No. 624,075. Patented May 2, 1899.

# J. M. OVERSHINER.

## TELEPHONE SWITCHBOARD.

(Application filed Dec. 17, 1897.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

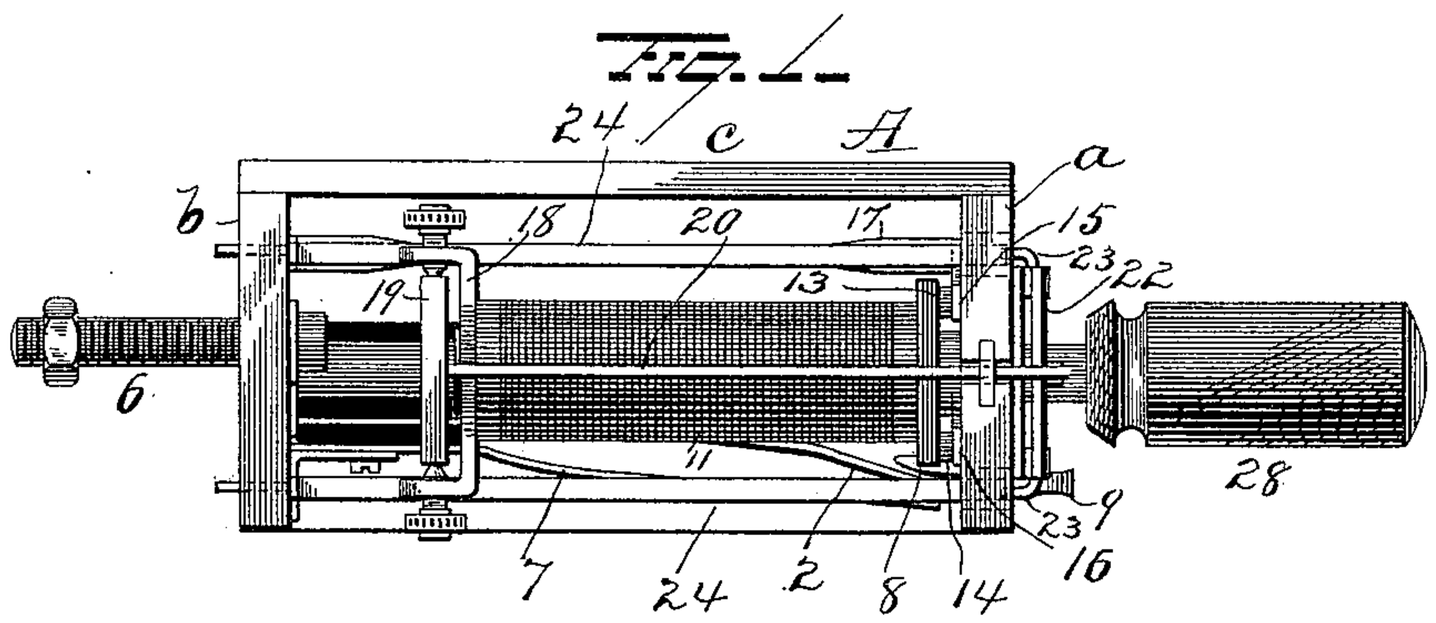



FIG. 2.

