

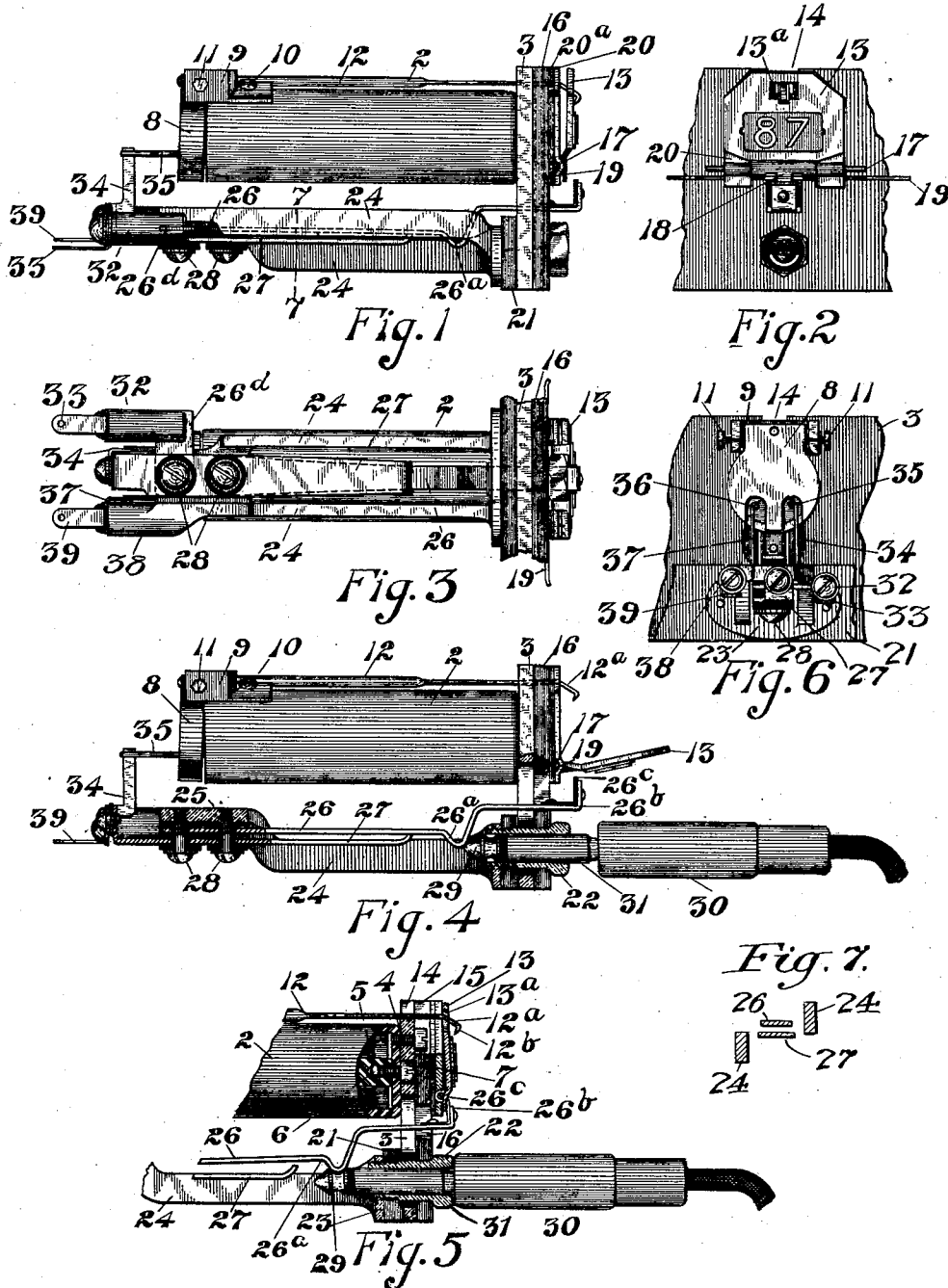
No. 697,515.

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K. B. MILLER.
COMBINED JACK AND DROP.

(Application filed Nov. 8, 1901.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

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COMBINED JACK AND DROP.

SPECIFICATION forming part of Letters Patent No. 697,515, dated April 15, 1902.

