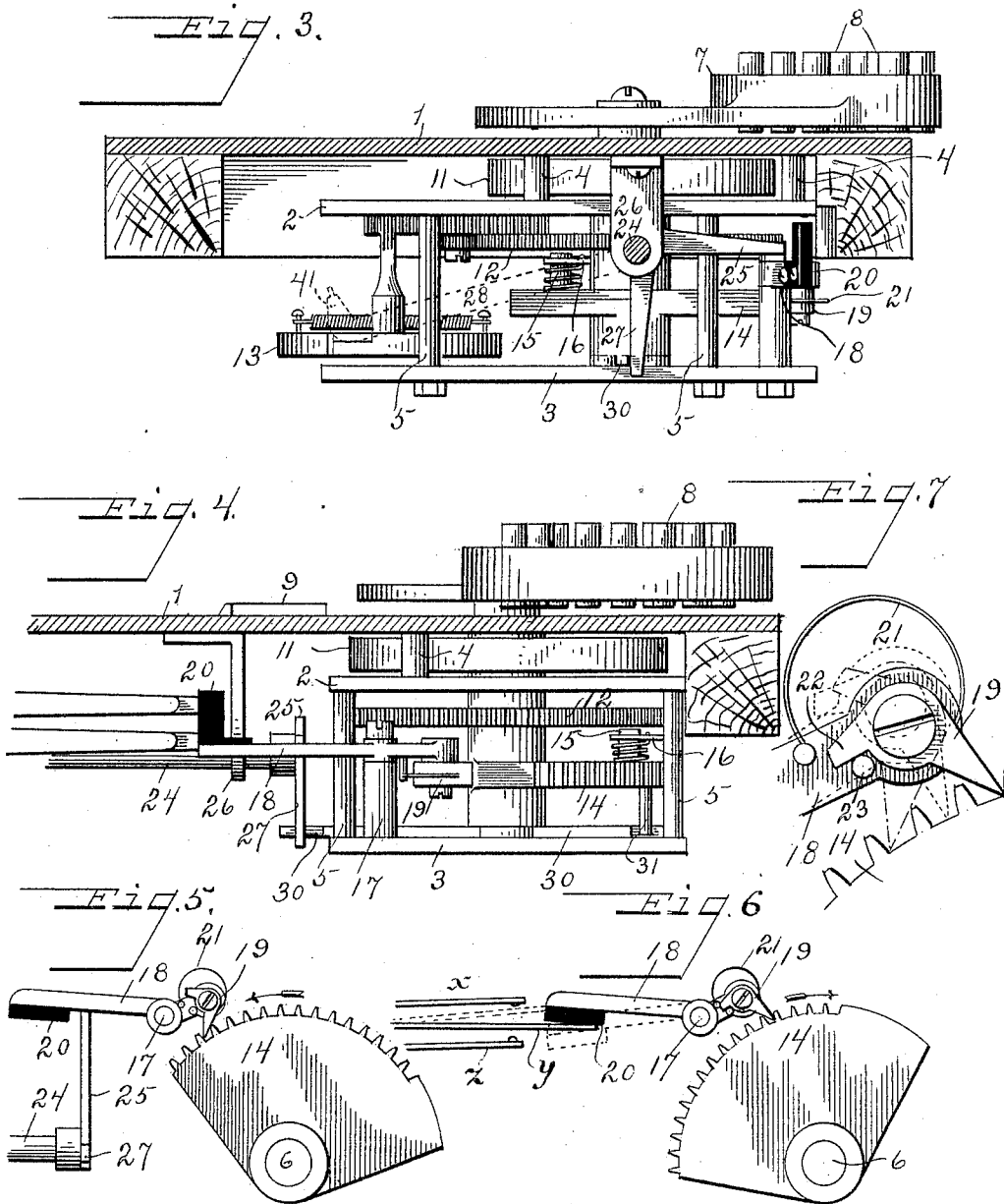
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5 SHEETS—SHEET 3.



