

No. 790,103.

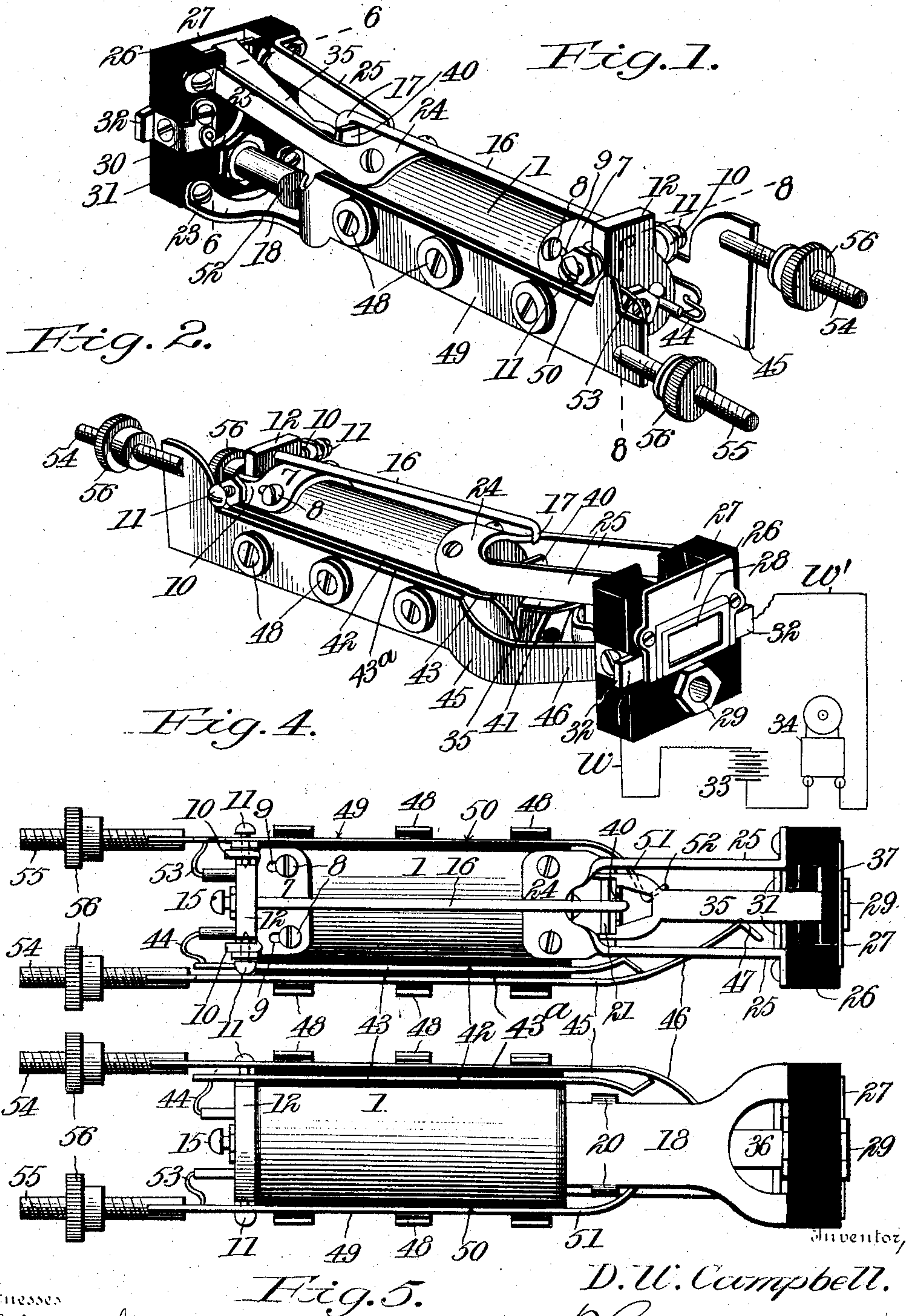
PATENTED MAY 16, 1905.

D. W. CAMPBELL.

COMBINED ANNUNCIATOR AND JACK FOR TELEPHONES.

APPLICATION FILED JULY 25, 1903.

2 SHEETS—SHEET 1.



Witnesses

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Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 3.

