June 3, 1930. J. G. WOOD ET AL 1,761,949

HORN BUTTON SWITCH

Filed April 9, 1928

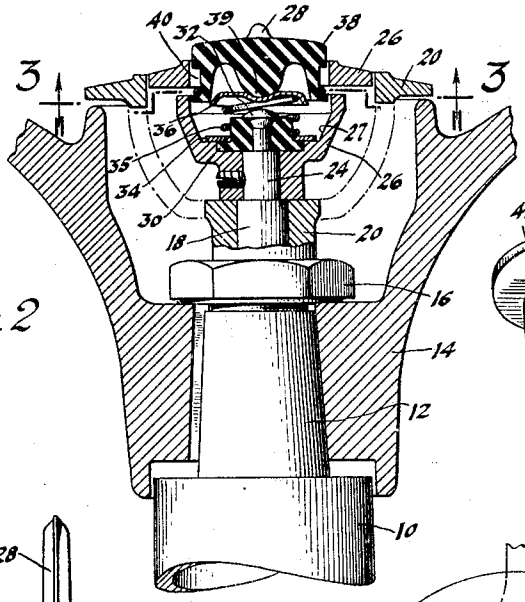


Fig. 2

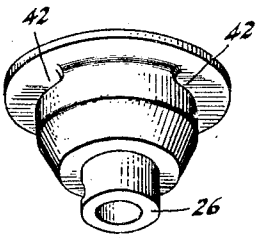


Fig. 5

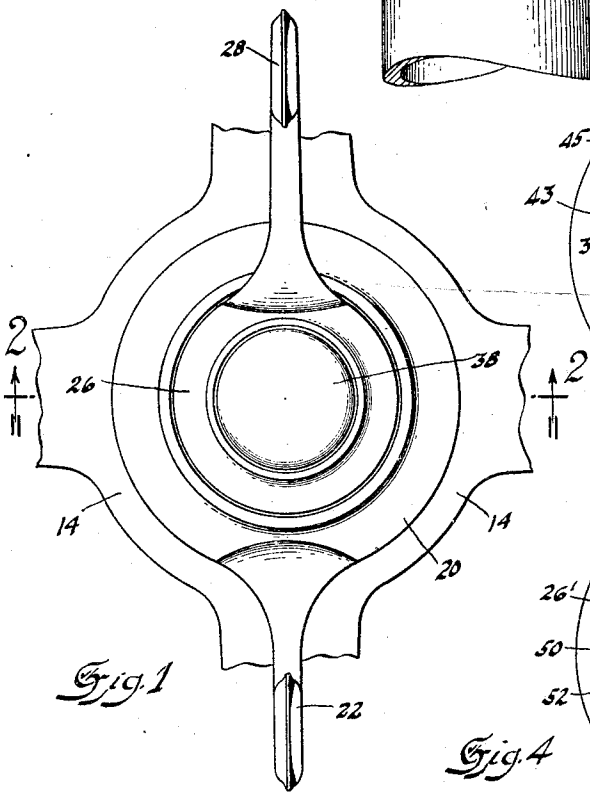


Fig. 1

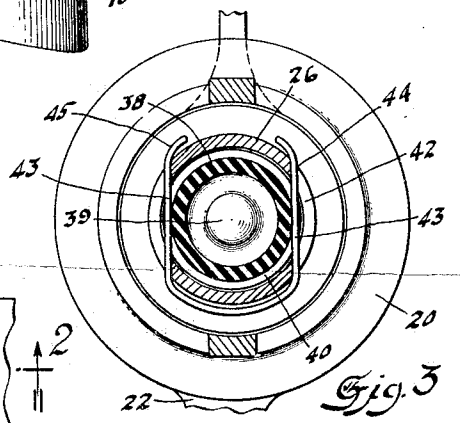


Fig. 3

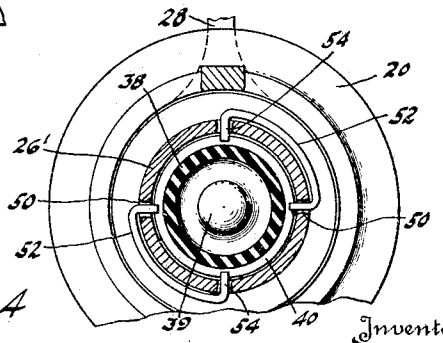


Fig. 4

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UNITED STATES PATENT OFFICE

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HORN BUTTON SWITCH

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This invention relates to switch mechanism and particularly to switch mechanism such as that usually provided on the steering column of an automotive vehicle for controlling a signalling device.

The usual steering column of an automotive vehicle comprises one or more nested tubular shafts connected with the engine controls, each shaft having fixed to its upper end a control member provided with a handle. Usually the inner control member is recessed and carries in the recess the switch mechanism for actuating the signalling device. The present invention relates to switch mechanism of this type.

In the usual construction a contact member is carried by a switch button mounted upon and engaging with switch mechanism held within the recess by means of screws or rivets. Considerable work is required in assembling this structure, and when the switch fails to make a good contact, due to the accumulation of dirt or for other reasons, the mechanism is with difficulty disassembled.

According to the present invention, I provide a switch mechanism which comprises separate members which are readily assembled in the recess and are held in position by a removable spring wire clip. In the assembled switch the parts are securely held in position so that no rattle can occur and yet may be easily removed or disassembled at any time it is desired to inspect the same.