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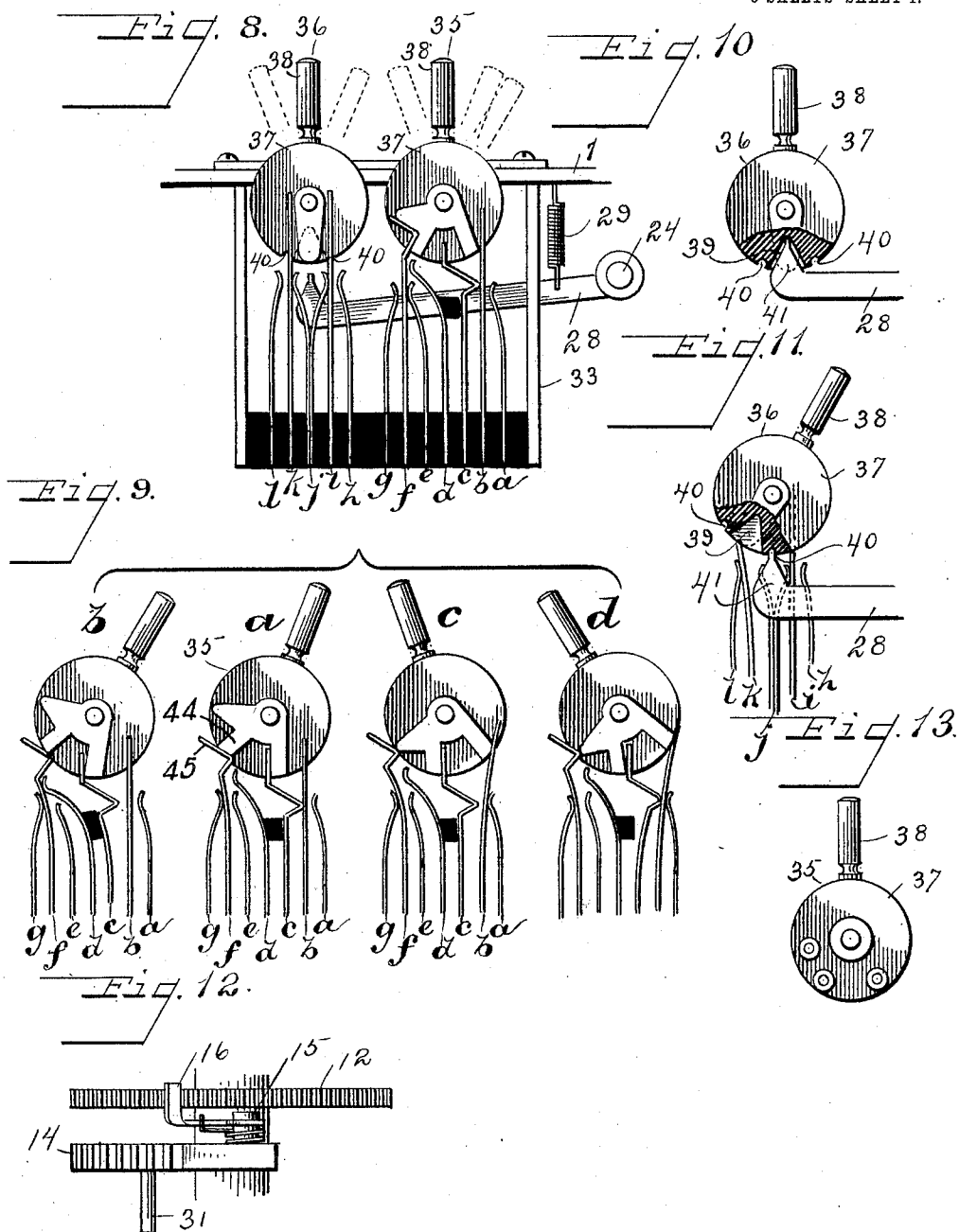
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1,044,538.

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5 SHEETS-SHEET 4.



WITNESSES:
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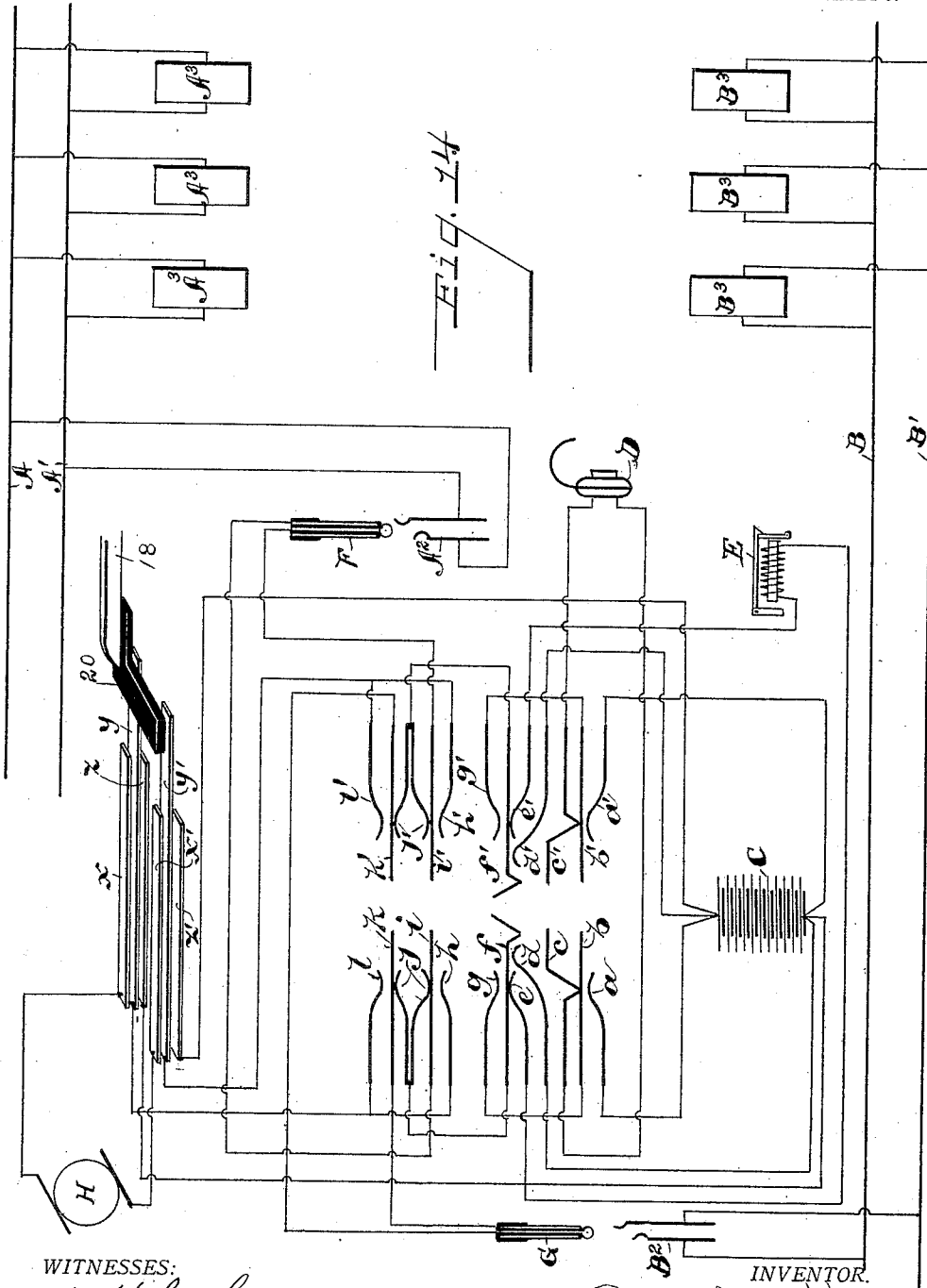
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1,044,538.

