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W. C. PUTNAM

2,134,800

TREADLE SWITCH

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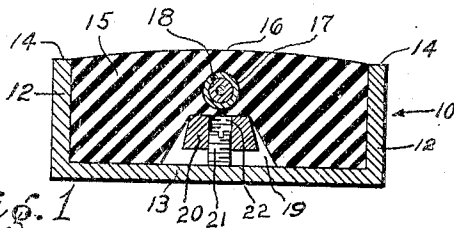


Fig. 1

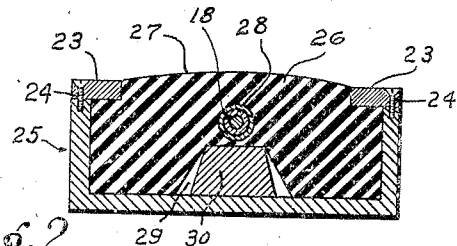


Fig. 2

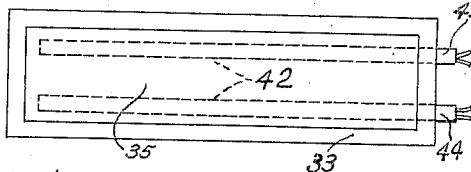


Fig. 3

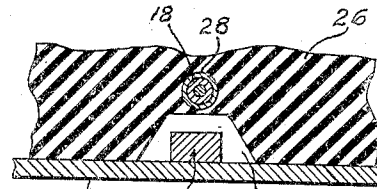


Fig. 4

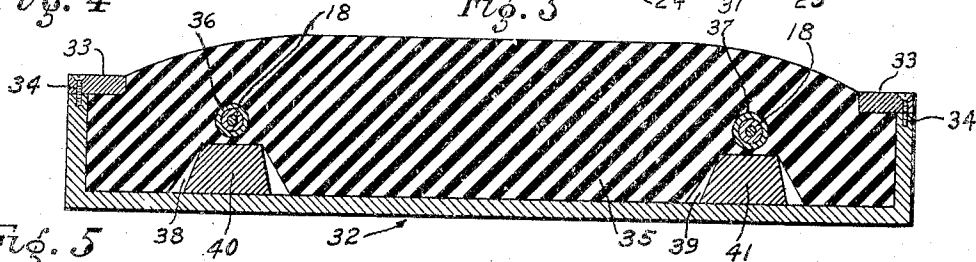


Fig. 5

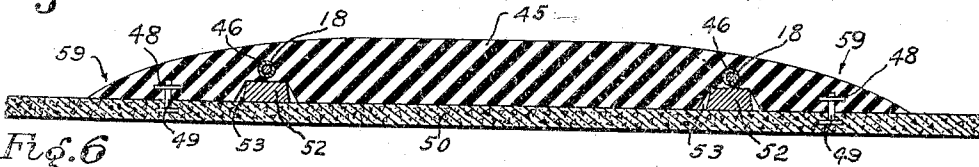


Fig. 6

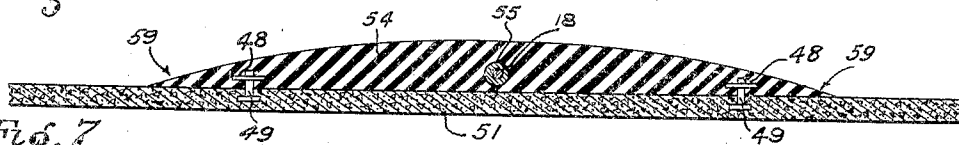


Fig. 7

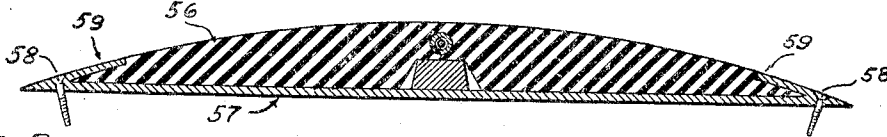


Fig. 8

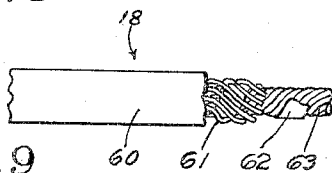


Fig. 9

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TREADLE SWITCH

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Application March 21, 1934, Serial No. 716,630

5 Claims. (Cl. 200—86)

This invention pertains to treadle switches and more particularly to a treadle switch for use in a street or driveway where it will be operated by the pressure of an automobile or a vehicle wheel passing thereover to complete an electric circuit.

A principal object of this invention is to provide a treadle switch having an adjustable bridge acting as a central support for a switch cable such as is disclosed in my co-pending application entitled Treadle switch, Serial No. 428,669, filed Feb. 15, 1930, now Patent No. 1,998,942, issued April 23, 1935.