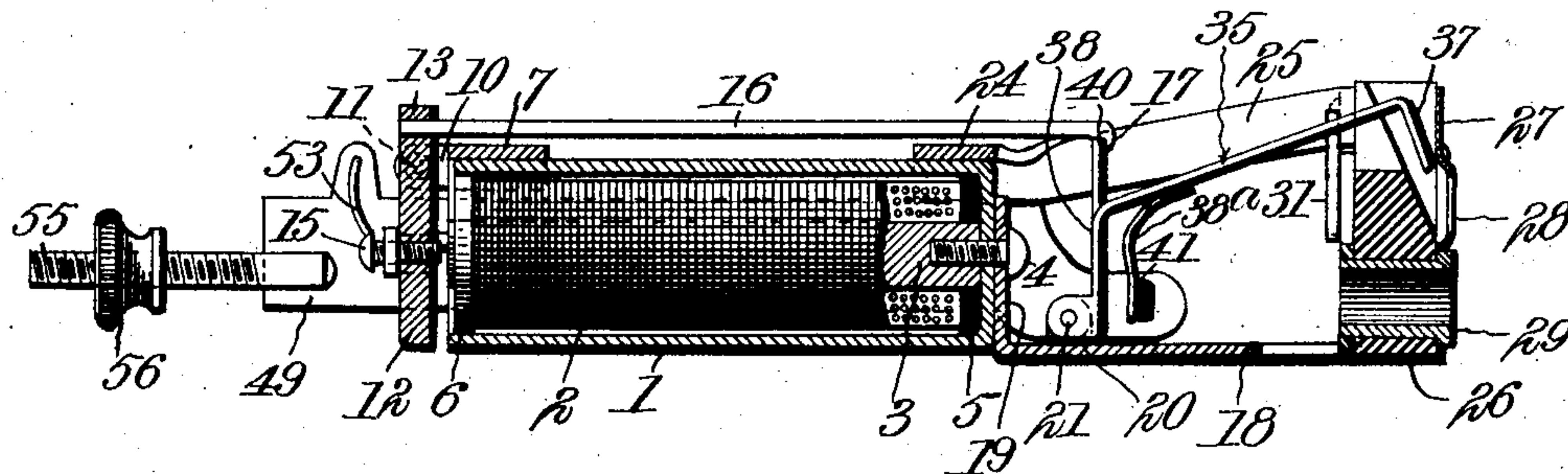


Fig. 6.

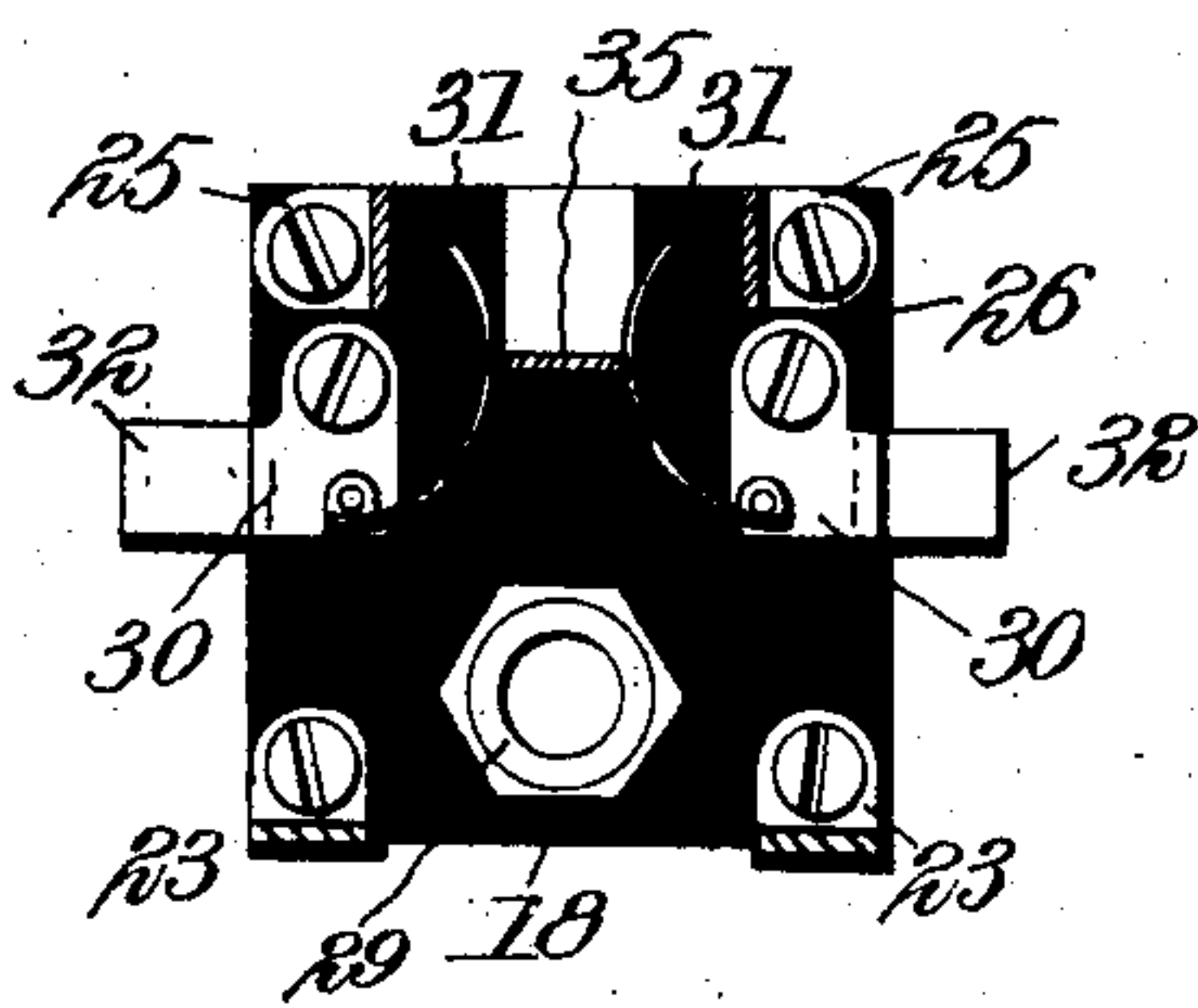


Fig. 7.

