

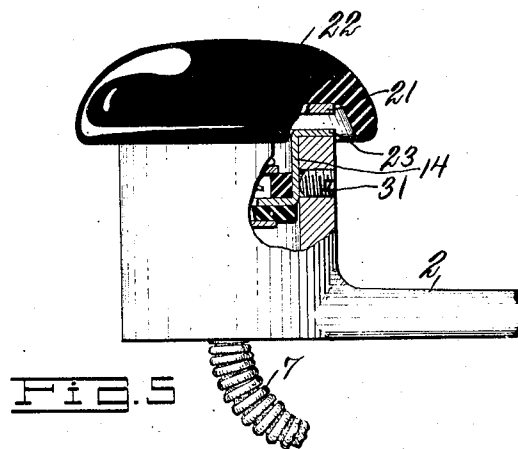
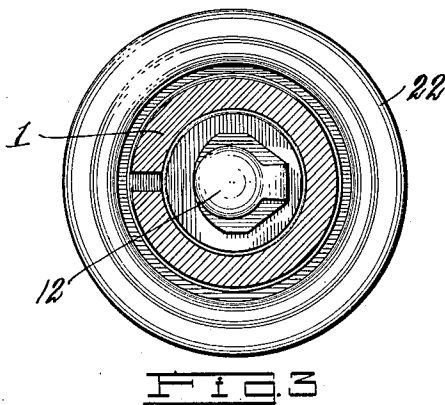
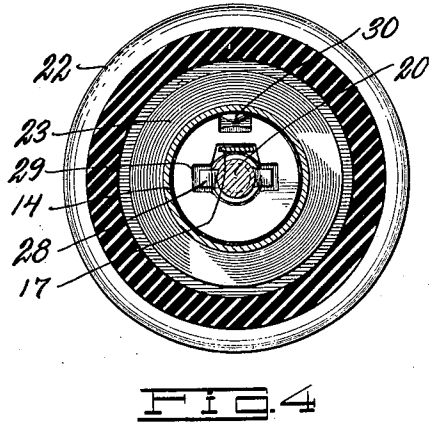
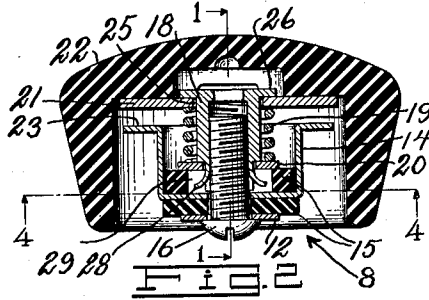
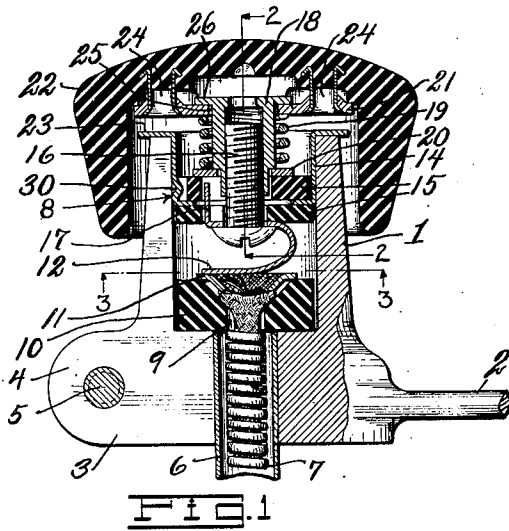
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R. B. BENJAMIN

SWITCH

Filed Nov. 1, 1923



INVENTOR

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BY

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UNITED STATES PATENT OFFICE.

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SWITCH.

Application filed November 1, 1923. Serial No. 672,060.

To all whom it may concern:

Be it known that I, REUBEN B. BENJAMIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Switches, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to electric switches and more particularly to a switch for controlling vehicle signalling circuits.

An object of the present invention is to provide a compact, simple and inexpensive form of switch, which can be particularly adapted for the above mentioned purpose and be mounted preferably upon the spark (or gasoline) lever of a motor vehicle.

