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NON-POSITIONAL INDICATOR FOR SWITCHBOARDS

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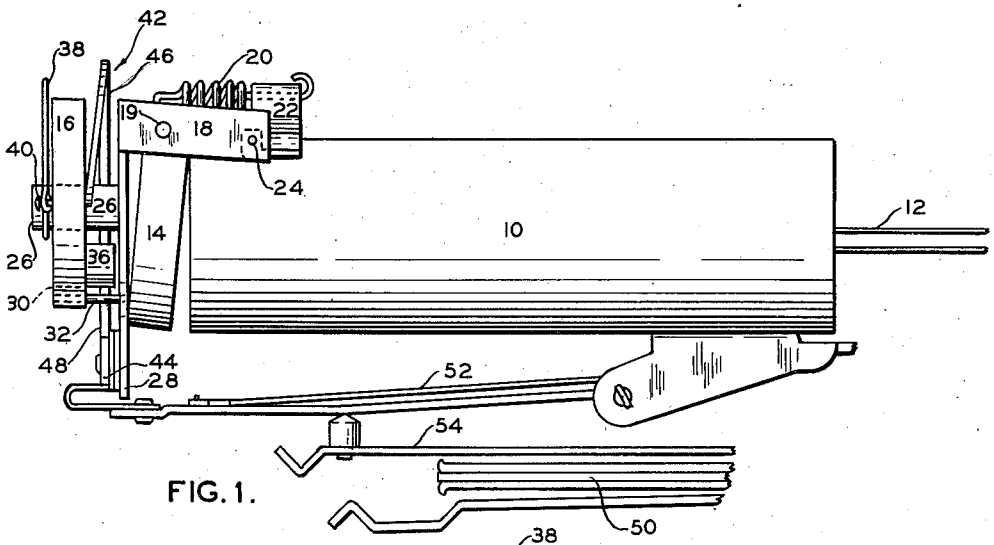


FIG. 1.

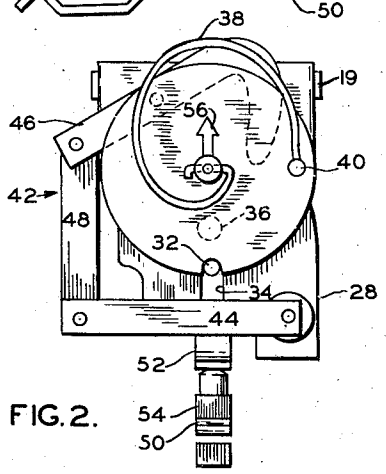


FIG. 2.

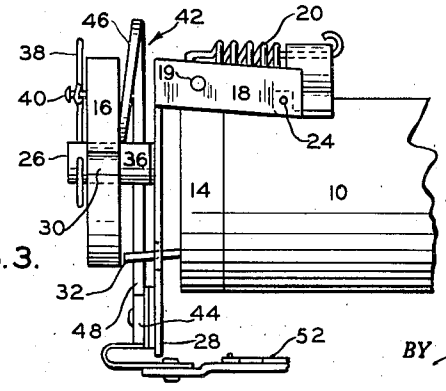


FIG. 3.

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NONPOSITIONAL INDICATOR FOR SWITCHBOARDS

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1 Claim. (Cl. 179—92)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to telephone drops and particularly to automatically restorable non-positional telephone drops.

Telephone drops presently in use indicate an incoming signal by means of an indicator which, when released, will move due to the force of gravity acting thereon. Such a drop is not well adapted for use in mobile or field installations, where the telephone switchboard is frequently inclined at a sharp angle with a horizontal.

It is therefore an object of the invention to provide a telephone drop that is non-positional in character, whereby the said drop will be operative when positioned at any angle to the horizontal. It is another object of the invention to provide such a drop that will be automatically restored to its normal non-indicative position when connection is made to the telephone jack associated with the drop.

These objects, together with other objects and advantages of the invention that will be apparent to one skilled in the art, are achieved in a preferred embodiment of the invention by means of a rotatable indicator disc, the said disc being released to rotate by means responsive to an incoming signal. Means are provided associated therewith whereby the said disc will be restored to its normal non-indicative position upon insertion of a telephone plug into the jack associated with said drop, and the disc will then be locked in position by the above named responsive means.

For a better understanding of the invention, reference is made to the following specification of a device embodying the invention, the said specification to be read in connection with the accompanying drawings, in which

Figure 1 is a side elevational view of a device embodying the invention, the device being shown in its normal position, and

Figure 2 is a front elevational view of the device shown in Figure 1, and

Figure 3 is a side elevational view of a portion of the device shown in Figure 1, and shows the device in its indicating position.