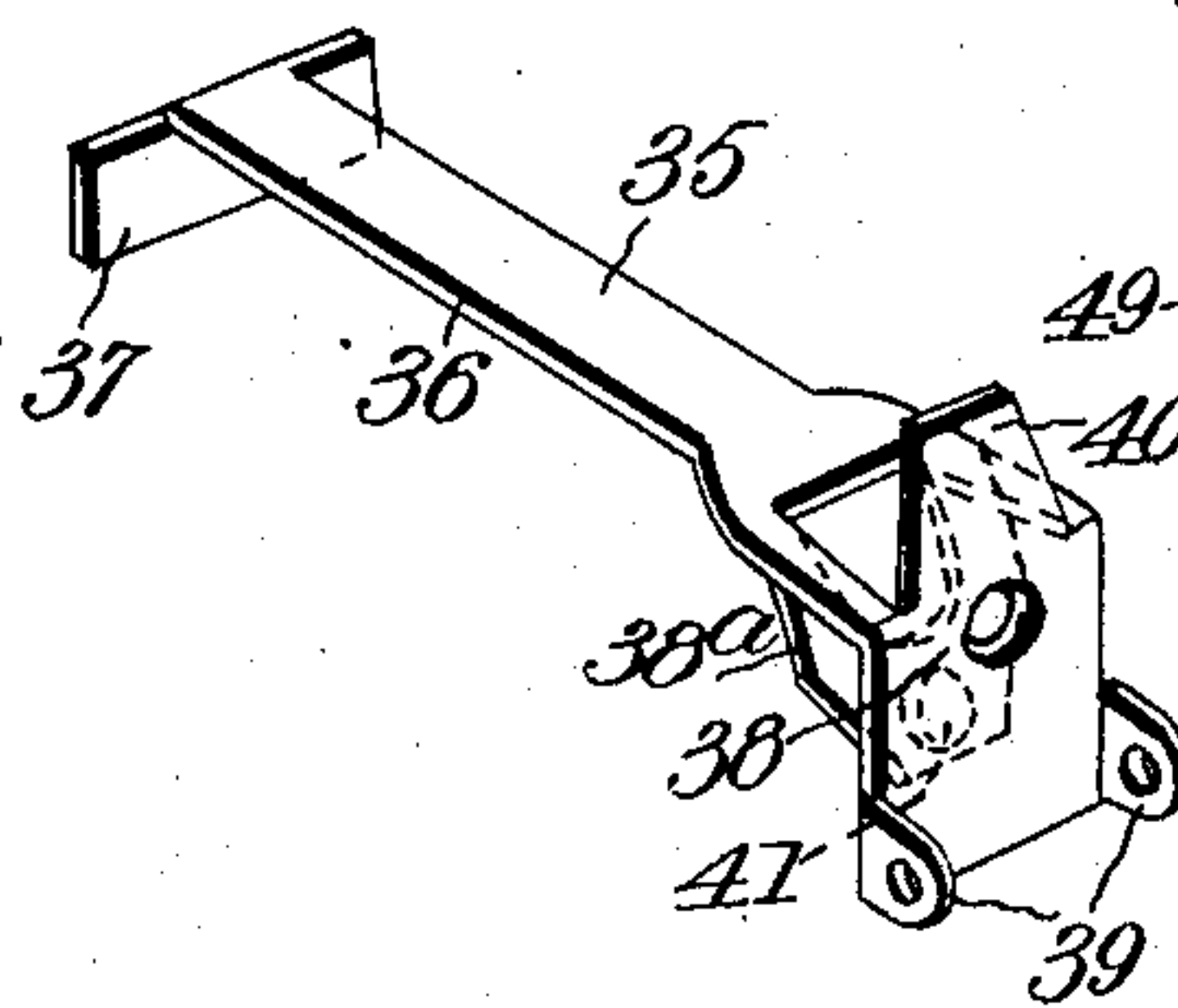


Fig. 8.