Patented Nov. 19, 1912.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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SELECTIVE APPARATUS FOR PARTY-TELEPHONES.

1,044,538.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed February 8, 1908. Serial No. 414,935.

To all whom it may concern:

Be it known that I, DANIEL W. KNEISLY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Selective Apparatus for Party-Telephones, of which the following is a specification.

My invention relates to telephone apparatus and particularly to selective apparatus for use in connection with party line service wherein is employed lock-out devices of the general type illustrated in my former Patent #860,920 or in connection with any system in which the desired subscriber's instrument is brought into operative connection by a predetermined series of separate electric impulses.

The object of the invention is to greatly simplify the construction as well as the means and mode of operation of such devices, whereby they will not only be cheapened in construction, but will be more positive in operation, more efficient in use, substantially automatic in operation, and unlikely to get out of repair.

A further object is to provide a device that may be adjusted to select the required instrument by a minimum number of operations on the part of the operator, and when so adjusted will automatically select and ring that instrument and restore the cord circuits to normal condition, thus making the operation speedy and permitting the operator to control a greater number of lines.

A further object is to provide in combination with such a selective apparatus a controlling key by which said apparatus is set in motion, which key is so connected that separate impulses may be sent over the line by manual operation of the key to select the desired instrument in event of accident to the selective apparatus, said key being also capable of use independent of the selector for ringing other than "lock-out" lines on combination switch boards.

A further object is to provide means for positively locking said key in operative position until the operation of selecting and ringing have been completed.

With the above primary and other incidental objects in view as will appear from the specification, the invention consists of the means, mechanism, construction, and

mode of operation hereinafter described and set forth in the claims.

In the drawings, Figure 1 is a perspective view of a common form of switch board equipped with the selective apparatus. Fig. 2 is a bottom plan view of the selective apparatus. Fig. 3 is a side elevation from the left in Fig. 2 of the "make and break" mechanism for transmitting the separate impulses. Fig. 4 is a similar view of the same apparatus as viewed from the top of the figure in Fig. 2, and at right angle to Fig. 3. Fig. 5 is a detail view showing the relation of the parts during the adjusting or setting operation. Fig. 6 is a similar view during the selecting or impulse sending operation. Fig. 7 is an enlarged detail of the operating pawl showing by dotted and dot and dash lines the different positions assumed thereby during the movement of the parts. Fig. 8 is a side elevation of the ringing and the listening or locking and unlocking keys and the switches operated thereby in their normal positions. Fig. 9 is a view illustrating different positions assumed by the listening or locking and unlocking key to accomplish certain results hereinafter described. Fig. 10 is a detail view of the ringing key and engaging lever of the selective apparatus when said selector has been "set" or adjusted but not set in motion. Fig. 11 is a similar view during the operation of the selective apparatus, showing the key locked in its operative position. Fig. 12 is a detail view showing the connecting pawl between the selector mechanism and the governing mechanism. Fig. 13 is a modification of the listening key showing the use of rollers. Fig. 14 is a diagrammatic view of the electrical connections of the various parts. Fig. 15 is a detail of the key mechanism.

Like parts are indicated by similar characters of reference throughout the several views.

In constructing the device there is employed a base plate 1 to the under side of which is attached all the operating parts of the structure. On the upper side of the plate are the operating keys and the oscillating selector head hereinafter described.