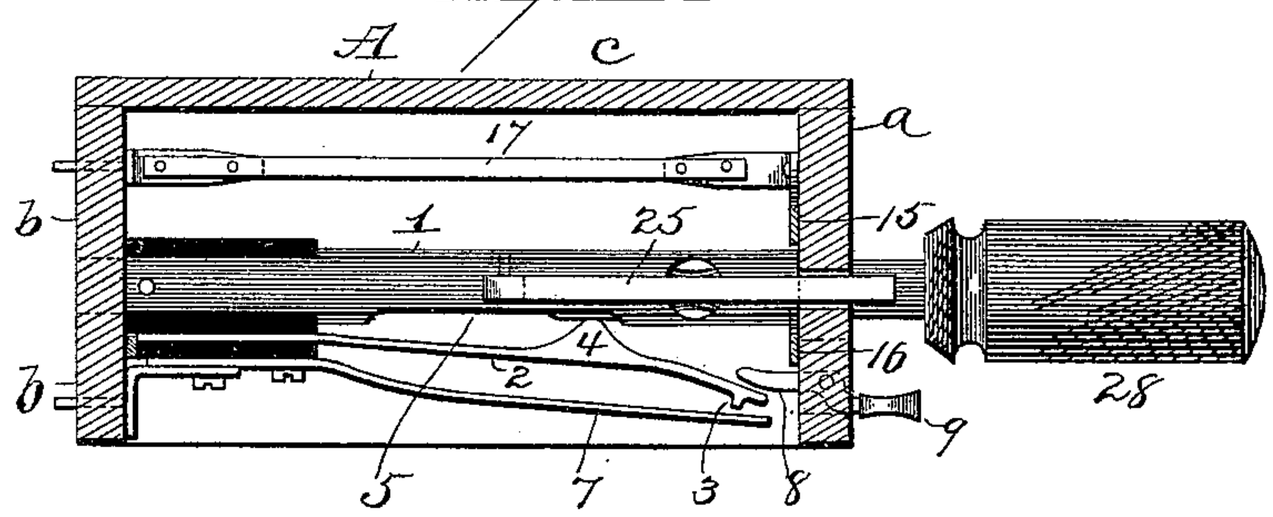



FIG. 3.

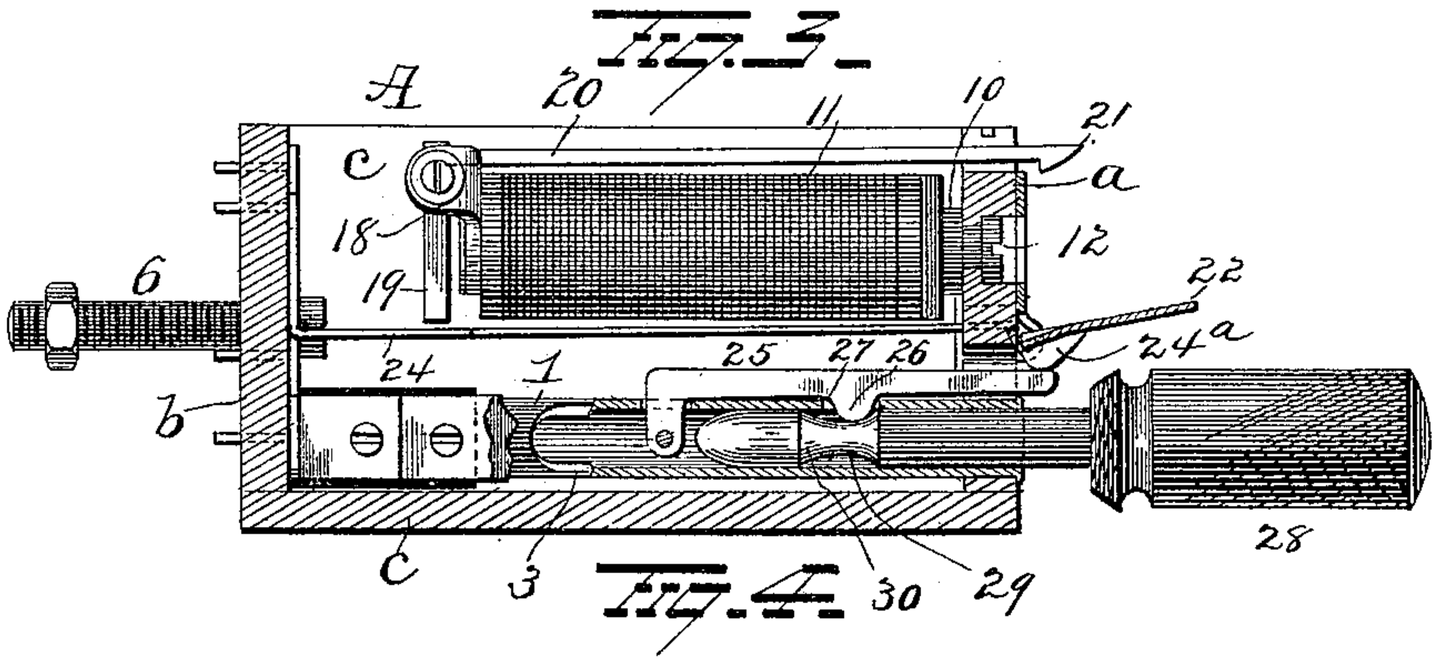
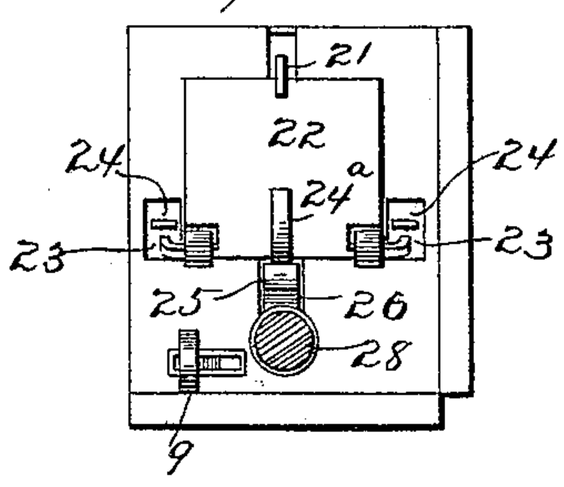