A second and highly important object is to provide a device of the character mentioned, embodying a resilient member having a channel wherein a length of switch cable containing the contact elements of the switch may be removably inserted.

A further object of my said invention is the provision of a treadle switch consisting of a resilient member holding in suspension electrical contact elements over a removable bridge, the whole of which being maintained in proper relationship by a housing adapted to be detachably secured to a pavement or driveway.

Other objects, advantages and features of said invention will appear from the accompanying drawing, the subjoined detailed description, and the appended claims.

In the drawing:

Fig. 1 is a sectional view of a treadle switch disclosing a bridge adjustable by means of a screw.

Fig. 2 is a sectional view of a treadle switch disclosing a removable bridge.

Fig. 3 is a sectional view similar to Fig. 2 showing a lower bridge in position in the same treadle switch.

Fig. 4 is a diagrammatical plan view of a double treadle switch.

Fig. 5 is a sectional view of a double treadle switch having removable interchangeable bridges.

Fig. 6 is a sectional view of a double treadle switch adapted to be removably secured to the surface of a pavement.

Fig. 7 is a sectional view of a single treadle switch similar to the one shown in Fig. 6 but without a bridge.

Fig. 8 is a sectional view of a single treadle switch with a removable bridge and adapted to be detachably secured to a pavement.

Fig. 9 is a fragmental view of the switch cable partly broken away to disclose its construction.

Referring to the drawing, Fig. 1 shows a treadle

switch comprising a housing 10 having sides 12 and a base 13. The housing 10 is installed by placing the same into a pavement or other supporting structure in order that the top 14 of the sides 12 will be flush with the surface of the pavement.

A resilient member 15 preferably constructed of rubber and having a convex top 16 adapted to be contacted by a vehicle wheel and to convey the pressure thereby received, downwardly, is formed to fit within said housing.

The resilient member 15 is further provided with the channel 17 formed therein to receive the switch cable 18. A length of the switch cable 18 is inserted after the resilient member is formed and may be removed therefrom at will and another cable substituted. It has been found unsatisfactory to mould the cable in the rubber, the heat necessary in curing the rubber tending to kink the cable, resulting in inoperative or unreliable action. Furthermore, it may at times become necessary to replace the cable because of defects or deterioration.

Member 15 is further provided with a recess 19 to permit the insertion therein of a bridge 20 for the support of the portion of the resilient member 15 directly under cable 18, thus to concentrate pressure applied to the top of member 15 on the switch elements of cable 18.

In view of the fact that the height of the bridge 20 relative to the normal rest position of the cable 18 is very critical when pressure is applied through the resilient member 15 there are provided a plurality of adjusting screws 21 threaded into openings 22 along the length of the bridge 20 and which rest upon the bottom section 13 of the housing 10. The screws 21 are an illustration of an adjusting means. Any suitable adjusting and supporting means suitable to the work may be used.

Fig. 2 discloses a treadle switch of the same general construction as that disclosed in Fig. 1 with the modifications of having top holding plates 23 secured by screws 24 to the housing 25 and the resilient member 26 formed to conform to housing 25 and the attached plates 23, having a convex top 27, a channel 28 adapted to have removably inserted therein a switch cable 18, and a recess 29 to permit the use of a bridge 30 as above described for bridge 20.

Another modification herein disclosed, and more clearly shown in the fragmental view of the same treadle switch disclosed in Fig. 2, shown in Fig. 3, is the removable interchangeable bridges illustrated by the said bridge 30 of the

high type and a lower bridge 31 shown in Fig. 3.

Fig. 4 shows a plan view of a double treadle switch, a section of which is shown in Fig. 5. A housing 32 having top holding plates 33 secured by screws 34, forms a support for a resilient member 35 which is provided with two channels 36 and 37 for the insertion of a removable length of switch cable 18, recesses 38 and 39 thereunder permitting the use of interchangeable bridges 40 and 41. The cables are indicated in plan view Fig. 4 by the broken lines 42 with extended ends 43 and 44 which may be connected to separate electric circuits, such as a street signal, or a garage door opening mechanism, or a signal bell at the entrance to a garage, or any other circuit where it is desired that a vehicle will operate a mechanism when the vehicle travels in one direction over the treadle switch, and where it is desired that the connected mechanisms shall become inoperative when a vehicle passes over the treadle switch in the opposite direction.

Fig. 6 illustrates a modification of the double treadle switch shown in Fig. 5 providing a resilient member 45 containing two switch cables 18 and operating as a double switch, and which is adapted to be removably installed on top of a pavement, floor, or the like so as not to mutilate its floor surface, or to be used where it is desired to install a removable switch.

The switch may be constructed with adjustable or removable bridges, or as shown in Fig. 7, without a bridge, depending upon its application.