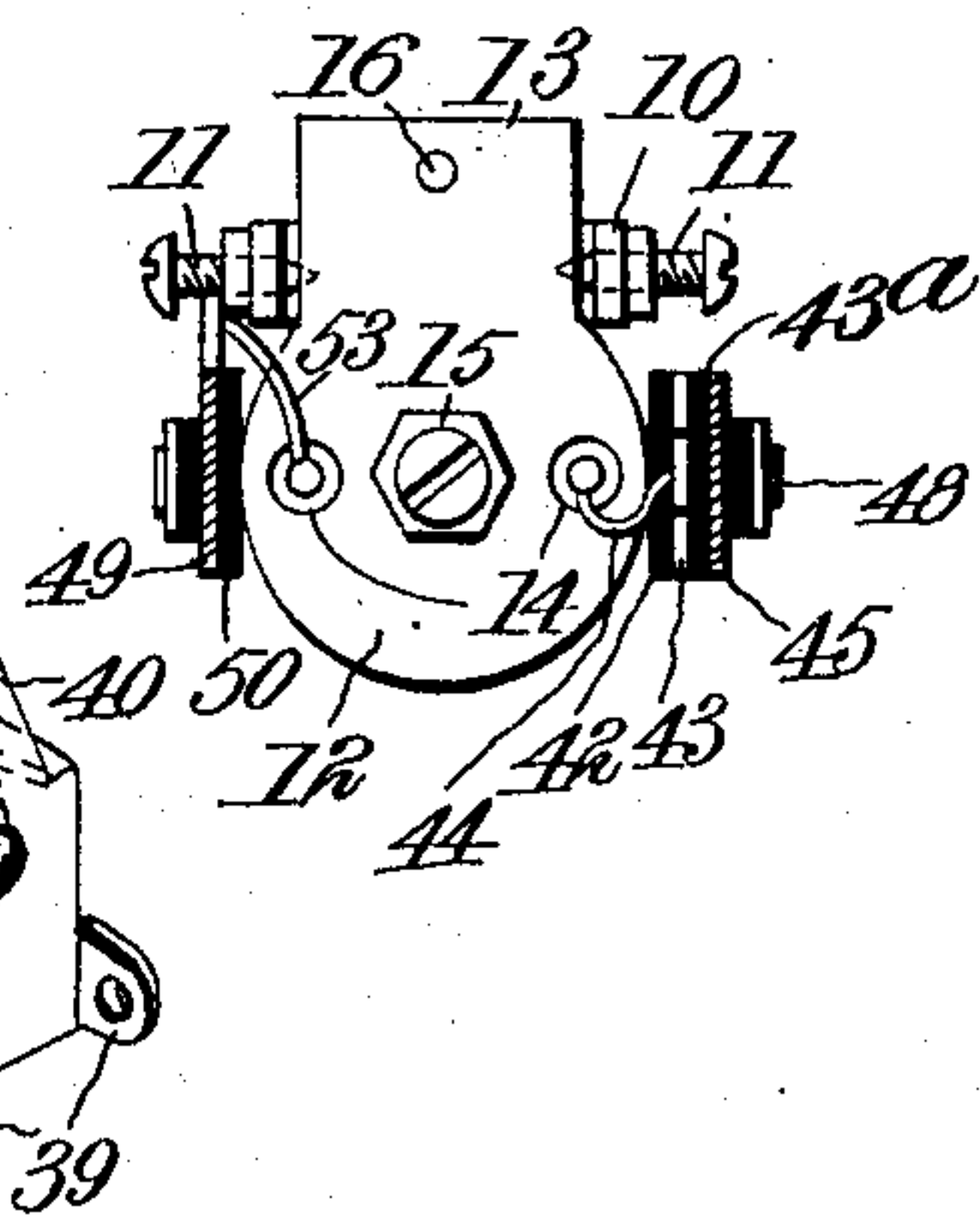


Fig. 9.