The selector proper or impulse transmitting mechanism is located adjacent to one end of the plate 1 and comprises a frame composed of the plates 2 and 3 supported on

the plate 1 and separated therefrom and from each other by the studs 4 and 5. A vertical shaft 6 extends through the frame made by said plates and above the base plate 1, where it carries an oscillating head 7 having therein a series of depressible stop keys 8, shown in detail in Fig. 15 of Sheet 1, which engage a stop 9 on the plate and limit the movement of the parts, in accordance with the particular stop key depressed. Each stop key is provided with a retracting spring 10. Located intermediate the plates 1 and 2 and attached at one end to the main shaft 6 is a motor spring 11 adapted to return the shaft and connected parts to normal position, when moved therefrom. The oscillation of the head 7 serving to wind said motor spring 11. Loosely journaled on the main shaft 6 intermediate the plates 2 and 3 is a gear wheel 12 forming one of a train of gears actuating a governor 13 controlling the return of the parts to normal position under the action of the motor spring 11.

The governor shown is of ordinary construction, and the particular construction is not essential, but any suitable device may be used, therefore, it will not be described in detail.

Secured upon the main shaft 6 and movable therewith is a notched or toothed segment 14. Projecting from the upper face of the segment 14 is a pin 15 on which is journaled a spring actuated pawl 16 engaging the teeth of the gear wheel 12 in such manner that the shaft, the notched segment, and the oscillating head will freely move in one direction independent of the gear 12 and the governing mechanism, but the return movement of said parts to normal will be controlled by said governing device. Pivoted on a stud 17 is a rock lever 18 carrying at one end a pivoted double acting pawl 19 engaging the notched segment 14, and actuated thereby to intermittently close and open certain electric switches hereinafter described. The switch engaging end of said rock lever 18 is provided with a lateral projecting arm 20 of insulating material, adapted to contact and operate said switches. The pawl 19 pivoted on the rock arm 18 is provided with a spring 21 tending to hold the pawl in the positions shown in Figs. 6 and 7. However, upon the oscillation of the head to set the mechanism for any desired instrument on the line, the pawl 19 will be reversed against the tension of the spring 21 and will ride freely over the notches of the segment 14, as in Fig. 5, the pawl oscillating on its pivotal connection to the lever as the notches of the segment 14 pass successively under the pawl, the rock lever 18 remaining at rest. Upon the reverse movement of the notched segment 14; that is, upon its return to normal, under the

action of the motor spring 11 the pawl 19 will be reversed as in Figs. 6 and 7, in which position the tail 22 of the pawl 19 rides over the notches of the segment 14 on the return movement thereof, a corresponding oscillation of the rock lever 18 will result, which will cause the make and break operation of the before mentioned switches, by the engagement of the insulated arm 20.

In Fig. 7 the position of the pawl 19 during the setting operation is shown by dot and dash lines, and in its operative position by solid lines; in dotted lines in said figure is shown the position of the pawl and arm during the reversal of the pawl at the time the segment 14 begins its return movement. It will be noted that to permit the reversal of the pawl the lever 18 must oscillate upon the pivotal connection thereof. Means to lock the rock lever 18 and thereby the segment 14 against return movement until predetermined operations have been effected are provided which comprise a rock shaft 24 carrying at one end a bell lever, one arm 25 of which projects into the path of the rock lever, from the time the parts are moved from normal at the initial setting operation until moved from the path of the lever 18 by the oscillation of the rock shaft, by the operation of the operator's key as hereinafter described. The shaft 24 is mounted in bearings 26 secured to the plate 11. The bell lever, of which 29 is one arm and 27 at substantially right angles thereto the other arm, is rigidly secured to said shaft and movable therewith. The shaft 24 also carries a series of arms 28 connecting with operators' keys, by which said arms 28 may be depressed to oscillate the shaft 24. Springs 29 attached to the arms 28 and to the plate 1 tend to rock the shaft 24 in one direction whereby the arm 25 will move into the path of the lever 18, and to return it to such position when moved therefrom. When the respective parts are in normal position the arm 25 is held out of the path of the lever 18 by the engagement of a lever 30 pivoted on the main shaft 6 with the arm 27 of the bell lever. The opposite end of the lever 30 is engaged by a pin 31 projecting from the segment 14. The construction is such that at the initial movement of the segment 14 the pin 31 moves away from the lever 30 which frees the rock shaft 24 and permits it to oscillate under the action of the springs 29, and so move the arm 25 into the path of the lever 18. As the segment 14 approaches the limit of its return movement to normal, the pin 31 engages the lever 30, which lever in turn engages the arm 27 of the bell lever and holds the arm 25 out of the path of the lever 18 from which it has been previously moved by the action of the operator's key yet to be described.

