

A. J. CARTER.
 PARTY LINE RINGING KEY.
 APPLICATION FILED AUG. 27, 1913.

1,099,164.

Patented June 9, 1914.

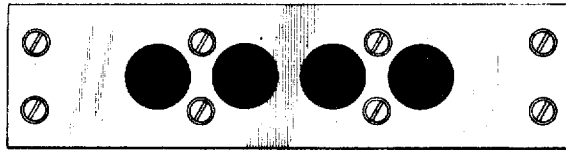


Fig. 4.

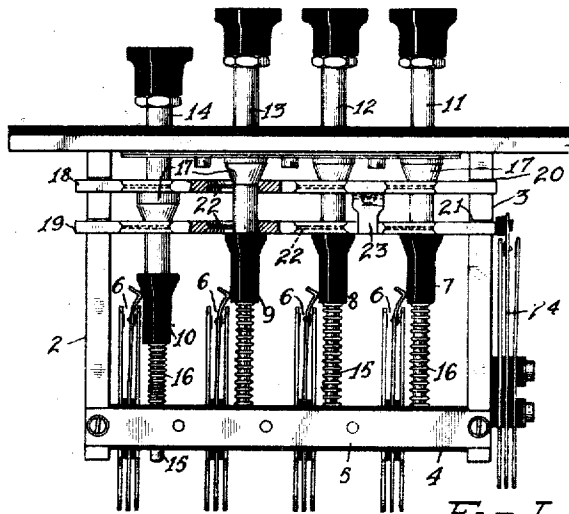


Fig. 1.

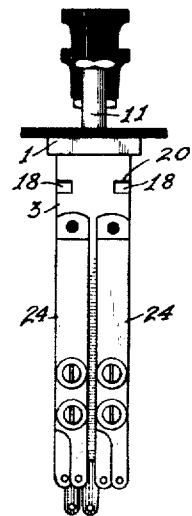


Fig. 3.

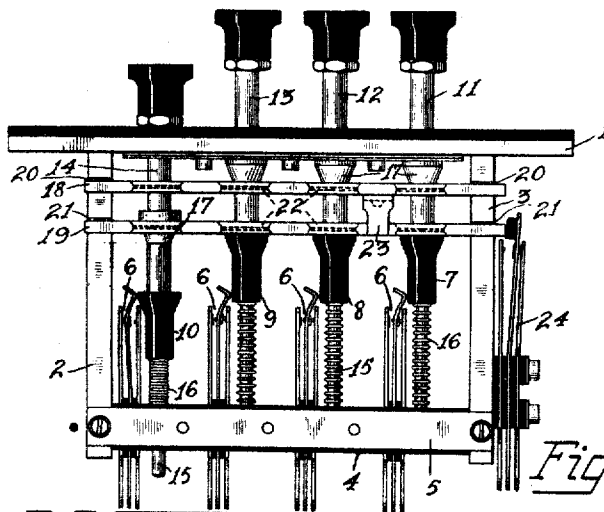


Fig. 2.

Witnesses:
G. E. Mueller
Wm. Berghahn.

Inventor:
Alva J. Carter:
By Curtis Blamp
Attorney

UNITED STATES PATENT OFFICE.

ALVA J. CARTER, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD & SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PARTY-LINE RINGING-KEY.

1,099,164.

Specification of Letters Patent.

Patented June 9, 1914.

Application filed August 27, 1913. Serial No. 786,841.

To all whom it may concern:

Be it known that I, ALVA J. CARTER, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Party-Line Ringing-Keys, of which the following is a specification.

My invention relates to party line ringing keys, and more particularly to those party line ringing keys as used for instance in connection with telephone switchboards.

My improved key is of the indicating type, by which I mean that the key has a plurality of actuating devices so arranged that means in connection with the key will indicate which of the devices had been last actuated. In keys of this general type the plurality of actuating devices may be so manipulated if desired that all of them remain in an indicating position, so that the operator when using the key need only cause a slight further movement of any particular actuating device to connect the ringing current through the key. The keys are sometimes manipulated in this way by the operators in order to reduce the amount of work necessary during the ringing operation; but it is desirable that such manipulation be prevented in order that that particular device remain in an indicating position which has been last actuated. To this end my invention provides positive means by which even though the key is so manipulated that all the actuating means are in an indicating position the further actuation of one device into ringing position will positively restore the remaining actuating devices. In the particular key herein shown the actuating devices take the form of plungers. Of course my invention is not so limited. I will, however, describe this particular form which my invention may take by referring more particularly to the accompanying drawings, illustrating the same, in which—

Figure 1 is a side view of the key constructed in accordance with my invention; Fig. 2 shows the key with one plunger depressed; Fig. 3 is an end view thereof, and Fig. 4 is a top view thereof.