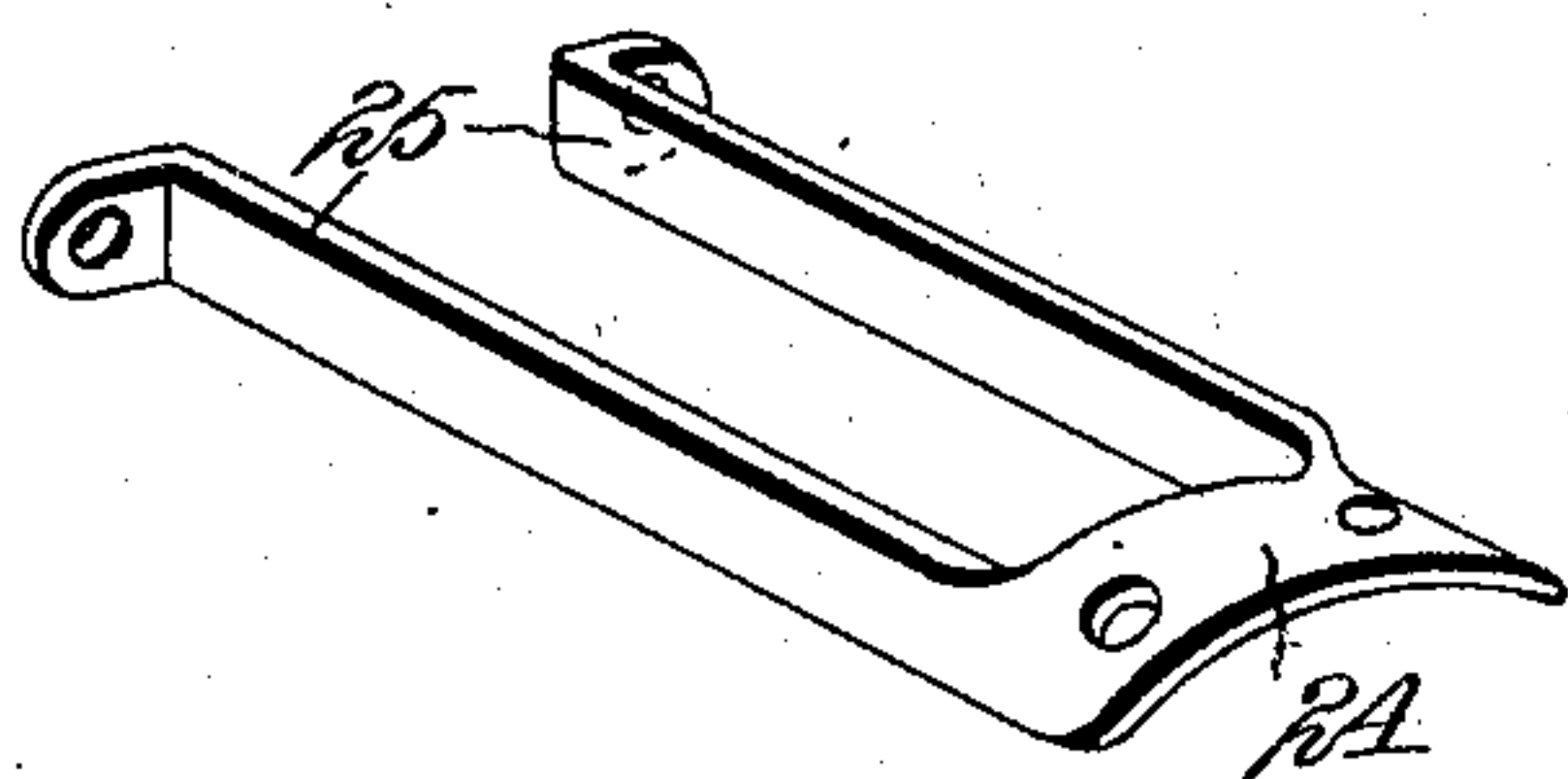
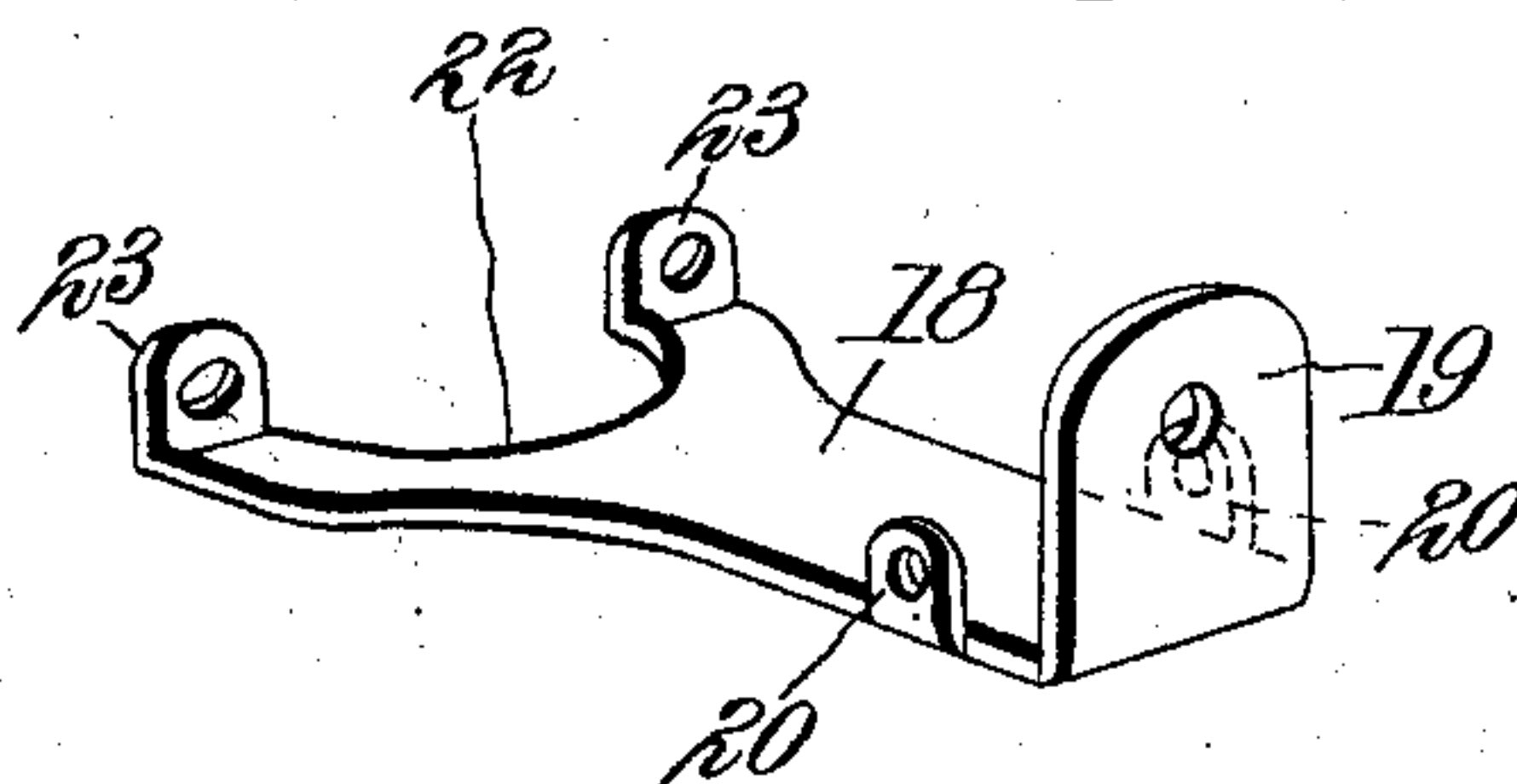


