A. F. DIXON.

COMBINED JACK AND SIGNAL.

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1,100,358.

Patented June 16, 1914.

Fig. 1.

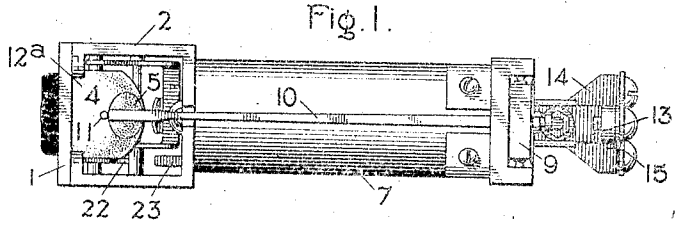


Fig. 2.

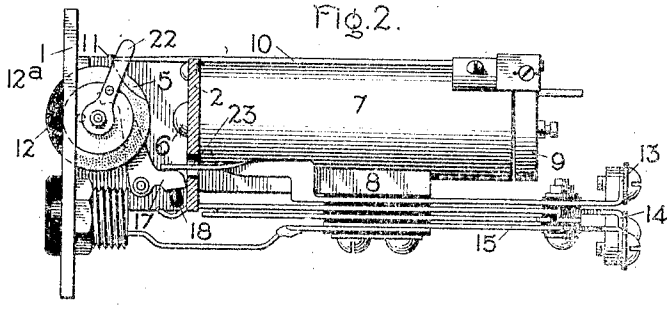


Fig. 3.

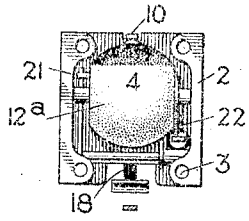


Fig. 4.

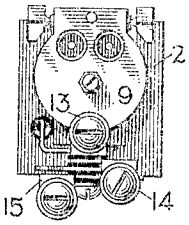
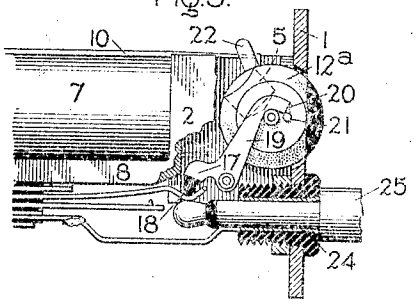


Fig. 5.



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UNITED STATES PATENT OFFICE.

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COMBINED JACK AND SIGNAL.

1,100,358. Specification of Letters Patent. Patented June 16, 1914.

Application filed March 16, 1909. Serial No. 483,854.

To all whom it may concern:

Be it known that I, AMOS F. DIXON, citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Combined Jacks and Signals, of which the following is a full, clear, concise, and exact description.

My invention relates to signals for telephone switchboards, more particularly to combined jacks and signals of the general type wherein a target is operated electrically and restored through the action of the plug when inserted in the jack.

The object of my invention is to provide an improved signal and signal controlling mechanism.

Prior to my invention telephone signals have been used comprising a pivoted target of a form adapted to protrude through an opening in a front plate, said target being adapted to display a white surface when operated and a black surface when restored. Signals comprising this form of target have proved highly satisfactory for various reasons but more particularly because the protruding surface of the target renders the white surface conspicuously visible from the side as well as the front of the switchboard position in which they may be located.

My invention consists broadly in associating with a target, of the general type mentioned, an electromagnet adapted to operate the target, a jack, a plug and a lever adapted to force or restore the target to its normal position when the plug is inserted in the jack.

More specifically my invention provides an unbalanced target of the type mentioned, preferably a target of approximately spherical form, an electromagnet, mechanism for normally retaining said target in its restored position and for releasing it when said electromagnet is energized, a jack, a plug, and a bell crank lever for restoring the target when the plug is inserted in the jack.

My invention may be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of a combined jack and signal embodying my invention; Fig. 2 is a side elevation; Fig. 3 is a front view as it would appear with the front plate removed; Fig. 4 is a rear view; and Fig. 5 is a side view, partly in section, showing the plug in position in the jack and illustrating its restoring action.

Similar letters of reference designate similar parts throughout the different figures.