My improved key consists of the face plate 1, to which by means of studs 2 and 3 an insulating plate 4 is held in place between end plates 5—5. The insulating

bridge 4 carries suitable ringing spring combinations 6 which are adapted to be actuated by insulating buttons 7, 8, 9 and 10, carried by plungers 11, 12, 13, and 14. These plungers are reciprocally mounted in the plate 1, and also have projecting pins 15 by means of which they are confined to their oscillating position by the insulating bridge 4. Suitable springs 16 tend to hold these plungers in their uppermost position. The plungers are also provided with sections 17 or stops having herein the general form of truncated cones. These truncated cones are used for two purposes. First, to release other plungers that are in an indicating position, and secondly, to hold the particular plunger used in its indicating position. To accomplish this I provide two sliding plates 18 and 19 respectively, which will slide transversely of the framework, being mounted within grooves 20 and 21 provided therefor in the struts 2 and 3. These plates 18 and 19 each have openings 22—22 therein, shown in full lines in two plates in Fig. 1, and shown in dotted lines in the remaining figures, which openings 22 converge toward the median line of said plates as clearly apparent from the figures. These two plates 18 and 19 are held together by means of a bridge 23 so that these plates move in unison. The plate 19 also actuates suitable controlling springs 24 every time either one of the plungers is depressed into ringing position, as shown in Fig. 2. Now whenever a plunger, say the plunger 14 for instance, is pressed downwardly into position shown in Fig. 2 it will move the plates 18 and 19 to the right to actuate the spring combination 24 and also the spring combination 6. Now when this plunger 14 is released it comes back into the indicating position shown in Fig. 1, whereby the lug 17 rests against the lower face of the plate 18. Now when any other plunger is depressed it moves the plates to the right and releases the plunger 14. Now it is readily conceivable that all four plungers 11, 12, 13 and 14 can be so manipulated by being pushed downwardly simultaneously that all occupy the position of the plunger 14 of Fig. 1. Under these conditions if the plates 18 and 19 were not fastened together the movement of any plunger into ringing position would merely actuate the plate 19 thereby operating the desired switch spring com-

5 bination 6, and also the spring combination
 24, but the plate 18 not being movable under these assumed conditions none of the
 other plungers would be released. In my
 10 present structure, however, I have these
 two plates firmly fastened together by the
 bridge 23 so that should the plungers all
 occupy the position shown for the plunger
 14 in Fig. 1, then if any plunger is further
 15 actuated into ringing position, a movement
 of the plate 19 to the right will also
 move the plate 18 to the right, thereby releasing
 those keys not being at that time operated.
 By thus making the plates 18 and 19
 20 movable together the indicating feature
 of the key is preserved even though the
 plungers have been previously so manipulated
 as to place them all in an indicating position.
 The key thus maintains its indicating
 25 feature which is the important feature
 desired in the operation of a telephone
 exchange. As before stated operators try
 to manipulate keys of this kind so as to reduce
 the actual work necessary to call the party
 and to this end try to manipulate the key
 into the hypothetical position assumed in
 the foregoing description.

30 It must, of course, be remembered that the
 spring combination 24 must be actuated to
 complete the ringing circuit and in order to
 actuate this spring combination 24 the plate
 19 must be positively moved into such position
 as will secure release of the hitherto depressed
 plungers.

35 From what has been described it is
 thought that the nature of my invention will
 be entirely clear and that its advantages will
 be readily apparent.

40 It will also readily appear that the specific
 structure shown herein while serving for
 illustrative purposes does not limit the scope
 of the invention as modifications can be
 readily made without departing from the
 spirit of the invention.