Another object is to provide a structure that may be cheaply manufactured, of few parts and capable of being quickly assembled. I preferably design this structure so that it is simple and compact, of a permanent character and not easily destroyed by rough usage.

Briefly, the invention resides in a combination comprising a tiltable switch operating member for controlling the circuit contacts, one of which is mounted on the switch operating member, and known as the movable contact, for engagement with a second contact, which is preferably grounded through a socket member serving as the switch mounting. The circuit contacts are included in a sub-assembly removable from the socket as a unit, so that this sub-assembly may be of a self-containing character. The socket is grounded on one side of the circuit, while the other side is brought through the socket by means of a spring contact in electrical connection with the movable contact. This connection is in the form of an insulated post to which the switch operating member and movable contact are connected.

In order to apprise those skilled in the art how to construct and practice my invention, I shall now describe alternate embodiments thereof, in connection with the accompanying drawings, which form a part hereof.

In the drawings—

Figure 1 is a vertical axial section, taken

on line 1—1 of Fig. 2, of a vehicle signalling push button control preferably carried at the outer end of a vehicle spark lever;

Fig. 2 is a sectional view of the same taken on line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1 and looking in the direction of the arrows;

Fig. 4 is a similar view, but taken on line 4—4 of Fig. 2; and,

Fig. 5 is an embodiment of a modified form of my invention, being partly in elevation and partly in section to illustrate a modified form of retaining the self-contained switch within the outer end of a vehicle spark lever control.

A vehicle signalling switch embodying my invention comprises essentially a grounded metallic socket, a sub-assembly adapted to be inserted therein and furnishing a stationary contact, and a tiltable push button carried by this sub-assembly having a cooperating movable contact for making and breaking the signalling circuit. In the present instance, the socket is formed at the outer end of a spark lever control of a motor vehicle. This outer end is enlarged and provided with a diametrical split at one side, so that the enlargement may constitute a clamp to securely retain at its lower end a horn lead forming part of the signalling circuit. The clamp also functions to securely retain the aforesaid sub-assembly at its upper end. It will be noted at the outset that the switch button is tiltable, in any direction, so that contact of the switch terminals is assured whenever the button is operated in any direction.

As before mentioned, socket 1 is an enlargement at the end of lever 2, which is axially cored for a limited distance at its upper end. In the embodiment shown in Figs. 1 to 4 inclusive, socket 1 is provided with a diametric split, designated 3, and with ears 4 for receiving a clamping bolt 5 whereby sheath 6 of horn lead 7 is securely clamped in position. This clamping arrangement will also securely hold sub-assembly 8 in position at the upper end of socket 1. Sheath 6 terminates flush with the base or floor of socket 1, while lead 7 continues upwardly a short distance to pass through a central aperture 9 in an insulation collar 10. Collar 10 is normally assembled at the base of socket 1 and lead

7 is flared outwardly to engage the upper face of this collar. Thus the end of lead 7 may be held within socket 1, and, by spreading it, a contact 11 may be furnished for engagement with a cooperating spring contact 12. Contact 12 is carried by the sub-assembly 8.

This sub-assembly is of a self-containing character in that the parts thereof may be assembled before being inserted in socket 1. Sub-assembly 8 comprises a metallic sleeve contact member 14 of an external diameter approximately equal to the internal diameter of socket 1, so that it may be tightly seated in the socket.

An insulating base comprising the collars 15 is mounted upon the metallic sleeve 14, having a bead 30 formed thereon and lying in a groove in the upper collar to prevent relative rotation. Collars 15, together with sleeve 14, are provided with a central aperture through which a screw 16 is adapted to pass. At the lower end, screw 16 holds spring contact 12 in place, which spring contact is provided with an upstanding projection 17 passing through said insulating base, thereby preventing relative rotation with respect to the same. A metallic post 18 is internally threaded for the reception of the upper end of screw 16. A coil spring 19 surrounds the post 18, being confined between a collar 20 adjacent to the insulating base and a movable contact 21, fixed to the tiltable push button 22 surmounting the entire switch structure. Coil spring 19, being of the expansion type, tends to maintain the circuit in open condition by normally holding movable contact 21 out of engagement with a stationary contact 23.