Referring to Figs. 1, 2 and 5, 1 is a plate, to the rear face of which a U-shaped frame 2 is secured in some suitable manner as by means of screws passing through said plate and entering tapped holes 3. Within the frame 2 is a centrally pivoted target 4, preferably of spherical form adapted to protrude through an aperture in the plate 1. In the drawings a target of approximately spherical form, protruding through a circular opening in said plate is shown. The target although symmetrical in form with respect to its axis of rotation, is unbalanced so that in its normal position, gravity tends to tilt it in a clockwise direction when viewed as in Fig. 2. As shown in Figs. 1 and 5 a solid target may be used which preferably may be of some light material, as for example, aluminum, the target having a hole or recess filled with some dense substance 5, as lead, adapted to unbalance it. Secured to the rear wall of the frame 2, by means of a screw 6, is an electromagnet 7, said electromagnet being further supported by an arm 8 extending rearwardly from said frame. The armature 9 of the magnet carries an arm 10 adapted to engage with a pin or catch 11 on the target 4, and normally hold the said target in its normal position, as shown in Figs. 1 and 2, in which position the surface 12 exposed to view may be black. With this construction the electromagnet when energized operates to disengage the arm 10 from the catch 11 whereupon the target tilts in a clockwise direction to its operated position shown more clearly in Fig. 3, in which position the surface 12^a exposed to view may be white. Secured to the rearwardly extending arm 8 are jack springs 13, 14 and 15. Pivoted within the frame 2 is a bell crank lever, preferably a Z-shaped lever, having an arm 17, equipped with an insulating stud 18 which rests upon one of the jack springs, and a second arm 19 terminating in a horizontal portion 20, against which projection 21 on the target may strike when said target is released by the arm 10. Se-

cured to the target is an arm 22 adapted to strike a spring 23 when said target is released and thereby close a night-alarm circuit.

Referring to Fig. 5, 24 is a jack thimble mounted upon the plate 1, and 25 is an ordinary operator's plug.

The circuit connections of the electromagnet, jack and night-alarm contact are too well understood by those skilled in the art to require description.

The operation of my invention is as follows: When a calling party rings, the electromagnet 7 is energized, whereupon the arm 10 is lifted from engagement with catch 11 and the target 4 is allowed to tilt to its operated position, thereby displaying the white surface 12^a through the aperture in the plate and indicating to the operator that a connection is desired. In the operated position of the target 4 the arm 22 rests upon the night-alarm contact spring 23, which parts may be so associated with the night-alarm circuit as to complete the same in a manner well understood by those skilled in the art. In this position pin 21 rests adjacent to the end of the arm 20 of the Z-shaped bell crank lever. The operator, in answering the call, inserts the plug 25 into the jack, as shown in Fig. 5, whereupon the spring 13 is lifted and the bell crank lever tilted, thereby bringing the end of the portion 20 of said lever in contact with projection 21 on the target and forcing said target to its normal or restored position, in which position the white surface of the target is obscured. When the plug 25 is withdrawn the target is retained in its normal position by the arm 10, as shown in Figs. 1 and 2.

Although my invention is illustrated herein by a target carrying a pin or catch 11 with which the retaining arm 10 normally engages it will be readily understood that said catch might readily be otherwise associated with the target, and that an arm or projection adapted in any suitable manner to move with the target as, for example, by securing it to the shaft or pivotal part on which the target is carried, would perform the same function and clearly be within the scope of my invention. Also although the restoring lever is herein shown as having a part acted upon by the plug through the medium of the jack spring 13, it is obvious that the part 20 might be placed directly in the path of the plug without departure from the scope of my invention.

Having described my invention, I claim:

1. The combination with a frame, of an approximately spherical target, pivotally mounted within said frame, an electromagnet mounted adjacent said target, an armature for said electromagnet, a catch carried by said target, an arm carried by said armature adapted to engage said catch and normally retain the target, a jack, a plug, a projection carried by said target, a bell crank lever pivoted intermediate said plug and said target, said lever being adapted to engage said projection and restore said target when the plug is inserted in the jack.

2. In an electromagnetic annunciator the combination with a frame, of a centrally pivoted approximately spherical target symmetrical in form with respect to its axis of rotation, a projection carried by said target, a spring jack, a plug, and a pivoted lever intermediate the path of said plug and said projection, insertion of said plug within said jack causing said pivoted lever to rotate about its pivot point and engage said projection for restoring said target.

3. The combination with a frame, of a solid approximately spherical target pivotally mounted in said frame, said target having a recess, material carried in said recess for unbalancing said target, an electromagnet for controlling said target, a jack, a plug, and a pivoted lever intermediate said plug and said target rotated about its pivot point for restoring said target when said plug is inserted in said jack.

4. In an electromagnetic annunciator the combination with a frame, of a centrally pivoted approximately spherical target symmetrical in form with respect to its axis of rotation, moved to indicating position by force of gravity, a projection carried by said target, a spring jack, a plug, and a pivoted lever intermediate the path of said plug and said projection for restoring said target to non-indicating position upon the insertion of said plug within said jack.

In witness whereof, I hereunto subscribe my name this 15th day of March A. D., 1909.

AMOS F. DIXON.

Witnesses:
IRVING MACDONALD,
EDGAR F. BEAUBIEN.