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R. HORN ET AL

2,040,311

TELEPHONE DESK SET MECHANISM

Filed May 31, 1930

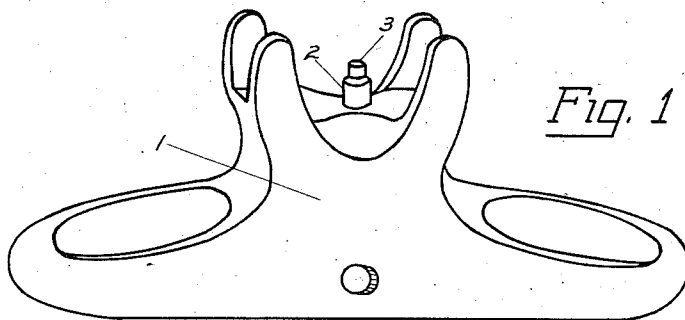


Fig. 1

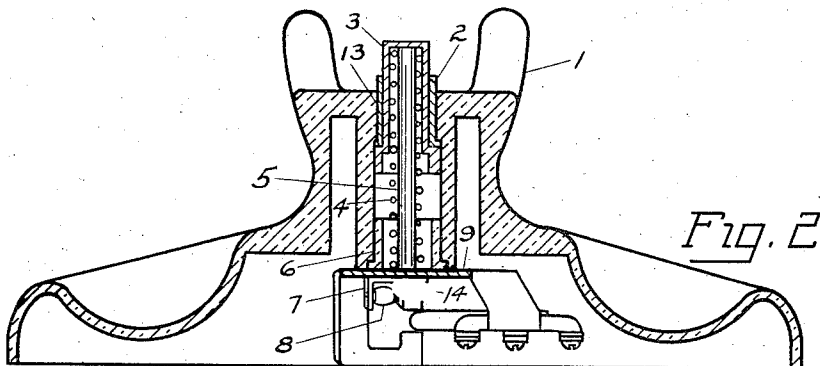


Fig. 2

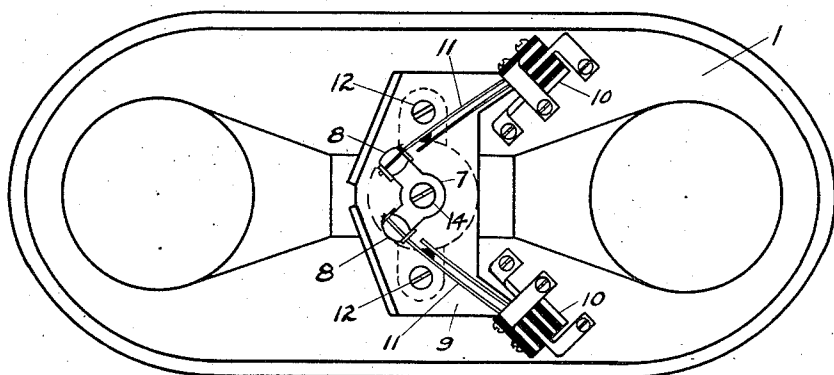


Fig. 3

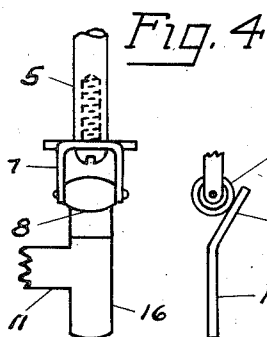


Fig. 4



Fig. 5

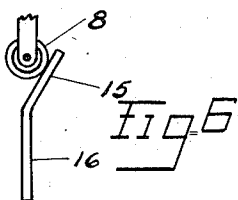


Fig. 6

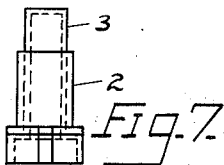


Fig. 7

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UNITED STATES PATENT OFFICE

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TELEPHONE DESK SET MECHANISM

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Application May 31, 1930, Serial No. 458,143

2 Claims. (Cl. 179-159)

Our invention relates to improvements in switches for telephone desk sets; and the objects of our improvement are, first, to provide a switch structure which may be assembled and wired before being installed in the body of a telephone desk set, and which may be used in any one of several styles of telephone desk sets; and second, to provide a means of actuating this switch which will operate immediately after the stroke of the operating mechanism is begun and which will permit a long stroke of the operating mechanism after the switch is operated.