Referring to Fig. 6 the resilient member 45 is shown of sufficient width to extend to either side beyond the switch cables 18 which are removably inserted in channel 46 provided for their reception and having imbedded therein a catch, clip, or spring washer 48 adapted to removably engage a pin 49 located in the flooring or pavement 50 to which the switch may be removably secured in operative position and yet removal be permitted with the greatest speed and efficiency from the top of a floor or pavement.

The floor 51 may be presumed to be flat and act as a support for the resilient member 45, and if desired, bridges 52 may be used in recesses 53 in resilient member 45 provided for that purpose or the resilient member 45 may be constructed as shown in Fig. 7 where the bridge is omitted. It would not be required that a bridge be incorporated where the treadle switch is in use when vehicles pass at a markedly slow speed, as the pressure would operate the cable. It is necessarily preferable, however, that a bridge be incorporated in a treadle in which speed of action is required, as the bridge makes the treadle sensitive to high speeds and light pressures.

In Fig. 7 there is provided a resilient element 54 with a single channel 55 to receive a switch cable 18 and form a single treadle switch without a bridge, adapted to be removably secured by the recited fastenings 48 and 49 to a floor 51.

In Fig. 8 is shown a treadle switch in which the resilient member 56 is shown housed in a light, preferably flexible metal housing 57 which may be removably secured to a floor or pavement by any suitable means such as the screws 58.

The treadle switch shown in Figs. 1, 2 and 5 are designed to be used by setting them below the surface of the street, pavement or floor so that the top surface 14 in Fig. 1, the top of plates 23 in Fig. 2 and the top of the plates 33 in Fig. 5 would be flush with the pavement and only the convex upper surface of the resilient member in

each treadle switch would be above the surface of the adjoining street or pavement.

The treadle switches shown in Figs. 6, 7 and 8 as recited are to be used above the pavement or floor and for that purpose have their approach edges beveled or sloped as shown at 59.

Fig. 9 shows a fragmental view of a portion of the switch cable 18 which these treadle switches are designed to incorporate as a contact medium for a connected electric circuit.

The cable 18 comprises a core 63 of flexible wire spirally covered with insulating material 62, having a space between the strands of the wrap upon which a second layer of flexible wire is wound.

The contact is made between the core 63 and the wires 61 when pressure is applied to the cable, the wires 61 touching the core 63 through the space between the wraps of the insulating material 62. A low voltage of current is preferably used to prevent arcing at the point of contact.

A covering for the contact elements just noted, preferably made of water and acid proof material and sufficiently resilient to transmit pressure to the wire contained therein, is illustrated at 60.

The several resilient members shown in the drawing are intended to act as a housing for the cable 18, as a protection against too great pressure, and to transmit the required pressure from the vehicle wheel passing thereover to the elements of cable 18 so as to bring the wires 61 in contact with the core 63 and act as a switch connecting means for a connected electric circuit.

The amount of pressure required to compress the cable to the contacting point may be governed by the shape and thickness of the resilient member used but more accurately governed by the height of the bridge used as a support for the cable. It has been determined through experimentation that the treadle switch may be made so sensitive by increasing the height of the bridge that it will be operated accurately by an automobile passing thereover at a speed of more than sixty miles per hour, and may be retarded by the use of the low bridge so that only a slow moving vehicle passing thereover will provide sufficient pressure long enough for it to be transmitted by the resilient member and contact the cable elements.

Intermediate speed actuations of the cable may be had by adjustment of the bridge height or by inserting bridges of varying heights.

Certain modifications may appear to one versed in the art in adapting this invention to its many uses but such modifications may well be made without departing from the spirit of my invention as defined in the appended claims.

What I claim as my invention and desire to secure by Letters Patent is:

1. A treadle switch comprising a resilient member, a channel in said resilient member, a switch cable comprising a pair of electrical conductors and a sheath inclosing said conductors separably in said channel and an adjustable bridge supporting said resilient member and said cable.

2. A treadle switch comprising a resilient member, a channel in said resilient member, a switch cable movable in said channel, a supporting member for said resilient member and a removable bridge between said supporting member and said cable.

3. A treadle switch comprising a resilient member, a channel in said resilient member, a switch cable removably inserted in said channel, a sup-

port for said resilient member and an adjustable bridge between said support and said cable including screw means to adjust the height of said bridge.

5 4. A treadle switch comprising a resilient member, a channel in said resilient member, a switch cable removably inserted in said resilient member, and a removable, interchangeable bridge supporting said cable.

5. A treadle switch comprising a resilient member, a channel in said resilient member, a switch cable movable in said channel, a supporting member having removable upper flanges supporting said resilient member, an adjustable bridge supported by said supporting member to support said cable when pressure is applied to said resilient member. 5

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