Attached to the under side of the plate 1

is a plurality of pendant frames 33, one for each calling line operated by said impulse sending mechanism, in each of which is mounted switch blades or terminals, insulated from each other, and arranged in two series, connecting respectively with the opposite sides of the line, and designated by reference letters *a* to *l* and *a'* to *l'* respectively. These switch blades are adapted to be brought into electrical contact one with the other in predetermined combination by means of a listening or locking and unlocking key 35, and a ringing key 36, controlled by the operator. These keys will hereinafter be mentioned as a primary key 35 and secondary key 36, with reference to their sequence of operation in answering a call and securing and ringing the desired instrument. Each of the keys 35 and 36 consists of a pivoted oscillatory disk 37 having a radial handle 38 projecting above the plate 1, and provided with sundry lateral projections on said disk engaging with and operating the various switch blades. The aforementioned lateral projections are provided on opposite sides of the keys, and simultaneously operate the corresponding blades of the two series *a* to *l* and *a'* to *l'*. The secondary key 36 is provided with a recess 39 in the periphery thereof, while on either side of the said recess is located a notch 40. The extremity of the arm 28 projects within the frame 33 and between the respective series of switch blades or terminals, and is provided with a cam shaped head 41 which projects within the recess 39, as in Fig. 10 when the shaft 24 carrying said arm is oscillated under the action of the spring 29 upon the initial movement of the segment, at which time the shaft 24 is released by the disengagement of the pin 31 and the lever 30. The oscillation of the shaft 24 which causes the head 41 of the arm 28 to project within the recess 39 also moves the arm 25 into the path of the rock lever 18 and so locks said lever and thereby the notched segment 14. When the operator has made the proper connections the secondary key 36 is operated and by the engagement of the sides of the recess 39 with the head 41 the arm 28 is depressed and the shaft 24 is oscillated to move the arm 25 from the path of the lever 18 whereby the pawl 19 will be permitted to reverse and the segment 14 return to normal position during which movement the secondary key will be held in its operated position by the engagement of the head 41 with the notch 40 before mentioned as shown more particularly in Fig. 11. Upon the return of the segment 14 to normal position the engagement of the pin 31 with the lever 30 not only serves to move the bell-crank lever to hold the arm 25 out of the path of the lever 18 as before described but also by the engagement of the

lever 30 with the arm 27 of the bell lever causes the oscillation of the shaft 24 and therewith the arms 28 to disengage the head 41 from the notch 40 and permit the operated key to return to normal. There is also secured to the plate 1 a bracket 42 carrying a plurality of flexible switch blades or terminals arranged in two series of three blades each and designated by reference characters *x*, *y*, *z*, and *x'*, *y'*, and *z'* respectively. In Fig. 2 but one series of these switch blades appear, the other series being immediately back of those to be seen; both series are shown in perspective near the top in Fig. 14. The insulated arm 20 of the lever 18 rests on the intermediate blades *y*, *y'* which are normally in contact with the uppermost blades *x*, *x'* as in Fig. 2. At the initial return movement of the segment 14 the reversal of the pawl 19 causes an oscillation of the lever 18 which breaks the contact of the blades *x* and *y* and *x'* and *y'* respectively, and at each subsequent oscillation of the lever 18 due to the pawl 19 slipping over each successive notch of the segment 14, a contact is made and broken by the blades *y* and *z*, and *y'* and *z'*, which causes a series of electric impulses to pass over the line to operate the step by step telephone lock-out devices.

Referring to Fig. 14, A—A' is the calling line connected to the answering jack A². B—B' is the called line connected to the calling jack B², and common to a series of subscribers' instruments each equipped with a lock-out device operated by separate electric impulses said instruments and lock-out devices being indicated at B³. These lock-out devices may be of any suitable construction, but are preferably of the type shown in my aforementioned patent and in my co-pending applications Serial Nos. 416,900 and 429,306.

The connections of the various switch blades is shown in Fig. 14 and is as follows:—The blades *a* and *a'* are connected to the positive and negative sides of the battery C; the blades *b* to *g* and *b'* to *g'*; *c* and *c'* connect with opposite sides of the operator's receiver D; the blades *d* and *d'* connect through the battery C; the blades *e* and *e'* are connected through an ordinary clear-out drop E; *f* is connected to *j* and *f'* to *j'*, *h* connects with *y*, and *h'* with *y'*; *i* and *i'* connect with the sleeve and tip respectively of the answering plug F; *j*—*j'* are double blades and are connected with *f* and *f'* respectively as before mentioned; *k* and *k'* connect with the sleeve and tip respectively of the calling plug G; *l* and *l'* connect respectively with *y* and *y'*, being joined with the connection of *h* and *y* and *h'* and *y'* before mentioned; *x* and *x'* connect with opposite poles of the generator H or other source of electric energy, while *z* and

z' connect with opposite sides of the battery C.