45 Having, however, thus described one form
 which the invention may take, what I claim
 as new and desire to secure by Letters Patent
 is:

50 1. A party line ringing key having a plurality
 of actuating devices, switching mechanism
 under the control of each device, and further
 switching mechanism controllable by either
 device, said devices having a normal position,
 a circuit controlling position and an intermediate
 55 position, and means controllable by a device
 when movable from an intermediate position
 to a circuit controlling position to restore to
 normal position all other actuating devices
 not in normal position.

60 2. A party line ringing key having a plurality
 of actuating devices, switch mechanism under
 the control of each device, further switch
 mechanism controllable by either device, said
 65 devices being movably

mounted to permit movement from a normal
 to a switch controlling position, means for
 holding an actuated device in an intermediate
 position, and means provided for said devices
 to control said first aforesaid means to release
 any held devices, when a device is moved from
 an intermediate position to a switch controlling
 position.

70 3. A party line ringing key having a plurality
 of actuating devices, switch mechanism under
 the control of each device, said devices being
 movably mounted to permit movement from a
 normal to a switch controlling position, means
 for holding an actuated device in an intermediate
 position, and means provided for said devices
 to control said first aforesaid means to release
 any held devices, when a device is moved from
 an intermediate position to a switch controlling
 position.

85 4. A party line ringing key having a plurality
 of plungers, switch mechanism under the control
 of each plunger, further switch mechanism
 controllable by either plunger, said plungers
 being mounted so as to be movable from a
 normal to a switch controlling position, means
 for holding an actuated plunger in an intermediate
 position, and means controlled by each plunger
 to control said first aforesaid means to release
 any intermediately held plungers, when a
 plunger is moved from an intermediate to a
 switch controlling position.

100 5. A party line ringing key having a plurality
 of plungers, switch mechanism under the control
 of each plunger, further switch mechanism
 controllable by either plunger, said plungers
 being mounted so as to be movable from a
 normal to a switch controlling position, a
 reciprocatory plate for holding an actuated
 plunger in an intermediate position, and means
 controlled by each plunger to control said first
 aforesaid reciprocatory plate, to release any
 intermediately held plungers, when a plunger
 is moved from an intermediate to a switch
 controlling position.

110 6. A party line ringing key having a plurality
 of plungers, switch mechanism under the control
 of each plunger, further switch mechanism
 controllable by either plunger, said plungers
 being mounted so as to be movable from a
 normal to a switch controlling position, a
 reciprocatory plate for holding an actuated
 plunger in an intermediate position, and a second
 reciprocatory plate controlled by each plunger
 to control said first aforesaid reciprocatory
 plate, to release any intermediately held
 plungers, when a plunger is moved from an
 intermediate to a switch controlling position.

125 7. A party line ringing key having a plurality
 of plungers, switch mechanism under the control
 of each plunger, further switch mechanism
 controllable by either plunger, said plungers
 being mounted so as to be

movable from a normal to a switch controlling position, a reciprocatory plate for holding an actuated plunger in an intermediate position, and a second reciprocatory plate controlled by each plunger to control said first aforesaid reciprocatory plate, to release any intermediately held plungers when a plunger is moved from an intermediate to a switch controlling position, said plungers each having a conical projection to control said second reciprocatory plate.

8. A party line ringing key having a plurality of plungers, switch mechanism under the control of each plunger, further switch mechanism controllable by either plunger, said plungers being mounted so as to be movable from a normal to a switch controlling position, a reciprocatory plate for hold-

ing an actuated plunger in an intermediate position, and a second reciprocatory plate controlled by each plunger to control said first aforesaid reciprocatory plate, to release any intermediately held plungers when a plunger is moved from an intermediate to a switch controlling position, said plungers each having a conical projection to control said second reciprocatory plate, and said reciprocatory plates being fastened together.

Signed by me at Chicago, county of Cook, and State of Illinois, in the presence of two witnesses.

ALVA J. CARTER.

Witnesses:

GEORGE E. MUELLER,
B. O'BRIEN.

DISCLAIMER.

1,099,164.—*Alva J. Carter*, Chicago, Ill. PARTY-LINE RINGING-KEY. Patent dated June 9, 1914. Disclaimer filed January 20, 1915, by the assignee *Kellogg Switchboard and Supply Company*.

Enters this disclaimer to ~~claims~~ 1, 2, 3, 4, and 5 of said patent.

[*Official Gazette*, January 26, 1915.]