FIG. 4.

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## TELEPHONE SWITCHBOARD.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

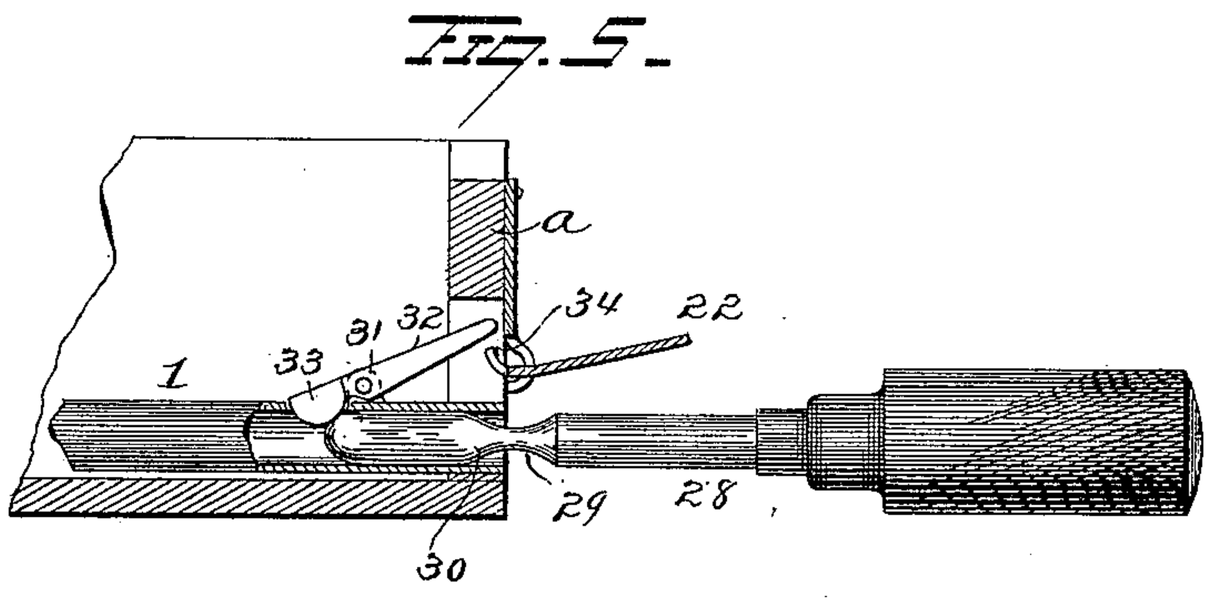



Fig. 9.

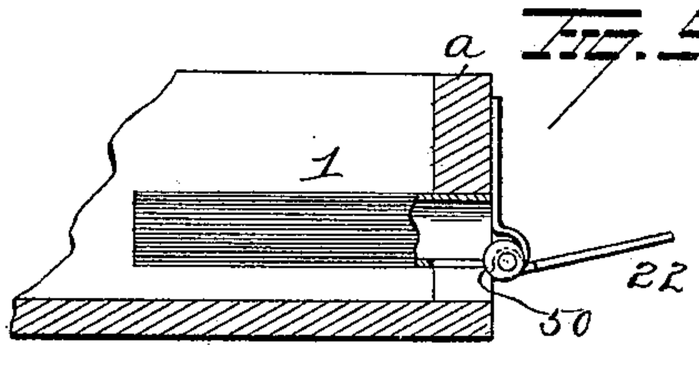



Fig. 7.