Operation: A call being sent in from an instrument on line A—A' is indicated in the usual manner; the operator inserts the answering plug F in the answering jack A² and moves the primary key 35 to listening position, as at Fig. 9. In this position the key will be retained by the engagement of the lateral projection 44 above the angular bend 45 of the blade f (see Fig. 9^a). In this position the connections are from the line A—A' through the plug F to the blade i , to j normally contacting therewith, from j to f pressed into contact with g by the action of the key, from g to b in normal contact with c and thence to the operator's receiver D thence in reverse order through the corresponding parts of the opposite or prime series to the plug F and to the line, completing the circuit. If the calling line is equipped with lock-out devices, the operator will lock the line against other subscribers by pressing the key 35 to its second or lock position as at b in Fig. 9. This will cause the projection 43 of the key to engage the blade c and break the contact between b and c and at the same time establish a contact between a and f which is already in contact with g . The blade d is moved by an interposed block of insulation between c and d . This operation will cut out the operator's receiver D through the disconnecting of b and c and by the connection of f and d will bring the battery C into the circuit sending an impulse back on the calling line which will step up the lock-out devices one step and thereby lock all instruments except the one calling; the current passing as before from the plug F to i , to j , to d , thence to the battery, and from there in reverse order through the opposite series to the plug F and to the line. If the calling line is an independent service line this locking operation will be omitted. Also if the calling subscriber desires another on the same line, the line is not locked as described, but the selector mechanism is set in operation and the secondary key 36 is operated to send the energizing current back on the same line as hereafter described. If the called line is an independent service line the calling plug is inserted in the proper jack and the ringing current sent by the operation of the secondary key to be described. If the desired subscriber is on another lock-out line, after inserting the calling plug G in the calling jack B², the selector mechanism is set in motion by the operator depressing the stop key 8 corresponding to the instrument desired, and oscillating the head 7 until its movement is arrested by the engagement of the depressed stop key 8 with the stop 9, in which position the parts will be locked by the engagement of the pawl 19

with the segment 14 and the arm 25 with the rock lever 18, as before described. To complete the calling operation the secondary key 36 is now operated as in Fig. 11, which releases the selecting mechanism as before described, and at the same time closes the contact between k and l , breaking contact between k and j so battery C is bridged across called line only, as in Fig. 11. The initial movement of the segment reverses the pawl 19 as in Fig. 7, and in doing so oscillates the lever 18 to break the contact between x and y and x' and y' by depressing y and y' . The continued movement of the notched segment 14 beneath the pawl 19 oscillates the lever 18 to make and break the contact between y and z and y' and z' a number of times equivalent to the number of impulses required to bring into operation the desired instrument. The number of impulses is determined by the number of notches passing under the pawl 19 before the segment reaches normal position, and the number of notches so passing the pawl is in turn determined by the distance the oscillating head 7 is moved before the depressed key 8 engages the stop 9. During the selecting operation, at each oscillation of the lever 18 the current will pass from the battery C to the blade z thence to y , from y to l , then through k held in contact therewith by the secondary key 36, and from k to the calling plug G then out on the wire and through the instruments B³ returning through the plug, the blades k' , l' , y' , and z' and to the opposite side of the battery. After the last notch of the segment has passed under the pawl 19 the segment continues to move an additional distance as in Fig. 2 before reaching normal position and disengaging the ringing or secondary key as described. During this additional movement of the segment, the lever 18 has returned to normal position, permitting the blades x and y and x' and y' to contact as in Fig. 2. This forms the ringing connection, from the generator H through x to y , from y to l , thence through k held in contact with l by the key 36, from k to the plug G, thence out on the line, returning on the opposite side of the line through the plug to k' then through l to y' , from y' to x' , said blades being normally in contact, and from x' to the opposite side of the generator. When the segment 14 approaches the limit of its return movement the pin 31 engages the lever 30, which in turn engages the arm 27 and by the additional movement of the segment, oscillates the shaft 24 to withdraw the head 41 of the arm 28 from engagement with the secondary key 36, permitting said key to return to normal, as in Fig. 8 thus breaking the contact between k and l and again establishing contact between j and k , which establishes the talking circuit be-

tween the respective lines. The talking circuit extends from the line A through the plug F to *i* then to *j* normally contacting therewith, from the second blade of *j*, said switch blade being double, to *k*, thence to the plug G and out on the line B; the return circuit is from the line B' through plug G to *k'*, thence through the double blades *j'* to *i'*, thence to the plug F and to the line A' completing the talking circuit. After the conversation is finished, and it is desired to return the instruments to normal the primary key is reversed to unlocking position as at *c* in Fig. 9, closing the contacts between *a* and *b* and *f* and *g* which will reverse the direction of the current from the locking position as at *b* in Fig. 9. When in unlocking position the current will pass from the battery C to *a*, thence to *b*, through the bond to *g*, to *f*, thence to *j* and through *k* and *i* to the respective plugs.

The locking and unlocking positions of the primary key as indicated in positions *b* and *c* of Fig. 9 connect the parts with opposite sides of the battery C. The terminals *a* and *g* are connected to opposite sides of the battery C; in one case the blade *d* is connected with the blade *g* through the interposed blade *f*, in the other case the blade *a* connected with the opposite side of the battery is connected with *g* through *b* and the bond to *g*. If one line is an independent service line in unlocking the instruments the secondary key is held in a position to prevent the current going on the independent line and in position to close the circuit of the party line. If the calling line is independent and it is desired to unlock the instruments on the line B—B', the secondary key 36 will be thrown opposite the position shown in Fig. 11 opening the contact *j* and *i*, thus closing the circuit through the plug G when the primary key is moved to unlocking position or to reverse the direction of the current, and the plug F is cut out of circuit. In other words, the cord circuit is divided and the current closed in reverse direction over the party line.

