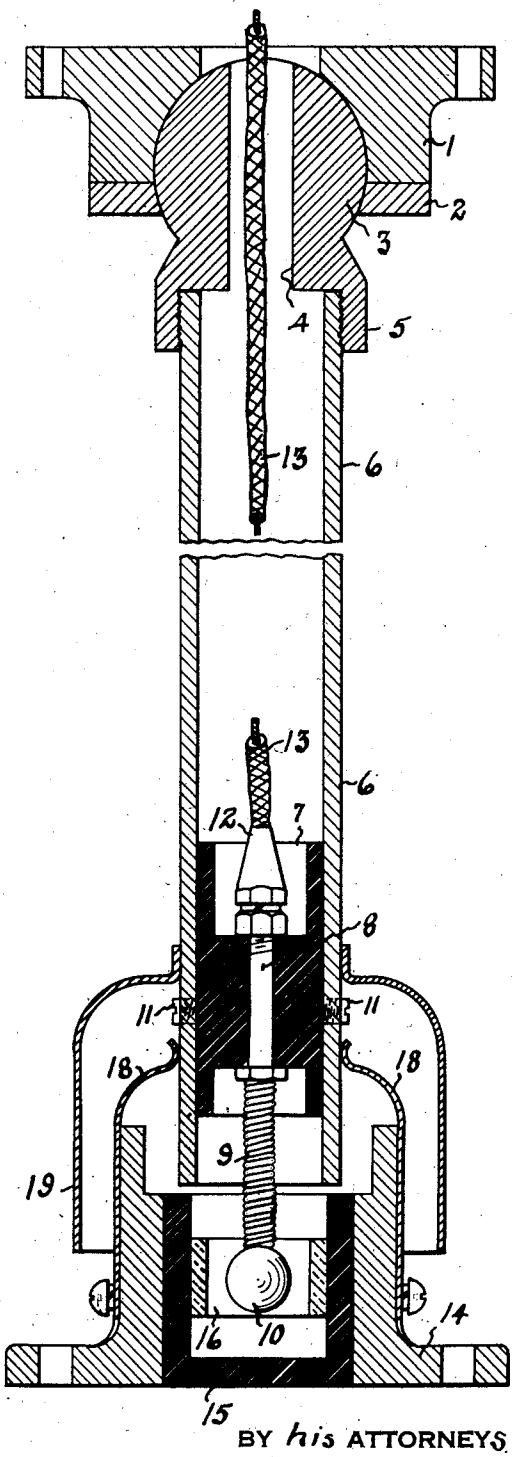
March 7, 1933. A. F. PAUL 1,900,198

STANCHION SWITCH

Filed July 29, 1931



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Patented Mar. 7, 1933 1,900,198

UNITED STATES PATENT OFFICE

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STANCHION SWITCH

Application filed July 29, 1931. Serial No. 553,757.

This invention involves a novel form of switch structure.

The general object of this invention is to provide an electric switch structure for use on vehicles as a safety device to prevent the door from closing on passengers and also as a substitute for the so-called treadle switch as now employed on street cars, buses and the like.

One of the objects of this invention is to provide a relatively simple switch structure in the form of a stanchion to be placed near the exit ways of vehicles in a position so that it will naturally be grasped by the passengers desiring to leave the vehicle and, hence, displaced to complete an electric circuit to effect the opening of the exit doors of the vehicle.

This switch may also be used in connection with the safety interlock devices so that when it is closed the vehicle power is cut off and the brakes applied so that it can not be started until the switch has been released. It may also be employed in a suitable signal circuit to notify the operator that a passenger is leaving the exit door.

These and other objects as will appear from the following disclosure are secured by means of this invention.

This invention resides substantially in the combination, construction, arrangement and relative location of parts in accordance with the following disclosure.

Referring to the drawing—

The single figure is a vertical cross-sectional view with a portion of the stanchion broken away of the device of the invention.

It is modern practice on transportation vehicles such as street cars and buses, for example, to mount a so-called treadle switch in the exit passage-way of the vehicles adjacent the exit doors so that when the vehicle is brought to a stop and the exiting passengers are standing adjacent the exit doors they must step upon the treadle which operates the treadle switch. Thus as soon as the vehicle is brought to a stop the closed switch completes circuit to the door control apparatus for the door operating members so that the doors open automatically. The present invention involves a switch having similar functions and made up and forming part of a stanchion or post which may be mounted adjacent to or in the passageway to the exit doors. The passenger or passengers who desire to leave the vehicle naturally grasp the stanchion to steady themselves with the result that it is displaced, closing the switch which forms a part thereof to effect the opening of the doors when the vehicle is brought to a stop.