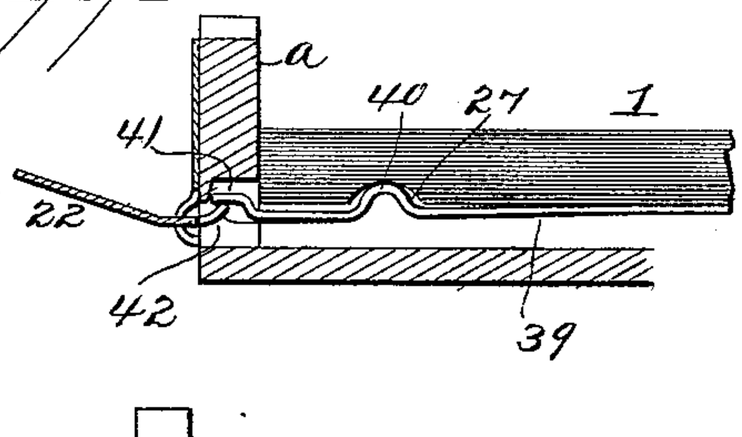



Fig. 6.

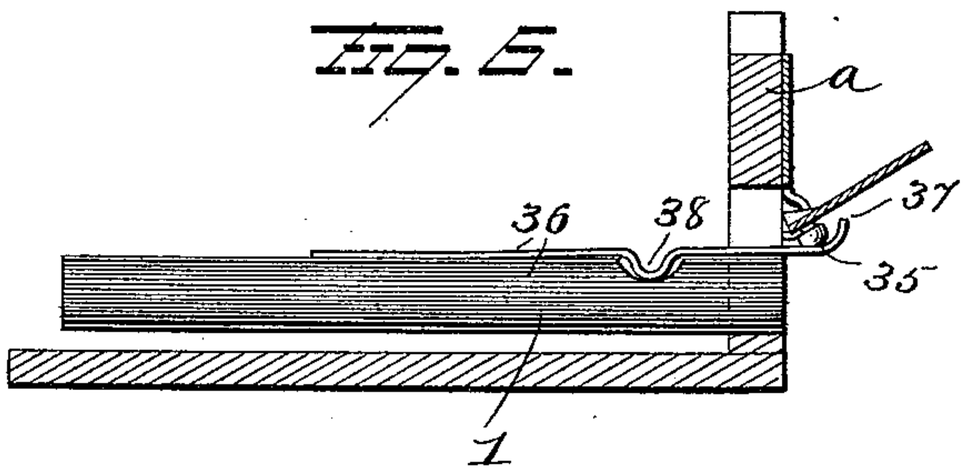
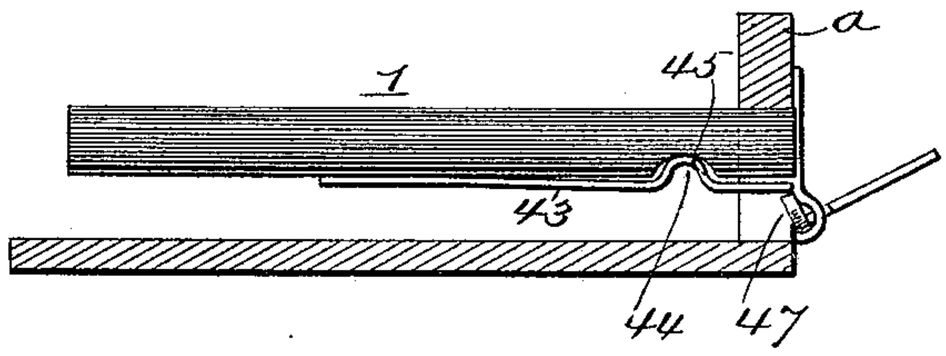



Fig. 8.

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# UNITED STATES PATENT OFFICE.

JAMES M. OVERSHINER, OF ELWOOD, INDIANA.

## TELEPHONE-SWITCHBOARD.

SPECIFICATION forming part of Letters Patent No. 624,075, dated May 2, 1899.

Application filed December 17, 1897. Serial No. 662,301. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. OVERSHINER, of Elwood, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Telephone-Switchboards; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in telephone-switchboards, one object of the invention being to provide simple and efficient means whereby to effect the restoration of the annunciator-drop to the latch devices by the insertion of the plug into the jack and also by the withdrawal of the plug from the jack.

A further object is to provide simple and efficient means for manipulating the signaling-circuit without danger of creating a noise in the telephone of the calling subscriber.