While the device has been herein shown and described as applied to party line telephones, it is to be understood that the invention is not limited to such use, but is applicable to any system of selective signaling or electrical operation or control from distant points, such as railway signal systems, telegraph systems, electric bulletin systems, and other similar systems where it is desired to select or operate any one or any set of several instruments or electrically controlled devices on a common line.

From the above description it will be apparent that there is thus produced a device of the character described, possessing the particular features of advantage before enumerated as desirable, but which obviously is

susceptible of modification in its form, proportions, detail construction, arrangement of parts and its application, without departing from the principle involved or sacrificing any of its advantages.

Having thus described my invention, I claim:

1. In a device as described, an electric circuit, an impulse transmitting mechanism, means for locking the impulse transmitting mechanism, a switch in said electric circuit, and means for causing the release of the impulse transmitting mechanism simultaneous with the operation of the switch.

2. In a device as described, a frame, an oscillating shaft, a notched segment on said shaft, an electric switch, a pivoted lever operating said switch, a pivoted pawl carried by said lever and engaging the notches of the segment, said pawl being capable of movement about its pivotal connection independent of the lever when the segment moves in one direction, means to limit the oscillation of said pawl in one direction whereby the engagement of the pawl and segment will cause an oscillation of the supporting lever, means for oscillating said notched segment in one direction independent of said lever and a motor for returning said segment in operated engagement with said lever whereby said switch will be closed a predetermined number of times, substantially as specified.

3. In a device of the character described, an electric circuit, an impulse transmitting mechanism, a locking device therefor, an operating key adapted to release the impulse transmitting mechanism, a lock for said key adapted to retain the key in its operated position, and means to release the key upon the return of the impulse transmitting mechanism to normal.

4. In a device of the character described, an electric circuit, an impulse transmitting mechanism, a locking means therefor brought into operation upon the initial movement of the impulse mechanism and adapted to maintain said mechanism in its adjusted position, and an operating device to release the impulse transmitting mechanism to permit it to return to normal.

5. In a device of the character described, an electric circuit, an impulse transmitting mechanism, means for locking the impulse transmitting mechanism, a switch controlling the circuit, and means whereby the operation of the switch will cause the release of the impulse transmitting mechanism.

6. In a device of the character described, electric circuits, two circuit terminals and a movable terminal normally in contact with one of the first mentioned terminals, an impulse transmitting mechanism adapted to operate the movable terminal to cause it to break its contact with the first mentioned

terminal and to contact the second terminal a predetermined number of times before again permitting it to contact the second terminal.

5 7. In a device of the character described, an electric circuit, an impulse transmitting mechanism, a switch controlling the circuit, means for locking the switch in its operated position, and means for automatically releasing the switch upon the completion of the operation of the impulse transmitting mechanism.

10 8. In a device as described, a main frame, an oscillating segment therein, an electric switch, a rock lever adapted to operate said switch, and actuated by said segment, a lock means for said rock lever normally held out of engagement by said segment but adapted to automatically move into locking engagement with said lever upon the initial movement of the segment, substantially as specified.

9. In a device as described, a main frame, an oscillating segment therein, an electric switch, a rock lever operating said switch and in turn operated by said segment, means for locking said rock lever against movement, a pivoted lever engaging and moving said lock mechanism into operative position, a pin in said segment, engaging the lock operating lever whereby the lock mechanism will be rendered inoperative as the segment approaches its normal position, substantially as specified.

10. In a device as described, a main frame, an oscillating segment therein, an electric switch, a rock lever adapted to operate said switch, a lock means for said rock lever normally out of engagement therewith, means for bringing said lock-means to operative position on the initial movement of said segment, substantially as specified.

11. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever adapted to operate said switch and in turn operated by said segment, a bell lever one arm of which is adapted to extend into the path of said rock lever and limit the movement thereof, an operating lever engaging the opposite arm of said bell lever and operated to actuate said bell lever by said oscillating segment, substantially as specified.

12. In a device as described, a main frame, an oscillating toothed segment, an electric switch comprising two anterior and an intermediate blade, said intermediate blade and one of the anterior blades being normally in contact, a rock lever adapted by its oscillation to flex said intermediate blade, said rock arm being actuated by said segment, means whereby said segment will move in one direction independent of said lever, and on the initial return movement

will operate said rock lever to break the con-

tact of the intermediate blade and the first anterior blade and on the subsequent movement of the segment operate the rock arm to intermittently contact the intermediate blade with the second anterior blade, substantially as specified.

13. In a device as described, a main frame, an oscillating segment, an electric switch comprising two anterior and an intermediate blade, said intermediate blade and one of the anterior blades being normally in contact, means operated by said segment whereby said segment may be moved in one direction independent of the switch, and whereby the initial movement of the segment in the opposite direction will cause the intermediate blade to be moved out of contact with the first anterior blade, and the subsequent movement of the segment will cause the intermediate blade to intermittently contact the other anterior blade, substantially as specified.

14. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever actuated by said oscillating segment and adapted to operate said switch, means for locking said rock lever and means including a pivoted key for releasing said lock mechanism, substantially as specified.

15. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever actuated by said segment and in turn operating said switch, a rock shaft, an arm on said shaft projecting into the path of and limiting the movement of said rock lever, a pivoted key having cam faces therein, an arm on said rock shaft engaging said key whereby the operation of said key will rock the shaft to move the stop arm out of engagement with said lever, substantially as specified.

16. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever actuated by said segment and in turn operating said switch, a rock shaft, means connected with said shaft for locking and unlocking said rock lever, a pivoted key, an arm on said shaft engaging the key whereby the operation of said key will operate said shaft to release the rock lever, substantially as specified.

17. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever actuated by said segment and in turn operating said switch, a rock shaft, means connected with said shaft for locking and unlocking said rock lever, a pivoted key, an arm on said shaft engaging the key whereby the operation of said key will operate said shaft to release the rock lever, and means for retaining said key in operative position until said oscillating segment has returned to normal position, substantially as specified.

18. In a device as described, a main frame,

an oscillating segment, an electric switch, a rock lever actuated by said segment and in turn operating said switch, a rock shaft, means connected with said shaft for locking and unlocking said rock lever, a pivoted key, an arm on said shaft, a recess in said key, a head on said arm adapted to project within the recess the sides of said recess being adapted to act on said head as a cam to move said arm and rock shaft to release the rock lever, substantially as specified.

19. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever actuated by said segment and in turn operating said switch, a rock shaft, means connected with said shaft for locking and unlocking said rock lever, a pivoted key, an arm on said shaft, a head on said arm, cam faces formed in said key engaging said arm head and operating the rock shaft to release the said rock lever, a notch in said key adjacent to said cam face with which said arm engages when operated by said key to retain the key in its operated position, substantially as specified.

20. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever actuated by said segment and in turn operating said switch, a rock shaft, means connected with said shaft for locking and unlocking said rock lever, a pivoted key, an arm on said shaft, a head on said arm, cam faces formed in said key engaging said arm head and operating the rock shaft to release the said rock lever, a notch in said key adjacent to said cam face with which said arm engages when operated by said key to retain the key in its operated position, and means to release said key by the operation of said oscillating segment as it approaches the limit of its return movement, substantially as specified.

21. In a device as described, a main frame, an oscillating segment, an electric switch, a rock lever actuated by said oscillating segment, and adapted to operate said switch, means for locking said rock lever and means including a pivoted key for releasing said lock mechanism, a ringing circuit and electric switches for controlling same and means for closing said ringing switches by the operation of said key simultaneous with the operation of the lock release mechanism, substantially as specified.

22. In a party telephone selector apparatus, a ringing generator, a battery, line connections, electric switches whereby said generator circuit and line connection will normally be connected, a device for automatically operating said switch whereby the connection between said generator and line connections will be broken and intermittent connections automatically made between said battery and line connections, substantially as specified.

23. In a party telephone selector apparatus, a ringing generator, a battery, line connections, electric switches forming part of the circuit between the generator and line connections, a device for automatically operating said switch whereby the circuit between said generator and line connections will be broken and intermittent connections automatically made between said battery and line connections, and a second manually operated switch intermediate said first named switches and the line connections, substantially as specified.

24. In a party telephone selector apparatus, a source of electric energy for selective apparatus and for ringing circuit, an electric switch normally connected with the source of energy, a device for automatically operating said switch to send separate electric impulses over the line, a second switch intermediate said first named switch and the line and adapted to be manually operated to close the circuit and means to retain said switch in its operated position for an interval of time after the separate impulses have ceased and the first switch returned to normal, whereby the ringing current will be sent over the line, substantially as specified.

25. In a party telephone selector apparatus, a source of electric energy, a switch connected therewith, mechanism for operating said switch to send separate electric impulses, calling line connections and called line connections, switches intermediate the first mentioned switch and the line connections whereby when one switch is closed the impulses will be sent over the called line, and when the other is closed the impulses will be sent over the calling line and means for operating said switches, substantially as specified.

26. In a party telephone selector apparatus, a source of electric energy, calling line connections and called line connections, a switch key movable to different positions and switches operated thereby, an indicator, and an operator's instrument, said key being adapted when in one position to exclude said indicator and include said operator's instrument in the circuit, when in a second position to exclude said indicator and also operator's instrument, and to include an additional source of energy whereby an electric impulse will be sent over the line and when in third position to connect the poles of said source of energy in reverse order whereby an impulse will be sent in reverse direction over the line, substantially as specified.

27. In a party telephone selector apparatus, a source of electric ringing energy, a source of electric energy for operating step-up devices, line connections normally contacting with the source of ringing energy, mechanism adapted to break said contact

and to intermittently close the line connections, and step-up energy, a predetermined number of times, and an additional switch in said line connections, adapted to bring either called or calling line in the circuit substantially as specified.

In testimony whereof, I have hereunto set

my hand this 30th day of January A. D. 1908.

DANIEL W. KNEISLY.

Witnesses:

WILLIS L. TROXELL,

F. L. WALKER.

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