Stationary contact 23 is formed by the upper end of the metallic sleeve 14 terminating in an annular flange. Annular flange or contact 23 firmly engages the upper edge of socket 1, so that a good contact is made therebetween. Socket 1 is grounded on one of the sides of the signalling circuit, and therefore, contact 23 should preferably be insulated from the rest of the sub-assembly, this being accomplished as before explained, by the insulating base comprising collars 15.

Tiltable push button 22 is preferably molded of insulation material. In the molding process, rivets 24 are anchored on the under side of push button 22. These rivets 24 are adapted to hold movable contact 21 securely in position. A central aperture 25 is furnished in movable contact 21. Post 18 is adapted to pass through this aperture 25 and be held from downward displacement by an annular flange 26.

When push button 22 is operated, it will be pushed against the tension of coil spring 19 until movable contact 21 engages the stationary contact 23 whereupon the circuit is completed. One of the advantages accru-

ing from the arrangement shown herein is that the push button 22 need not be centrally engaged in order to close the circuit. Good contact may be assured at any point around the entire circumference of the stationary and the movable contacts 21 and 22 when made to engage each other, by the push button being depressed at any angle.

When the sub-assembly is inserted in self-contained relation in socket 1, spring contact 12 is preferably bowed, so that it will resiliently press against lead contact 11 and form a good contact therewith. In view of the particular arrangement of these parts, this relation will continue as long as the switch remains in assembled condition. To prevent relative rotation between the push button 22 and the insulating fibre washers 25, or rather between the post 18 and these washers, the post is provided with out-flaring ears 28 which lie within a diametric groove 29 in the upper washer 15.

In the embodiment shown in Fig. 5, I preferably do not split the socket 1 to form a clamp in order to hold the sub-assembly in the socket. Instead, a tap is provided in one side of socket 1 for the reception of a set screw 31, which is adapted to engage the metallic sleeve contact member 14 for the purpose of holding it in place. However, either form of socket may be conveniently used with equal advantage.

The above described embodiments serve to illustrate the method of mounting a push button at the tip of a spark lever for controlling a signalling circuit of a vehicle, which at the present time usually includes a horn, claxon, or the like, for emitting the signal. Both embodiments also illustrate how the self-containing character of the switch permits its use at a point of convenience to the operator, which point does not afford much space for the switch, thereby necessitating a compact and simple arrangement of the switch parts. And again, this self-containing feature of the switch assembly renders the construction practical and inexpensive to manufacture, and obtains many advantages from a commercial standpoint which are not otherwise had.

Without further elaboration, the foregoing will so fully explain the gist of my invention, that others may, by applying current knowledge, readily adopt the same for use under varying conditions of service, without eliminating certain features which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured to me by the following claims.

I claim:—

1. In a switch, a socket having a contact at the base thereof, a sub-assembly designed to be removably inserted in said socket, a

cap shaped tiltable push button surmounting said assembly, said assembly comprising connecting members, a post for supporting said push button, and a contact at its inner end for engagement with said contact at the base of said socket.

2. In a switch, a grounded metallic socket having an insulated contact at the base thereof, a sub-assembly contained in a metallic sleeve contact member designed to be removably inserted into said metallic socket, a cap shaped tiltable push button surmounting said assembly, and a contact at the inner end of said assembly for engagement with said contact at the base of said socket.

3. A switch construction comprising a socket, an electrical terminal in said socket, and a self-contained sub-assembly comprising a fixed contact member, a manually operable button tiltable in any direction and carrying a movable contact engageable with said fixed contact, and a spring contact electrically connected with said movable contact and insertable into said socket for engaging said electrical terminal.

4. A switch construction comprising a socket, an electrical terminal in said socket, and a self-contained sub-assembly comprising an insulating base, a post mounted on said base, a fixed contact carried by said base, a manually operable button tiltable in any direction on said post, and carrying a movable contact engageable with said fixed contact, and a spring contact electrically connected with said movable contact and engageable with said electrical terminal, said insulating base, post and spring contact being insertable in said socket.