A further object is to improve the construction and arrangement of the drop and switch devices of a telephone-switchboard.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view. Fig. 2 is a bottom plan view. Fig. 3 is a longitudinal sectional view. Fig. 4 is an end view. Figs. 5, 6, 7, 8, and 9 are views illustrating modifications.

A represents a frame comprising end blocks *a b* and connecting plates or strips *c*, all of which are made, preferably, of hard rubber or other non-conducting material. A jack-socket 1 is secured within the lower portion of the frame A and made to communicate with a hole in the front end block *a* to permit the insertion of a switch-plug thereinto. A spring contact-arm 2 is secured to the rear block *b* of the frame, alongside the jack-socket and insulated therefrom. The spring 2 is provided at its free end with a contact-finger 3, and at a point between its ends said spring is made with a tooth or projection 4, adapted to normally bear against the walls of a slot or recess 5 made in the jack. The rear end of the spring 2 is electrically connected with a screw 6, by means of which latter the frame and parts supported thereby are secured to the back or support of the board and to which screw the subscriber's line-wire is connected. Another contact-spring 7 is secured in the frame A, so that its free end will terminate normally in proximity to the contact-finger 3 of spring 2, and the said contact-spring 7 is included in circuit with a suitable generator for signaling purposes. A small lever 8 is pivotally supported in a slot in the front block *a* of the frame and provided with a thumb or finger button 9, disposed to one side of the jack, the forward end of said lever being made to terminate behind the block *a* and between the jack and the contact-spring 2. Thus when the operator places a plug in the jack of the line of a subscriber to be called said plug will engage the tooth 4 on spring 2 and connect the subscriber's line in circuit. The operator will (while she still has hold of the handle of the plug) press the button of lever 8 with the thumb of her right hand, and thus move the contact-finger of spring 2 into electrical contact with the spring 7, thereby closing the signal-circuit and simultaneously opening the circuit through the cord and line of the calling subscriber by moving the spring 2 away from the plug and jack-socket.

The core 10 of an electromagnet 11 is secured to the front block *a* of frame A by means of a screw 12. The terminals of the coil of said magnet are connected with contact-points 13 14, secured to the head of the magnet-spool. Contact-plates 15 16 are disposed against the inner face of block *a* of frame A, so that when the screw 12 is tightened the magnet will be drawn toward the block *a* and the points 13 14 brought intimately into electrical contact with the plates 15 16, and thus connect the coil of the magnet in circuit. The plate 15 is connected with a conductor 17, while the plate 16 is electrically connected with the jack-socket. From this arrangement it will be seen that when the plug is inserted into the jack and the lever 8 moved, as above explained, to move the spring 2 away from the jack and into contact with the spring 7 the electromagnet will be open-circuited while the signal-circuit is closed, and thus the drop which is controlled by said magnet will not be released during the operation of signaling the subscriber.

A bracket 18 is secured to the rear end of the magnet and serves as a support for a depending armature 19. A latch-arm 20 is secured to the upper end of the armature and projects forwardly and beyond the block *a* of frame A, terminating in a hook 21 to engage the upper end of the annunciator-drop 22, said drop being hinged at its lower edge at a point in proximity to the jack-socket, preferably above the same.

The hinge-pin of the drop is preferably provided at its respective ends with toes or cranks 23, which when the drop falls will be turned upwardly, as the hinge-pin rocks, into electrical contact with conductors 24 24, which are included in circuit with a night-bell.

The drop 22 is provided on its outer face, at its lower edge, with a cam or enlargement $24^a$ to be engaged by the end of an arm 25, the latter being pivotally supported by the jack and adapted to project through an opening in the block *a* of frame A. The pivoted arm 25 is provided at a point between its ends with a curved enlargement 26, adapted to depend through a hole 27 in the top of the jack, so as to be engaged by the plug 28 when the latter is inserted into the jack. The plug 28, it will be observed, is made with a rounded end, although this is not essential. The said plug is also made with a recess 29, preferably having its forward face 30 beveled or curved, as shown in Figs. 3 and 5, and this recess is an important feature of my invention.