Fig. 10.



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UNITED STATES PATENT OFFICE.

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COMBINED ANNUNCIATOR AND JACK FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 790,103, dated May 16, 1905.

Application filed July 25, 1903. Serial No. 166,996.

To all whom it may concern:

Be it known that I, DANIEL WALLACE CAMPBELL, a citizen of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented new and useful Improvements in a Combined Annunciator and Jack for Telephones, of which the following is a specification.

My invention relates to improvements in telephony, and more particularly to annunciators having a drop to announce and indicate the source of a call.

Among the objects of this invention are to improve and simplify the means by which the indication is made and to render the device or instrument more certain and effective in operation than prior devices and more durable in use.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of my invention, showing the connecting-plug inserted. Fig. 2 is a perspective view taken in reverse of Fig. 1, the plug being removed and the shutter, in elevation, closing the opening in the insulating head-block. Fig. 3 is a central vertical longitudinal section through the instrument, showing the magnet or solenoid in the iron cylinder and the drop in side elevation and as raised. Fig. 4 is a top plan view of the instrument. Fig. 5 is a bottom plan view of the device. Fig. 6 is a vertical section taken on the line 6 6 of Fig. 1, showing the night-bell contacts. Fig. 7 is a detail perspective view of the drop or shutter. Fig. 8 is a vertical section taken on the line 8 8 of Fig. 1, showing the terminal wires of the magnet passing through the openings of the armature. Fig. 9 is a detail perspective view of the upper supporting-bracket for connecting the insulating head-block and the iron shell or cylinder, and Fig. 10 is a detail perspective view of the lower bracket for connecting the insulating head-block and the iron shell or cylinder and for supporting the drop.

In the drawings, 1 represents a tubular iron shell of suitable dimensions, one end of which is closed and the other open. Within this shell is a magnet 2, having a core 3, which is fas-

tened by means of a screw 4 passing through the end wall of the shell and threaded in the core. The other end of the core is contiguous to the armature 12 to attract it when the coil of the magnet 2 is energized. The coil (see Fig. 3) is arranged between the insulating-disks 5 and 6 in the usual manner. On the inner end of the shell is a plate or bracket 7, shaped to the contour of the shell and adjustably secured in position by screws 8, threaded in the shell and passing through slots 9 in the plate. The plate 7 is formed with bearing ears or lugs 10, which are provided with threaded apertures in which the screws 11 engage. The points of these screws catch in shallow bearing-sockets in the edges of the armature 12. Nuts on the screws 11 hold them locked when adjusted, as shown in the drawings. The armature 12 is a circular metal body formed with a vertical extension 13, which is pivoted, as described, by the screws 11. An adjusting-screw 15 is threaded through the center of the armature to adjust and limit the movement thereof toward the magnet. The armature may be moved to and from the magnet and set in operative position by means of slots and clamping-screws through the plate 7.

In the armature extension 13 is suitably secured one end of the latch-bar 16, which reaches forward above the magnet. This latch-rod is formed with a hook 17, which is adapted to engage a projection on the drop, as hereinafter described.

A bracket 18 is fastened by the screw 4 to the shell 1 and consists of a suitable metal plate having its inner end 19 turned up. Adjacent to said upturned part the bracket 18 is formed with oppositely-disposed vertical ears 20, through which the ends of a pintle 21 are riveted for the purpose hereinafter stated. The front end of the bracket is bifurcated at 22, so that the plug-sleeve 29 will be insulated therefrom, and the ends of the forks are turned up to form flanges 23, having apertures to receive screws which support the head 26 in front of the shell. A second bracket 24 is fastened to said shell and is formed with supporting-arms 25, terminating in laterally-dis-