In the drawing:

Fig. 1 is a plan view.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a section similar to Fig. 3, showing a modified form of my invention.

Fig. 5 is a perspective view of the control member.

The steering column comprises a tubular casing 10 within which are nested the tubular control shafts. A steering wheel 14 is keyed to the outer shaft 12 and is fixed thereon by means of a nut 16. Within the steering shaft 12 is a tubular control shaft 18 on which is fixed a control member 20 formed with a handle 22. Within the shaft 18 is an inner tubular control shaft 24 on which is fixed a control member 26 disposed within the member 20 and provided with a handle 28.

The control member 26 is formed with a recess 27 in the bottom of which is an insulating plug 30 carrying a central terminal 32 to which is fixed an insulated conductor extending down through the shaft 24. A metallic washer 34 surrounds the plug 30 and contacts with the surface of the control member 26 within the recess.

Surrounding the plug 30 and seating upon the washer 34 is a spiral spring 35 on which is seated, in normally spaced relation to the terminal 32, a contact member in the form of a thin metal cap 36 formed with a central depression. Extending within the recess is a switch button 38 formed on its under side with a central boss 39 resting in the central depression in the contact member 36. The switch button is formed on its outer side with an annular groove 40 for a purpose described below.

The control member 26 is formed on opposite sides with slots 42 each of which receives an arm 43 of a U-shaped spring clip or clamp 44. The clip has bent ends 45 and is formed of spring wire which is normally held by its own tension with an arm in each slot 42, each arm extending within the recess and resting in the annular groove 40 on the outer side of the button. To remove the button, it is only necessary to spring one of the arms 43 out of its slot 42. All of the parts of the switch mechanism may then be removed. The width of the groove 40 is sufficient to permit the button to be depressed far enough to press the cap 36 into contact with the terminal 32, thus grounding the terminal through the cap 36, coil spring 35, washer 34 and control member 26.

In the modification shown in Fig. 4, a control member 26′, corresponding to the control member 26, is formed with spaced openings 50 through which are extended the in-turned portions 54 of a plurality of arc-shaped wires 52, the inner ends of the portions 54 extending into the groove 40 on the switch button. In the embodiment disclosed, two wires 52 are provided, the openings 50 for the in-turned portions being spaced at substantially

equal intervals about the periphery of the control member. The wires 52 are of material similar to the material in the clip 44 shown in the first three figures, and may be readily sprung out of and replaced in the position illustrated.

With the construction disclosed, the elements of the switch mechanism are assembled separately in the recess in the control member and are securely held when the switch button is fixed in position. The switch button is fixed in position by a simple and inexpensive means which permits ready removal simply by springing the clip 44 (or one of the clips 52) outward. The spring clip is shown as comprising a wire, though any clip of this character which will remain on the control member with a portion extending within the recess for holding the switch button against removal may be used. The provision of the central boss on the under side of the switch button and the central depression in the contact member insures that the contact member will be centered at all times and will not become loose.

We claim:

1. In a switch mechanism comprising a control member provided with a recess, a tubular member connected with said control member, an insulated conductor within said tubular member and having a terminal within said recess, a switch button extending within said recess and movable to and from a position grounding said terminal, means resiliently urging said switch button away from grounded position, and a retaining element on said control member and having a portion resiliently held within said recess for limiting the movement of said switch button.

2. In a switch mechanism comprising a control member provided with a recess and a terminal within said recess, a switch button having a portion extending within said recess and being movable to a position grounding said terminal, means resiliently urging said button away from grounding position, said control member being provided with openings in its sides, and a clip on the outer side of said control member and having portions extending through said openings and limiting the movement of said switch button.

3. In a switch mechanism comprising a control member provided with a recess and openings in its sides, a terminal within said recess, a switch button having a portion extending within said recess and being movable to ground said terminal, means resiliently urging said switch button away from grounded position, and a retaining member on said control member having portions extending through said openings into said recess and resiliently held therein for preventing removal of the switch button.

4. Switch mechanism comprising a control member provided with a recess and a terminal within said recess, a spring adjacent said terminal, a contact member having a central depression over said terminal, said contact member being movable to a position grounding said terminal and normally held away from said position by said spring, and a switch button formed with a portion resting in said central depression and mounted for limited movement within said recess.

5. Switch mechanism comprising a control member provided with a recess and a terminal within said recess, a spring over said terminal, a contact member over said spring movable to and from a position grounding said terminal, a switch button having a portion extending within said recess and engaging said contact member, and removable retaining elements extending through the side of said control member and holding said switch member against removal from said recess.

6. In a switch mechanism for the steering column of an automotive vehicle, a control member having a terminal secured thereto, a switch button mounted on said member, means interrelated with said button and adapted to contact with said terminal on movement of said button, said member having openings, and resilient means extending through said openings and engaging said button to limit its movement.

7. In a switch mechanism for the steering column of a vehicle, a control member having lateral slots, a horn button mounted in said member, said button having a groove, and means applied exteriorly of said member in said slot and entering said groove to limit the movement of said button.

8. In a switch mechanism for the steering column of a vehicle, a control member having a plurality of lateral slots, a horn button mounted in said member, said button having a groove, and a resilient clip applied exteriorly of said member in said slots and entering said groove to limit the movement of said button.

In testimony whereof we affix our signatures.

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