Referring to the drawings, the drop includes a drop coil 10 forming a part of a telephone line 12, an armature 14 and a rotatable disc 16. The armature is eccentrically pivoted from a support 18 by means of trunnions 19 and is normally tilted in a forwardly inclined position by means of a helical spring 20 having its rearward end

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fixed to an attachment member 22 which may be affixed to the coil 10 by any suitable means. The support 18 is rigidly fixed to the attachment member 22 by rivets 24.

The disc 16 is rotatably mounted on an axle 26 fixed to a downwardly extending flange 28 of the support 18, and is provided with a semi-circular aperture 30 adapted to receive a forwardly extending pin 32 fixed to the forward face of the armature 14. The flange 28 is provided with a longitudinal slot 34 adapted to permit passage therethrough of the said pin 32.

A rotational stop 36 is fixed to the rearward face of the disc 16 immediately above the aperture 30. A flat spring 38 is positioned about the face of the disc 16, one end thereof being affixed to the axle 26 and the other end thereof being fixed to a lug 40 that is fixed to the periphery of the disc 16 substantially 90 degrees in a counter-clockwise direction from the aperture 30.

Positioned between the disc 16 and the flange 28 is a jointed three armed rocker 42 having the arms thereof rotatably connected together, the lower arm 44 being pivotly connected to a lower right corner of the flange 28 and the upper arm 46 being pivotly connected at a mid-point thereof to the upper portion of said flange. The upper arm 46 is hook-shaped and when the drop is not in use extends downwardly to within 90 degrees of the rotation stop 36. The two said arms 44 and 46 are pivotly connected by the arm 48.

The drop is mounted in a switchboard (not shown) in association with a standard telephone jack 50 and is provided with a pivotable lever arm 52 adapted to be actuated by upward movement of a jack terminal arm 54, the said upward movement resulting from insertion of a telephone jack into the plug 50. The free end of said lever arm 52 extends forwardly beyond the lower arm 44 of the rocker 42 and is contiguous to the lower surface thereof.

A signal placed on the telephone line 12 will pass through the coil 10, the resultant magnetic field of which will attract the armature 14 and cause it to pivotly swing toward the coil 10. Movement of the armature 14 will withdraw the pin 32 from the aperture 30 and thereby release the disc 16 to rotate due to the action of the spring 38. A marker, such as the arrow 56, is provided on the face of the disc 16 whereby displacement of the disc 16 may be more readily apparent to the switchboard operator.

The disc 16 will rotate counter-clockwise, due to the spring 38, until the rotation stop 36 has moved into engagement with the lower end of the

hook shaped arm 46 of rocker 42. The disc 16 is thereby displaceable through 90 degrees and it will therefore be visually obvious to the switchboard operator that rotation has occurred.

It will be apparent that rotation of the indicator disc 16 is in no manner dependent upon the position of the switchboard with respect to the horizontal, but is actuated solely by the spring 38 when the pin 32 is withdrawn from aperture 30. The device is therefore non-positional and is well adapted for use in field or mobile installations.

Having been made aware of the incoming signal by rotational displacement of disc 16, the switchboard operator completes the circuit through his operator's set by inserting a telephone plug into the jack 50, which action results in upward movement of the lever arm 52. Upward movement of arm 52 will be translated through the rocker 42 to downward movement of the hook shaped arm 46. Since the lower end of arm 46 is in engagement with the stop 36, the disc 16 will be rotated clockwise until the pin 32 and the aperture 30 are aligned. Since, at this time, the signal has been removed from the line 12, the armature 14 is free to be tilted forwardly due to the action of the spring 20 and the pin 32 will be moved into the aperture 30, thereby locking the disc 16 in place.

Means are thus provided whereby the disc may be automatically restored to its normal non-indicating position. The means are positive in action and require no act on the part of the switchboard operator other than the necessary act of inserting a plug into the jack 50.

There has thus been provided a telephone drop that is non-positional and automatically restorable. Many modifications of the device herein disclosed will be apparent to one skilled in the art, and it is therefore intended that the invention be defined in the attached claim.

What is claimed is:

A non-positional and automatically restorable telephone drop to indicate an incoming signal on a telephone line, the said drop being mounted on a switchboard in association with a telephone jack adapted to receive a telephone plug, comprising an apertured indicator disc free to rotate about an axle; a distorted flat spring having one end connected to said axle and having the other end connected to said disc whereby said disc may be urged to rotate; a pivoted armature having a forwardly extending pin adapted to be received by said apertured disc in its normal position, the said armature being urged toward said disc by a helical spring; a drop coil connected in said telephone line whereby said coil will be energized by said incoming signal and said armature and pin will be moved toward said coil, thereby removing said pin from said aperture; a multiple armed rocker arrangement having a terminal end thereof engageable by said rotation stop, the said rocker arrangement being actuated by insertion of said plug into said jack whereby said rocker arrangement will cause said disc to rotate to its normal position and be locked therein by said pin when said signal has been removed from the telephone line.

ANATOL PERESLEGIN.

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