posed flanges, as shown, through which screws are passed to hold the upper end of the insulating-head in position. The insulating-head is preferably made of hard rubber or other suitable insulating material and consists of a rectangular block formed with a tubular opening to receive the plug-sleeve 29, which is secured thereto by nuts, as shown, in the well-known manner. The top of the insulating-head is slotted and chambered out to permit the indicator 37 of the drop and its stem 36 to swing down and guide said plate in its movement. To the front of said head is secured an end plate 27, having an opening 28, through which the indicator 37 of the drop is visible when it drops down and closes the opening. To each side of the head 26 is secured a metal strip 30, which conforms to the surface of the head and is secured thereto and provided with spring-arms 31, which are turned inwardly and stand separated. The stem 36 of the drop brushes against the spring-arms 31 when it falls. The metal strips 30 are formed with flanges 32, which connect with the night-bell circuit, as shown in Fig. 2. This night-bell circuit is made up of a battery 33, line-wires W W', which are connected with the flanges 32, and a bell or other suitable alarm 34, inserted in said circuit. The night-bell circuit is normally open at the arms 31 and is closed when the drop falls and lodges between said arms.

The drop or annunciator 35 is made out of a single piece of thin metal (see Fig. 7) and formed with the stem 36, the outer end of which is turned down and shaped to form an indicator and close the opening 28 in the plate 27 on the front of the insulating-head. On the indicator 37 may be placed a number or other designation intended to publish to the operator the information required to identify the source of the call. The rear end portion of the drop is wider than the stem and bent down at 38 and formed with flanges 39, which are pivotally mounted on the pintle 21, arranged across the bracket 18. A vertical extension 40 is disposed to engage the hook 17 on the latch-bar and hold the drop in superior position. When current energizes the magnet, the armature raises the latch and permits the drop to fall. During this operation the stem 36 lodges between the spring-arms 31 and closes the night-bell circuit, so that a visual and auricular indication is made.

Depending from the stem 36 is a resilient arm 38^a, which carries an insulating-piece 41, riveted thereto in the path of the tip of the plug, so that when the plug is inserted and moved toward the rear end of the drop the plug is not short-circuited.

To one side of the shell 1 is a strip of insulating material 42, against which is fastened a magnet-plate 43, one end of which is connected with a terminal of the coil at 44. One end of the magnet-plate extends in front of

the shell and is formed with an outwardly-curved point which normally bears against the inner face of the line-plate to make electrical connection therewith.

To the outer face of the magnet-plate 43 is secured an insulating-plate 43^a and a combined line-plate and spring-jack 45, which are arranged as shown. The front end 46 of the spring-jack extends, as shown, in front of the magnet-plate and is curved inward into constant spring-contact with the contact-point of plate 43 and forms one arm of the spring-jack. The extreme end of the arm 46 is bent at 47 to be engaged by the stem of the plug and pressed outward when the plug is inserted through the plug-sleeve to break contact between the magnet-plate and the spring-jack, and thus open the magnet-circuit. The insulating-strips 42 and 43^a and the line-plate are fastened to the shell 1 by means of suitably-insulated screws 48. Arranged oppositely on the shell 1 is another line-plate and spring-jack 49, said plate being insulated from said shell by a strip 50 and said parts being fastened by insulated screws similar to those used for securing the first-described line-plate in position. The forward end of the plate 49 is bent inward at 51 to constitute one member of the spring-jack and terminates in a bend 52 to engage with the plug when inserted. The forward ends of the plates 43 and 49, respectively, are connected with the terminals 44 and 53 of the magnet-coil. The terminals 44 and 53 pass freely through perforations 14 in the armature 12. To the rearwardly-projecting ends of the plates 45 and 49 are secured threaded stems 54 and 55, which support the instrument and to which the branches of the line-circuit are electrically connected, the object being to fasten the stems to an insulating-support (not shown) which carries the line-terminals. Clamping-nuts 56 are threaded on the stems and are screwed down after the instrument is mounted in position. It will be noted that this mode of mounting the instrument provides very convenient means for its removal or detachment to make repairs or change the parts.

In brief, the operation of the instrument is as follows: Current passes from the line through the line-plate 45, connects with the magnet-plate 43, thence passes by the plate 43 to the coil, from the coil through the plate 49, thence to the line. This circuit energizes the magnet which attracts the armature, the movement of which lifts the latch and releases the drop or shutter, which closes the opening in the head and announces or displays the fact that a call has been made. The stem of the drop completes the night-bell circuit, and thereby closes that circuit and operates the alarm. The operator on ascertaining the location of the call inserts the plug through the plug-sleeve. When the plug is inserted, the tip impinges against the insulating-piece

41 on the arm 38^a and automatically raises the shutter. This operation breaks the contact between the line-plate 45 and plate 43 and opens the magnet-circuit, leaving the armature free to swing back and carry the latch into engagement with the drop or shutter and hold it in superior position. The operator then couples the proper lines, and when the service has been accomplished the plug is withdrawn, the springs 46 and 43 resume contact, and the coil-circuit is again established with the drop in superior position.