5. A switch construction comprising a socket, an electrical terminal in said socket, and a self-contained sub-assembly comprising a sleeve insertable into said socket, an insulating base mounted on said sleeve, a post mounted on said insulating base, a fixed contact, a manually operable button mounted on said post and tiltable in any direction and carrying a movable contact engageable with said fixed contact, and a spring contact electrically connected with said movable contact and mounted on said insulating base, and engaging said electrical terminal.

6. A switch construction comprising a socket, an electrical terminal in said socket, and a self-contained sub-assembly comprising a sleeve insertable into said socket, and having an inwardly extending flange at its inner end, an insulating base mounted on said sleeve, comprising a pair of buttons clamped on opposite sides of said flange, a post mounted on said insulating base, a fixed contact, a manually operable button tiltable in any direction, and carrying a movable contact for engagement with said fixed contact, and a spring contact mounted

on said base end engageable with said electrical terminal.

7. A switch construction comprising a socket, an electrical terminal in said socket, and a self-contained sub-assembly comprising an insulating base, a spring contact mounted on said base for engaging said electrical terminal, a post mounted on said base, a fixed contact, a manually operable button tiltable in any direction from said post, and carrying a contact engageable with said fixed contact, and means for securing said post and spring contact on said insulating base, and electrically connecting said post and spring contacts comprising a screw extending through said spring contact and threaded into said post.

8. A switch construction comprising a socket, an insulating base insertable into said socket, a post mounted on said insulating base, a button swiveled and tiltable on said post, a contact mounted on said button, a screw extending through said base and threaded into said post for holding it on said base, and means for preventing relative rotation between said post and base, whereby said post may be held from turning in assembly as the screw is threaded into the post.

9. A switch construction comprising a socket, an insulating base insertable into said socket, a post mounted on said insulating base, a button swiveled and tiltable on said post, a contact mounted on said button, a screw extending through said base and threaded into said post for holding it on said base, said post having ear extending laterally therefrom and engaging said base whereby said post may be held from turning in assembly as the screw is threaded into the post.

10. A switch construction comprising a socket, an electrical terminal in said socket, and a self-contained sub-assembly comprising a metallic sleeve insertable into said socket, an insulating base including a pair of collars for clamping the lower portion of said sleeve, a post carried by said insulating base, a button swiveled and tiltable on said post, a contact on said button adapted for engagement with said sleeve to close the circuit, a contact also on said post for engaging said electrical terminal in said socket, said post contact having an upstanding projection adapted to lie in grooves in said collars whereby relative rotation is prevented, said post having a laterally extending ear also adapted to lie in a groove in one of said collars whereby relative rotation between said post and said collar is prevented.

11. A switch construction comprising a grounded socket, an insulated terminal member at the base of said socket, a sub-assembly including a post in electrical connection with said terminal member, a button swiveled and tiltable on said post, a contact

carried by said button, said contact adapted to engage upon operation of said button, a contact member forming part of said sub-assembly, said contact member being in electrical connection with said grounded socket.

12. A switch for controlling a vehicle signalling circuit or the like comprising a lever control shaped to form a socket, said socket being grounded to serve as one side of the circuit, an insulated electrical terminal carried by said socket and connected to the other side of the circuit, a sub-assembly in electrical connection with said terminal removably inserted in said socket, an operating member having a movable contact carried by said sub-assembly, a cup shaped member forming part of said sub-assembly insulated from said movable contact, said cup shaped member being in con-

tact with said grounded socket and adapted for engagement with said movable contact for closing said circuit.

13. A switch for controlling a vehicle signalling circuit or the like comprising a lever control in the shape of a socket member at one end adapted to receive a sub-assembly having stationary and movable contacts thereon, said sub-assembly comprising means for carrying an operating member insulated from said stationary contact, said means being in electrical connection with said movable contact and in one side of said circuit, said stationary contact being grounded in the other side of said circuit through said socket member.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.