The weight of the arm 25 will maintain the enlargement 26 normally in the hole in the jack, so that it will be in the path of the plug when the latter is inserted into the jack. When a subscriber calls and the drop falls, the enlargement or cam 24 will rest upon the arm 25. As the operator inserts the plug into the jack the end of said plug will engage the enlargement 26 on arm 25, and thus raise said arm, which, acting upon or pressing against the cam or enlargement 26, will raise the drop and restore it to its latch device. When the plug shall have been fully inserted into the jack, the recess in the plug will be in line with the hole 27 in the jack, so that the arm 25 will be permitted to fall to its normal position, the enlargement on said arm entering the recess in the plug. Now when the subscribers "ring off" the drop can again fall while the plug is in the jack. When the operator withdraws the plug from the jack, the face 30 of the recess 29 in said plug will engage the enlargement 26 on the arm 25 and again raise said arm, resulting in restoring the drop by coöperation with the cam or enlargement thereon, as above explained.

In the form of the invention shown in Fig. 5 the jack is provided with ears 31, between which an arm or lever 32 is pivotally supported at a point between its ends. The rear end of the lever 32 is preferably weighted, as at 33, and adapted to enter the hole in the jack, so as to be in the path of the plug. The drop is provided at its lower edge (preferably centrally between the ends thereof) with a toe 34, which when the drop falls moves into the path of the lever 32. Thus when the plug is inserted into the jack it will engage the weighted end of the lever 32 and turn said lever on its fulcrum, causing the other end thereof to engage the toe 34 on the drop and restore the latter to the latch device. When the plug shall have been fully inserted into the jack, the recess in said plug will permit the weighted end of the lever 32 to again fall and allow the drop also to fall while the plug is in the jack. When the plug is withdrawn, the wall or face 30 of the recess 29 will again engage the projection or weighted end of the lever and turn the same to restore the drop, as above explained.

In the form of the invention shown in Fig. 6 the drop is provided at its lower edge with a cam 35, and the arm or lever which coöperates therewith and with the recessed plug is made in the form of a spring 36, one end of which is secured to the jack and the other end provided with a lip 37 to engage the cam on the drop, the intermediate portion of said spring arm or lever being provided with an enlargement 38, which projects through the hole in the jack, so as to be operated by the plug which is inserted into the jack or withdrawn therefrom.

In the form of the invention shown in Fig. 7 the drop is located to one side of the jack instead of above it, as shown by the forms hereinbefore referred to, and the hole 27 in the jack is made in the bottom instead of the top thereof. A spring arm or lever 39 is secured at one end under the jack and provided between its ends with a projection 40 to enter the hole 27, so as to be normally in the path of the plug. The free end of the spring arm or lever 39 is provided with a laterally-projecting finger 41, adapted to engage a lip 42 on the drop, so as to restore the same when the free end of said spring arm or lever is depressed by the insertion of the plug into or its withdrawal from the jack.

In the form of the invention shown in Fig. 8 the drop and jack are disposed side by side and the spring arm or lever 43 is disposed below the jack, so that the projection 44 thereon will normally enter the hole 45 in the bottom of the jack. The free end of the spring arm or lever 43 projects into a slot in the block *a* of frame A and is adapted when depressed to engage a curved toe 47, projecting from the hinge-pin or the drop or laterally from the lower end of the drop. It is apparent that when the recessed plug is inserted into or withdrawn from the jack (while the drop is down) the spring-lever 43 will be depressed and coöperate with the toe 47 on the drop to restore the latter.

In the form of the invention shown in Fig. 9 the drop and jack are located side by side and the hinge-pin of the drop is secured thereto. Said hinge-pin is extended at one end so as to terminate at or near the lower

edge of the jack, where it is provided with a cam-shaped arm 50. When the drop falls, the cam-shaped arm 50 will become disposed in the path of the plug as the latter enters the jack, so that when the plug is inserted into the jack it will engage said cam-shaped arm and turn it, thereby turning the hinge-pin of the drop and restoring the latter to the latch device. With this form of the invention the plug is inserted into the jack to such extent that when it shall have been fully inserted, so as to engage the tooth on the switch-arm 2, the recess in the plug will be over the cam-shaped arm 50, and thus permit the drop to fall while said plug is in the jack. Now when the plug is withdrawn the face of the recess in the plug will engage the cam-shaped arm 50 and restore the drop in an obvious manner.

My improvements are simple in construction and effectual in all respects in the performance of their functions.

Various other changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with an annunciator-drop and a jack, of an arm intermediate of the drop and jack and adapted to coöperate with the drop and a plug to enter the jack and coöperate with the said arm, whereby to restore the drop, substantially as set forth.