Referring to the drawing, the device comprises a plate or fixture 1 to be secured to the vehicle at any desired point, as on the ceiling thereof. This fixture is provided with a cover plate 2 together with which a spherical recess is formed. Within this spherical recess is secured a ball shaped member 3 having an integral internally threaded collar 5. This member is provided with a central longitudinal bore 4 as shown. A hollow rod or pipe 6 externally threaded at its upper end is secured to the ball shaped member as shown and, hence, depends from the socket in a manner so as to be displaceable in any direction, this construction providing in effect a universal coupling or joint. Secured within the tube 6 near the lower end is a cylindrical block of insulating material 7 suitably formed and held therein by means of the set screws 11. Secured in the insulating block is a rod or bolt 8 to the lower end of which is secured a tightly wound bronze spring terminating at the lower end in a bronze ball 10. Secured to the upper end of the rod or bolt 8 is an electrical connecting fixture 12 by means of which the conductor 13 is electrically connected to the rod 8, spring 9 and ball 10. The conductor 13 extends up through the device and issues from the top as shown. At 14 is a base plate to be secured to the floor of the vehicle directly under the roof plate. This floor plate is provided with a central passage within which a cup shaped shell of insulating material 15 is secured. A metal ring 16 is mounted within the cup 15 in a position so as to be engaged by the ball 10 when the stanchion is displaced. Arranged around the outer surface of the floor plate are a number of spring fingers 18

secured thereto and projecting thereabove so as to engage the tube 6. These spring fingers are arranged to hold the stanchion tube in a central position with respect to the floor plate so that the ball contact 10 is normally out of engagement with the ring contact 16. A cylindrical skirt 19 is mounted upon the stanchion tube 6 near the lower end thereof so as to enclose the parts while permitting relative movement thereof. The other circuit wire is attached to the ring contact 16 and that wire (not shown) together with the wire 13 extend to the control apparatus for the door operating members. This device is mounted in the passageway adjacent the exit doors so that exiting passengers may grasp it as a natural impulse to steady themselves and, hence, displace the stanchion rods and the parts mounted thereon against the action of the spring fingers 18 to move the ball contact 10 into engagement with the ring contact 16 regardless of the direction in which the stanchion is pushed. As soon as pressure is removed from the stanchion rod the spring fingers 18 move the ball contact out of engagement with the ring contact and move the parts to their normal central position as shown in the figure. The spring 9 is, of course, provided to permit continued movement of the stanchion rod after the ball contact engages the ring contact. The transverse movement of the tubular stanchion 6 is lowered by the annular vertically extending ring forming part of the floor plate.

From the above disclosure it will be apparent that my invention involves certain novel features which may be embodied in other physical constructions and I do not, therefore, desire to be strictly limited to the disclosure as given in an illustrative sense but rather to the scope of the appended claims.

It is, of course, at once apparent that this device is not limited to a form where the stanchion is mounted vertically with the roof and floor plates disposed one above the other. The device could be mounted so that the stanchion rod extends horizontally or, in fact, in any direction, it only being necessary to have the spring fingers 18 strong enough to center the device when no pressure is applied thereto.

What I seek to secure by United States Letters Patent is:

1. A combined stanchion and switch for vehicles, comprising a roof plate, a hand grasp tube, means for securing the upper end of the tube to the roof plate to permit transverse movement of the lower end of the tube in any direction, a resiliently mounted contact secured to the tube, a floor plate, a contact mounted on and insulated from the floor plate in a position to be engaged by the first contact when the tube is displaced, resilient means for normally holding the contacts out of engagement, and a protecting skirt enclosing the lower end of the tube and the upper end of the floor plate.

2. A combined stanchion and switch comprising a roof plate, a tube, a universal joint connecting means for uniting the tube at its upper end to the roof plate, a contact member mounted on the tube near the lower end, a floor plate to be mounted under the free end of the tube, a contact mounted on the floor plate in a position to be engaged by the first contact, and resilient fingers mounted on the floor plate and engaging the free end of the tube to normally hold the contacts out of engagement.

3. A combined stanchion and switch comprising a roof plate, a tube, a universal joint connecting means for uniting the tube to the roof plate, a contact member mounted on the tube near the lower end, a floor plate to be mounted under the free end of the tube, a contact mounted on the floor plate in a position to be engaged by the first contact, resilient fingers mounted on the floor plate and engaging the free end of the tube to normally hold the contacts out of engagement, and a protecting skirt mounted near the free end of the tube and substantially enclosing the end of the tube and the floor plate.

4. A switch structure as described, comprising a vertical stanchion tube, means for supporting the tube at one end to permit transverse movement of the other end of the tube in any direction, a contact mounted on the tube near its free end and insulated therefrom, a second contact mounted adjacent the first contact, means for normally holding the contacts out of engagement, and resilient fingers bearing on the free end of the tube for holding the contacts normally out of engagement.

5. A switch structure as described, comprising a tube, means for supporting one end of the tube to permit movement of the other end of the tube in any direction radially, a contact resiliently mounted on the tube and insulated therefrom, means including a contact in the form of a ring mounted so that the ring surrounds the resiliently mounted contact, and resilient fingers engaging the free end of the tube for holding the contacts out of engagement.

In testimony whereof I have hereunto set my hand on this 22nd day of July, A. D. 1931.

ABRAM F. PAUL.