Application filed November 8, 1901. Serial No. 81,547. (No model.)

To all whom it may concern:

Be it known that I, KEMPSTER B. MILLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in a Combined Jack and Drop, (Case No. 50,) of which the following is a specification.

My invention relates to improvements in a combined jack and drop, and more particularly to the self-restoring type.

In the accompanying drawings, which illustrate this specification, Figure 1 is a side view of the combined drop and jack. Fig. 2 is a front view of the same. Fig. 3 is a bottom plan view of the device. Fig. 4 is a side elevation of the same, showing the jack, part in section and with the plug in position about to engage the contact-spring. Fig. 5 is a detail view showing the front part of the device in section and with the plug inserted. Fig. 6 is a rear elevation; and Fig. 7 is a cross-section on the line 7 7, Fig. 1, showing the relative positions of the side bars of the jack-frame.

In the figures the numeral 2 designates the shell of the magnet, which is secured at its inclosed end to the rear face of a supporting-plate 3, preferably brass, by means of a screw 4. (See Fig. 5.) The spool 5 or magnet-coil is located within this shell upon the core 6, which is secured to the shell 2 by means of a screw 7, the head of said screw being adapted to fit within a suitable aperture in the plate 3, and thus acting to steady the shell 2 and hold it in proper position. At the other end of the shell 2 the armature 8 is pivoted at its upper edge in a support 9, secured by screws 10 to the shell 2, and pivot-screws 11 extend through suitable lugs formed on the support 9 to engage the said armature. The shutter-hook 12 is secured at its rear end to the upper edge of the armature 8 and extends forward to the drop 13. A notch 14 is provided in the supporting-plate 3 and a similar notch 15 in the insulating-plate 16, secured to the front face of the plate 3, in which the forward end of the hook normally rests and is adapted to vibrate. The forward end of the hook is

bent downwardly, as at 12^a, and extends through an aperture 13^a near the upper edge of the drop 13. It is further provided with a catch 12^b at its extreme end, which is adapted to engage the drop at the lower edge of said aperture. The drop is pivoted upon the pin 17 at its lower edge and carries a downwardly-extending projection 18, which is adapted to engage the night-bell wire 19 to close the circuit of the night-bell or pilot-signal when the drop falls, as shown in Fig. 4. The pin 17 is secured in position by the drop-supporting plate 20, which is secured to the front face of the insulating-plate 16, but spaced away from the same slightly by the insulating-block 20^a, the night-bell conductor 19 being supported near the front face of the plate 16.

The plates 3 and 16 extend below magnet 2 and carry the jack structure. Upon the rear face of plate 3 is secured a narrow insulating-plate 21. At the rear of this plate the jack-frame is secured, and it is held in place by means of a sleeve 22, passing through the plates 3, 16, and 21 and threading into the front bar 23 of the jack-frame, thus clamping the frame and bar 21 in position. The plate 3 is of course insulated from the sleeve 22, as shown. This frame comprises rearwardly-extending side pieces 24 24, one above the level of the other, as shown in Fig. 7, which are connected at their rear ends by the horizontal portion 25, to the lower side of which portion the springs 26 and 27 are secured. A strip of insulation is placed between the spring 26 and the portion 25 of the jack-frame and another between the two springs, while insulating-bushings surround the screws 28, which screws are adapted to firmly secure the said springs to the portion 25. The spring 26 is connected with the tip side of the line and at its forward end is provided with a bend 26^a, with which the tip 29 of the connecting-plug 30 is adapted to engage when the plug is inserted in the jack sleeve or ring 22. The free end of the spring extends forwardly through suitable apertures in the plates 3 and 16 and is bent upwardly at 26^b in front of the device. A connecting-plug 30 is provided

with a sleeve-contact 31, which makes electrical contact with the sleeve 22 of the jack. When the plug is inserted in the jack, the tip 29 thereof engages the spring 26 at the bend 5 26^a and lifts the same to cause the upwardly-extending portion 26^b to strike the drop or shutter 13 and to restore the same to normal position, as shown in Fig. 5. A strip of insulation 26^c may be secured to the part 26^b. 10 The spring 26 has at its rear end a laterally-deflected portion 26^d, Fig. 3, which connects with the binding-post 32 and terminal 33, with which the tip side of the subscriber's line is adapted to be connected. The lower spring 15 27, which normally engages with the spring 26, is extended at its rear end and is connected with a terminal 34, which makes contact with one of the magnet-terminals 35, the other magnet-terminal 36 being connected by 20 means of a small conductor 37 with the binding-post 38 and terminal 39, the latter also connecting with the jack-frame and through it with the sleeve 22. The plug-conductors are adapted to connect, respectively, with the tip 29 and sleeve 31 of the plug in the usual way. 25

