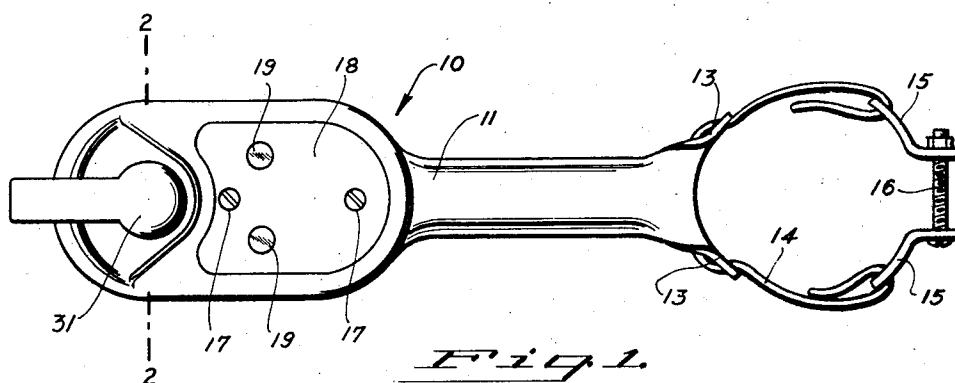
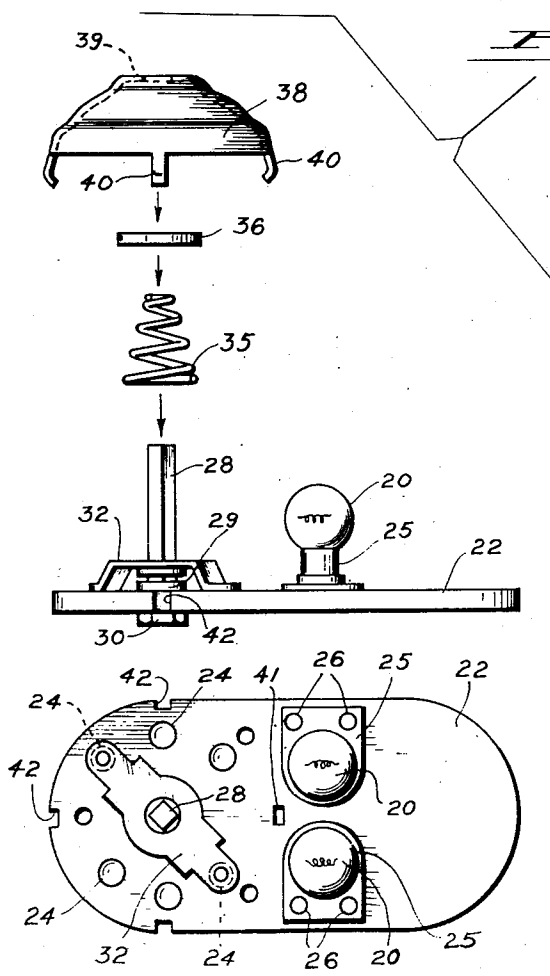
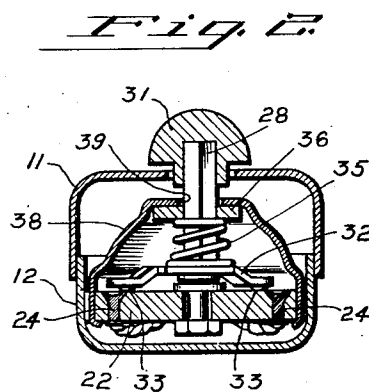


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CONTROL SWITCH ASSEMBLY
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CONTROL SWITCH ASSEMBLY

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1 Claim. (Cl. 200—168)

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This invention relates to switch mechanisms and is more specifically directed to the provision of a novel and improved switch assembly for controlling the operation of direction signalling systems for vehicles or the like, such as the system disclosed in our U. S. Patent No. 2,361,204.

The control switch assembly described in the aforementioned patent, although generally entirely satisfactory, has been found in practice to have the shortcoming that it is not absolutely dustproof. Occasionally, dust may penetrate into the switch housing and reach the associated contact elements and movable contact arm of the switch, thereby causing sparking during operation of the switch, or otherwise impairing proper functioning of the device.

For this reason, the control switch assembly disclosed in the aforementioned patent has not been approved by the underwriters for use with signalling systems installed in vehicles such as trucks for the transportation of gasoline, or the like, in which any sparking may constitute a serious hazard of fire and explosion.

Accordingly, it is the primary object of the invention to provide a control switch assembly of the character described embodying means for positively preventing dust or other deleterious matter from reaching the contact elements of the switch so as to eliminate any possibility of sparking and to render the assembly adapted for use with all kinds of vehicles.

Another object of the invention is to provide a control switch device comprising dust-proofing means, as aforementioned, which is sturdy and durable in use, simple and inexpensive to manufacture and adapted for assembly in a single and expeditious manner.

A further object of this invention is to provide a switch assembly comprising a housing for the switch mechanism and means mounted within the housing defining a substantially sealed chamber enclosing the contact elements of the device and shielding the same from dust or other matter which might penetrate into the housing.

Still another object is to provide means for protecting the contact elements of the switch, as aforementioned, that are independent of the housing and consist of a minimum of parts capable of ready assembly with a base carrying the contact elements of the device.

These and other related objects will become apparent in the following description of the invention illustrated in the drawings, wherein:

Fig. 1 is a top plan view of a control switch assembly according to the invention.