2. The combination with a drop and a jack, of an arm arranged to be connected with the drop, and a plug to enter the jack and engage said arm to restore the drop, substantially as set forth.

3. The combination with a drop and a jack, of an arm adapted to be connected with the drop, a portion of said arm to be disposed in the path of the plug which enters the jack, and a plug to coöperate with said arm and restore the drop when the plug is moved in the jack, substantially as set forth.

4. The combination with a drop and a jack, of a plug to enter the jack and having a recess, and an arm intermediate of the drop and jack and adapted to coöperate with the recessed plug to restore the drop when the plug is inserted into the jack and also when it is withdrawn therefrom, substantially as set forth.

5. The combination with a drop and a jack, of an arm adapted to be connected with the drop, a projection on said arm to enter the jack and a plug to be inserted into the jack and engage said projection whereby to move the arm and restore the drop, substantially as set forth.

6. The combination with a drop and a jack, of an arm adapted to be connected with the drop, a projection on said arm adapted to enter the jack and a recessed plug adapted to enter the jack and move said arm when said plug is inserted into the jack and also when it is withdrawn therefrom, substantially as set forth.

7. The combination with a drop and a jack, of a projection on the drop, an arm adapted to engage said projection, a projection on the arm to enter the jack and a plug to enter the jack and engage the projection on the arm, whereby to move the latter and restore the drop, substantially as set forth.

8. The combination with a drop and a jack, of a projection on the drop, an arm intermediate of the drop and jack and adapted to coöperate with said projection to restore the drop when said arm is moved in one direction, a projection on the arm to enter the jack, and a plug to enter the jack and having a recess to receive the projection on the arm, whereby the arm will be moved by the plug and the drop restored when the plug is inserted into the jack and also when it is withdrawn therefrom, substantially as set forth.

9. The combination with a drop and a jack, the latter having a hole therein, and a projection on the drop, of an arm or lever adapted to engage said projection, a projection on the arm or lever adapted to enter the hole in the jack, and a recessed plug adapted to enter the jack and coöperate with said projection on the arm or lever, whereby to move the latter so as to restore the drop when the plug is inserted into the jack and also when it is withdrawn therefrom, substantially as set forth.

10. The combination with a drop, a cam or projection thereon and a jack having a hole in the wall thereof, of an arm or lever pivotally supported at one end and having a projection to enter the hole in the wall of the jack, the free end of said arm or lever being disposed to coöperate with the cam or projection on the drop and a plug to enter the jack and having a recess to receive the projection on the pivoted arm or lever, whereby when the plug is inserted into the jack it will engage the projection on the pivoted arm or lever and restore the drop, then permit the projection on the pivoted arm or lever to enter the recess in said plug and the drop to fall, and then again move said pivoted arm or lever to restore the drop when the plug is withdrawn from the jack, substantially as set forth.

11. The combination with a jack-socket, of a spring-arm normally in contact with said jack-socket, a second spring normally out of contact with the first spring, a pivoted lever in proximity to the jack-socket and adapted to engage the first-mentioned arm, whereby to move it away from the jack-socket and into contact with the second spring, substantially as and for the purpose set forth.

12. The combination with a jack, and drop devices, of a contact-spring normally in contact with the jack, a second contact-spring normally out of contact with the first-mentioned contact-spring, means for including the

magnet of the drop devices in circuit with the jack, and a lever in proximity to the jack and adapted to move the first-mentioned spring away from the jack and into contact with the second contact-spring, substantially as set forth.

13. The combination with a jack having a slot, and electromagnetic drop devices included in circuit with the jack, a contact-spring having a projection to enter the slot in the jack, a plug to enter the jack and engage the projection on said contact-spring, a second contact-spring normally out of contact with the first-mentioned contact-spring, and a pivoted lever adapted to engage the first-mentioned contact-spring and move it in contact with the second contact-spring, substantially as set forth.

14. The combination with a frame comprising two blocks spaced apart, of contact-plates on one of said blocks, an electromagnet, contact-points on one end of said magnet and connected with the terminals of the coil thereof, a screw passing through the block and entering the magnet whereby to support the latter and press the contact-points on the magnet against the contact-plates on the block, a drop and a latch for said drop connected with the armature of said magnet, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES M. OVERSHINER.

Witnesses:
A. V. OVERSHINER,
MINNIE SMITH.