The electrical circuits of the device may be traced from the tip-terminal 33 through the tip-spring 26, local spring 27, conductor 34, magnet-terminal 35, through the magnet-coil and out through the terminal 36, conductor 37, binding-post 38, and terminal 39, by reason of which when a calling-current comes in over the line the magnet is operated to attract its armature 8, which lifts the lever 12, thus permitting the drop or shutter 13 to fall. 35 The operator upon seeing the signal or hearing the night-bell inserts the connecting-plug 30. The tip of the plug engages the spring 26 and lifts the same to restore the drop and 40 to open the circuit through the local spring 27. The line-circuit is now extended through the tip-spring and tip-contact of the plug on one side and through the frame of the jack which corresponds to the sleeve side of the 45 line and the sleeve-contact of the plug on the other side, and the magnet is cut out. At the termination of the conversation the plug may be withdrawn while the drop remains in its restored position.

50 By the terms "frame" and "supporting-strip" hereinafter used I mean to include any suitable part or combinations of parts that will accomplish the results sought.

Having described my invention, what I 55 claim is—

1. In a combined jack and drop, a suitable frame, a sleeve mounted on the frame, a contact-spring carried by and insulated from the frame and adapted to be engaged by the plug 60 when it is inserted in the sleeve, and a drop, said spring being constructed and arranged to engage and restore the drop when the plug is inserted in the jack, substantially as described.

65 2. In a combined jack and drop, a suitable support, a contact-spring mounted upon and insulated from the support and forming a

line-terminal of the jack, and a drop also mounted upon the support, said spring being formed to engage and restore the drop when 70 a plug is inserted in the jack, substantially as described.

3. The combination with a suitable frame, of a tip-contact spring mounted thereon, a 75 local spring with which said tip-spring normally engages, a drop-actuating magnet, the circuit of said magnet being normally completed through said springs, a drop, and a connecting-plug having a tip-contact adapted 80 to engage the tip-spring to separate said springs and open the circuit through said magnet, said tip-spring being arranged to restore the drop upon the insertion of the plug, substantially as described.

4. In a combined jack and drop, the combination with a suitable supporting-frame- 85 work, of a drop-actuating magnet and a drop carried thereon, a line-spring mounted upon and insulated from said framework and having a forwardly-extending end adapted to 90 engage and restore the drop when a plug is inserted in the jack, a local spring also carried by and insulated from said framework, the said line-spring being adapted to normally engage said local spring and to there- 95 by close the circuit through the said magnet, whereby when the plug is inserted in the jack the circuit through the magnet is opened and the drop restored by the line-spring, substantially as described. 100

5. The combination with a drop-actuating magnet and a drop, of a jack having a line-spring and a local spring mounted upon and insulated from the jack structure, said springs being normally in engagement and serving 105 to complete the line-circuit through the drop, said line-spring having an extended and upturned end to engage the drop when lifted, and a connecting-plug adapted to engage and lift said line-spring when inserted in the jack, 110 whereby the drop is restored and the magnet cut out, substantially as described.

6. In a combined jack and drop, a suitable support, a contact-spring mounted upon and insulated from the support and forming a line- 115 terminal of the jack, said spring having a forwardly-extending and upturned end and a strip of insulation mounted upon said end, and a drop adapted to be engaged by said insulated upturned end and to be restored 120 thereby when a plug is inserted in the jack, substantially as described.

7. In a combined jack and drop, the combination with a contact-spring forming one terminal of the jack, of a drop, and means 125 actuated by said spring for restoring the drop when a plug is inserted in the jack, substantially as described.

8. In a combined jack and drop, the combination with a drop, of a contact-spring 130 forming one terminal of the jack and having an extension to engage and restore the drop when a plug is inserted in the jack, substantially as described.