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

1. A device of the class set forth, consisting of a shell, a magnet in said shell, electric line connections therewith, a pivotally-supported armature, a latch-bar secured to said armature, a pivotally-mounted drop formed with a shutter near its front end, a downwardly-turned portion at its inner end, a vertical lug to engage the free end of said latch-bar, and an insulating-block in the path of the connecting-plug on the face of said depending inner end of said drop.

2. A device of the class set forth, consisting of a cylindrical shell having a closed end, a lower plate having its rear end secured to the closed end of said shell and its front end bifurcated and turned up vertically, a plate secured to the upper face of said shell and formed with forwardly-projecting arms, and an insulating-block secured to the turned-up ends of said lower plate and the ends of the arms of the upper plate and provided with a plug-sleeve.

3. A device of the class set forth, consisting of a cylindrical shell having a closed inner end, line-plates secured opposite each other to the side of said shell and formed with forwardly-extending jack-springs, a magnet-plate formed with a contact engaging one of said jack-springs, a circuit connected with the rear ends of said line-plates, a magnet in said shell and connected with said magnet-plate and to the opposite line-plate respectively, a pivotally-supported armature, a latch-bar on said armature, a pivotally-supported shutter or drop engaged by said latch, and a plug to break the contact between said jack-spring and magnet-plate.

4. A device of the class set forth, consisting of a cylindrical shell having a closed inner end, line-plates secured opposite each other to the side of said shell and formed with forwardly-extending jack-springs, a magnet-plate having a contact engaging one of said jack-springs, a circuit connected with the rear ends of said line-plates, a magnet in said shell having its terminals connected with said magnet-plate and to the opposite line-plate respectively, a pivotally-hung armature actuated by said magnet, a latch-bar on said armature and released thereby, a pivotally-mounted shutter

or drop held elevated by said latch and adapted to drop when said latch is disengaged, an insulating head-block formed with an opening which is closed by said shutter when it drops, and a plug to break the contact between said line-plate and magnet-plate and simultaneously restore the shutter to elevated position.

5. A drop-switch, consisting, in combination, of an insulating head-block formed with a plug-opening, a pivotally-supported drop having a turned-down rear end and a holding-latch, and an insulating-block secured to the front face of the turned-down end of said drop in the path of the plug, whereby the drop is lifted by the plug to engage the latch and short-circuiting prevented.

6. A device of the class set forth, consisting of a cylindrical shell, line-plates opposite each other and secured to the face of said shell, threaded stems secured to the rear ends of said line-plates, clamping-nuts on said threaded stems, and spring-jack members on the forward ends of said plates.

7. A device of the class set forth, consisting of a suitable shell, line-plates secured to the side of said shell and formed with forwardly-extending spring-jack arms, and supporting-stems secured to the rear ends of said line-plates, for the purposes specified.

8. A drop-switch, consisting of an insulating head-block formed with a plug-opening, a pivotally-supported drop having a turned-down rear end, which is electrically insulated on its face in the path of the plug, and connections on said head-block with which the limbs of the night-bell circuit are connected; said drop adapted to slide between said connections to close said night-bell circuit.

9. A switchboard-jack having a drop adapted to swing in front of it, an electromagnet located in the rear of said jack, a connecting-plug, an armature having a connection for catching and supporting said drop when it is raised by the entrance of said connecting-plug, a spring on said drop in the path of said plug, and a strip of insulation between said spring and the impinging surface of said plug, for the purposes specified.

10. A switchboard-jack having a drop adapted to swing in front of it, an electromagnet located in the rear of said jack, an armature having a connection for catching and supporting the drop when it is raised, a night-bell circuit normally open, a pair of spring-arms connected with said night-bell circuit, between which said drop is adapted to slide to close said circuit, a pair of line-plates connected with said electromagnet having jack-springs on their forward ends, and means carried by said line-plates for detachably supporting said parts.

11. A device of the class set forth, consisting of an electromagnet, a drop adapted to swing in front of it and be lifted by the operator's plug as it is thrust into said jack, a trigger

or arm for catching the drop when so raised, a shell inclosing said magnet, line-plates secured opposite each other on the side of said shell and formed with jack-springs on their forward ends, and means carried by the opposite ends of said line-plates to detachably support said parts.

12. A device of the class set forth, consisting of a magnet-coil, line-plates secured opposite each other to said coil and formed with jack-springs and supporting-stems, a drop adapted to swing in front of said magnet, a spring on said drop in the path of said plug, and an armature having a connection for catching and supporting said drop when it is raised by the entrance of the connecting-plug, for the purposes specified.

13. A device of the class set forth, consisting

of an electromagnet, a shell inclosing said magnet, a line-plate secured to the side of said shell and formed with a jack-spring, a stem secured to said line-plate for supporting said parts, a drop adapted to swing in front of said magnet, a connecting-plug, an armature having a connection for catching and supporting the drop when it is raised by the entrance of the connecting-plug, and a strip of insulation between said drop and the impinging end of said plug, for the purposes specified.

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

DANIEL WALLACE CAMPBELL.

Witnesses:

HANNAH M. HANSEN,
MILLS TOURTELLOTTE.