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Fig. 2 is a vertical sectional view through the assembly, taken on line 2—2 of Fig. 1, illustrating the construction of the housing, the switch mechanism and associated dust-proofing means therefor.

Fig. 3 is an exploded view of the various elements of said switch mechanism and associated dust-proofing means.

Referring now in detail to the drawings, 10 generally indicates the housing of the assembly which consists of elongated matable upper and lower sections 11 and 12, suitably secured together and each formed with an enlarged end portion to define a chamber adapted to accommodate the switch mechanism to be described.

The upper section 11 is provided at its other end with bracket elements 13, suitably slotted to permit passage of a flexible metal band 14 of adjustable length, the open ends whereof are drawn through bracket elements 15 interconnected by a screw and nut arrangement 16 by means of which the bracket arrangement may be fastened onto the steering column of a vehicle, to locate the assembly in operative position. The enlarged portion of the upper housing section 11 has a partially open top, to which there is removably fastened, as by means of screws 17, a cover plate 18 provided with windows 19 permitting observation of a pair of pilot lamps 20 mounted within the housing.

The switch mechanism comprises an insulating base plate 22 conveniently fastened to the lower section 12 of the housing. The plate 22 is provided with pairs of fixed contact elements 24 arranged in a circle and with sockets 25 mounting the aforementioned pilot lamps 20 and fastened to the base plate, as by means of rivets 26. The contact elements 24 and the sockets 25 are suitably electrically connected to the circuit of the signalling system which does not form part of the present invention and therefore will not be described herein.

A vertical shaft 28 is rotatably mounted on the base plate 22, centrally of the circle of fixed contact elements 24, and locked against axial displacement by the coacting flange 29 of the shaft and nut 30 abutting against opposite faces of the base plate. The upwardly projecting portion of the shaft 28 is of square cross-section and extends through and beyond the upper housing section 11 to receive at its free end a switch operating lever 31. The shaft carries for rotation therewith a contact lever or arm 32, formed at its opposite ends with integral nibs 33 (see Fig. 2) adapted to simultaneously engage, in the rotation

of the shaft, pairs of opposite contact elements 24. A coil compression spring 35 is freely mounted on and surrounds the shaft 28, the lower end of the spring resting upon the contact arm 32. A suitably perforated flat element or washer 36 is snugly mounted on the shaft in superimposed relation to the upper end of the spring.

A hollow member 38, which in the embodiment illustrated is shown as of substantially cup-shaped conformation, is provided with an opening 39 for the passage of the shaft 28, and is superimposed upon the washer 36 with its open end or mouth disposed downwardly. A plurality of peripherally spaced tongues 40 project from the terminal face of the open end of the member. Said tongues may be made to register with a slot 41 and a plurality of grooves 42 arranged at the periphery of the base plate 22, and are deformable to engage with their inwardly bent end portion the bottom face of the base plate, so as to lock the cup-shaped member 38 with its terminal face in surface engagement with the upper face of the base plate.

As illustrated in Fig. 2, when the various elements associated with the shaft 28 have been assembled thereon in the sequence described and indicated in Fig. 3, the spring 35 will be compressed between the washer 36 and the contact arm 32. Consequently, the arm will be urged toward the base plate 22, to insure proper contact of the nibs 33 of the arm with the contact elements 24, and concurrently the washer 36, snugly fitted on the shaft 28, will be forced into surface engagement with the end wall of the cup-shaped member 38 in the zone of the opening 39 thereof, thereby closing said opening.

Since, on the other hand, the terminal face of the opposite open end of the member 38 is maintained in contact with the upper face of the base plate by the tongues 40, and circumscribes the contact elements 24 and the arm 32, there is formed a substantially sealed structure defining a chamber within which the contact elements and associated contact arm are inclosed and effectively shielded from dust or other undesirable matter, independently of the housing of the assembly. Proper operation of the switch and elimination of any dangerous sparking is therefore constantly insured even in case of accidental penetration of such objectionable matter into the housing.

As will be apparent from the foregoing, the switch mechanism described, comprising the protected contact elements of the device, is readily assembled and then mounted within the lower

housing section 12 simply by fastening the base plate 22 to this latter by means of a few screws, and the upper section 11 may be likewise rapidly secured to the lower section to provide the complete assembly ready for application to a fixed support, such as the steering column of a motor vehicle.

While the invention has been described and illustrated substantially with reference to a preferred embodiment thereof, it is to be understood that certain changes and modifications may be made in the structure disclosed without departing from the spirit of the invention or exceeding the scope of the claim.

We claim:

In an electric switch assembly comprising a housing, a switch base secured within said housing, a vertical shaft rotatably supported on said base and projecting through said housing to carry an operating lever, a contact arm mounted on said shaft for rotation therewith, and a plurality of fixed contact elements carried by said base and engageable by said arm in the rotation thereof, a hollow member having one open end, a plurality of tongues projecting from said open end of the hollow member and engaging the base to lock the terminal face of said open end in surface engagement with the base, the hollow member defining a chamber inclosing said contact arm and said contact elements and having an opening through which the rotatable shaft extends, an element for closing said opening carried by the shaft within said chamber, and resilient means on the shaft between said element and the contact arm for maintaining said element in closing position to provide a substantially sealed structure within the housing and for concurrently urging the contact arm toward the base.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
836,352	Youmans	Nov. 20, 1906
2,165,200	Batcheller	July 11, 1939
2,303,693	Hill	Dec. 1, 1942

FOREIGN PATENTS

Number	Country	Date
351,282	Great Britain	June 25, 1931
641,881	France	Mar. 10, 1927