9. In a combined jack and drop, the combination with a drop, of a contact-spring forming one terminal of the jack, of a sleeve forming another terminal of the jack, said spring having an extension to engage and restore said drop when a plug is inserted in the jack, substantially as described.

10. The combination with a jack and drop structure having a drop, a contact-spring forming one terminal of the jack, a sleeve forming another terminal of the jack, of a connecting-plug adapted to be inserted in the jack and having contacts to cooperate respectively with the terminals of the jack, and means controlled by said spring to restore the drop upon the insertion of the plug into the jack, substantially as described.

11. The combination with a jack and drop structure having a drop, a contact-spring forming one terminal of the jack, a sleeve forming another terminal of the jack, and a connecting-plug adapted to be inserted in the jack and having contacts to cooperate respectively with the terminals of the jack, said spring having an extension to engage and restore the drop when the plug is inserted in the jack, substantially as described.

12. A metallic-line drop and jack, comprising a framework, a sleeve mounted thereon, said framework and sleeve being connected with one side of the metallic line, a contact-spring mounted upon, but insulated from said framework and connected with the other side of the metallic line, a normal contact for the spring, a drop-actuating magnet having its winding connected on one side with said framework and the other with said normal contact, a drop, said spring having an extension, and means actuated by said extension for restoring the drop when a plug is inserted in the jack, substantially as described.

13. A metallic-line drop and jack, comprising a framework, a sleeve mounted thereon, said framework and sleeve being connected with one side of the metallic line, a contact-spring mounted upon, but insulated from said framework and connected with the other side of the metallic line, a normal contact for the spring, a drop-actuating magnet having its winding connected on one side with said framework and the other with said normal contact, and a drop, said spring having a forwardly-projecting end to engage and restore the drop when a plug is inserted in the jack, substantially as described.

14. In a combined jack and drop, the combination with a front plate, of a drop mounted upon said plate, and a contact-spring forming one terminal of the jack, said spring being extended through an aperture in said front plate to engage said drop and restore the same when a plug is inserted in the jack, substantially as described.

15. In a combined jack and drop, the combination with a front plate, of a drop mounted upon said plate, and a contact-spring forming

one terminal of the jack, said spring being extended through an aperture in said front plate and having an upturned end to engage and restore the drop when a plug is inserted in the jack, substantially as described.

16. In a combined jack and drop, the combination with a front plate, of a drop mounted upon said plate, and a contact-spring forming one terminal of the jack, said spring being extended through an aperture in said front plate and having an upturned end to engage and restore the drop when a plug is inserted in the jack, said forward and upturned end having an insulating-covering, substantially as described.

17. In a combined jack and drop, the combination with a front plate or support having a jack-socket therein and an aperture above the socket, of a jack-frame secured to the rear face of the front plate or support, a drop pivoted above the said aperture upon said plate or support, and a contact-spring mounted upon and insulated from the frame and forming one terminal of the jack, said spring having a contact portion disposed in line with said socket and a drop-actuating portion extending above said socket and through said aperture, substantially as described.

18. In a combined jack and drop, the combination with a supporting-strip, of a jack-frame comprising a pair of side pieces and front and rear bars joining them, the said front bar being placed against the rear face of the supporting-strip, a sleeve extending through the said supporting-strip and front bar to secure the said frame to the strip, said sleeve forming the jack-opening, a contact-spring forming one terminal of the jack mounted upon and insulated from said rear bar and having a contact portion disposed in line with said sleeve, the forward end of said spring being extended over said sleeve, and a drop adapted to be restored by said extended end when a plug is inserted in the jack, substantially as described.

19. In a combined drop and jack, the combination with a support, of a drop pivoted upon the face of said support, a drop-actuating magnet secured to the rear face of said support, a jack-frame also secured to the rear face of the support, a sleeve extending through the support and into said frame and forming a terminal of the jack, and a contact-spring mounted upon and insulated from said frame and forming the other terminal of the jack, said spring being extended forward over the sleeve and through the support to engage and restore the drop when a plug is inserted in the sleeve, substantially as described.

Signed by me, at Chicago, county of Cook, State of Illinois, this 4th day of November, 1901.

KEMPSTER B. MILLER.

Witnesses:

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JOSEPH C. BELDEN.