The above features as well as others will be more specifically hereinafter described in the ensuing specification and the accompanying drawing in which:

Fig. 1 is a perspective view of the base unit of one type of desk set in which our invention may be used;

Fig. 2 is a vertical section of the desk set and mechanism;

Fig. 3 is a view of the bottom of the desk set with the cover plate removed;

Fig. 4 is a detailed view of one of the operating springs and rollers; and

Fig. 5 is a detailed top view of the plunger which operates the springs.

Fig. 6 is a detailed side view of one of the operating springs and its associated roller;

Fig. 7 is a detailed side view of the plunger which operates the springs.

Referring now to the drawing in which like reference characters indicate the same parts in the several views, the body or stand 1 may be any one of several desk sets. A plunger mechanism consisting of an outer sleeve 2 and an inner sleeve 3 extends through an aperture 13 in the body 1. A helical spring 4 inside the inner sleeve 3 holds the sleeves 2 and 3 in their uppermost position when the hand set (not shown) is lifted from the cradle of the stand. A plunger rod 5, inside the spring 4 and permanently fastened to the upper closed end of the inner sleeve 3, extends downwardly through a non-conducting bushing 6 and spring assembly framework 9. Secured to the lower end of the plunger rod 5 by a screw 14, is the roller frame 7 which carries two rollers 8 of non-conducting material, arranged to move on and along certain springs, as will be explained.

The operated mechanism consists of a spring assembly framework or mounting plate 9 and two spring assemblies 10, which may contain any desired number and arrangement of springs. In each of these assemblies 10 is a special spring 11

having its free end 16 extended in a direction at right angles to the main body of the spring, roughly in the form of a T. The upper arm 15 of this extension 16 is bent outwardly at an angle of approximately 45 degrees.

It is over these bent and extended ends 16 and 15 of the springs 11 that the rollers 8 pass when the rod 5 is depressed by pressure upon the sleeves 2 and 3. Upon the downward movement of the plunger 5 the rollers 8 engage the inclined ends 15 of extensions 16, thus moving the springs 11 from each other, operating such other springs in the spring assemblies 10 as may be desired. Due to the inclined ends 15 and the T shape of the springs 11, the springs are operated by approximately the first one-fourth of the downward stroke of the plunger rod 5; the further movement of the plunger rod having no effect upon the operation of the spring assemblies, serving only to hold them in the operated position.

It will be noted that the sleeve 3 secured to the plunger 5 is loosely slidable within the sleeve 2, thus should the sleeve 2 become jammed as by the telephone cord being forcibly drawn thereabout the plunger will nevertheless be operated when the hand set is placed in the stand cradle due to the fact that the sleeve 3 will readily move within the sleeve or collar 2. This structure practically assures that the switch spring will be actuated whenever the hand set is placed on the cradle regardless of the conditions which may exist. In the normal operation of the device, however, when the hand set is placed on the supporting cradle both sleeves 2 and 3 are depressed so as to be practically flush with the upper surface of the cradle.

The rollers 8 are fitted with sufficient freedom to eliminate wear of the various parts, and are made of a non-conducting material, to prevent electrical contact between the various parts.

After being assembled, the mechanism is attached to the body 1 by means of two screws 12, which pass through the framework 9.

This construction permits the complete assembly of the spring arrangement prior to its insertion in the telephone stand. In inserting it the plunger 5 within the sleeves 2 and 3 thereon is passed upwardly through the aperture 13 in the stand 1 and after the screws 12 are secured the assembly is complete. This arrangement permits the ready removal of the spring assembly for replacement or repair and also makes more easy the assembly of the spring structure when the device is originally manufactured.

While we have illustrated and described a spe-

cific form of our invention and associated the same with a specific form of desk set it is to be understood that the mechanism of our invention is applicable for use in various other ways without departure from the spirit and scope of the appended claims.

Having described our invention, what we claim as new and desire to secure by United States Letters Patent is:

- 10 1. A telephone desk set operating mechanism comprising contact spring assemblies, means for operating said contact spring assemblies immediately after the said plunger means begins its stroke, said means comprising a plunger and a
- 15 pair of sleeves and non-conducting roller members, one of said sleeves having an outwardly directed flange at one end, the other of said sleeves surrounding said first sleeve and resting

on said flange and means limiting further movement of said contact spring assemblies after they are fully operated.

2. In a telephone desk set operating mechanism, a plunger, a plunger spring, contact spring assemblies, plunger and sleeve means for operating said contact spring assemblies immediately upon depression of said plunger, said sleeve means comprising a first sleeve having a flange at one end and a second sleeve surrounding said first sleeve and resting on said flange, cam portions on said spring assemblies, roller members associated with said plunger means engaging said cam portions, and means for retaining said contact springs in an operated position while said plunger continues its downward stroke.

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