April 23, 1935. W. C. PUTNAM 1,998,942

TREADLE SWITCH

Filed Feb. 15, 1930

Fig. 1.

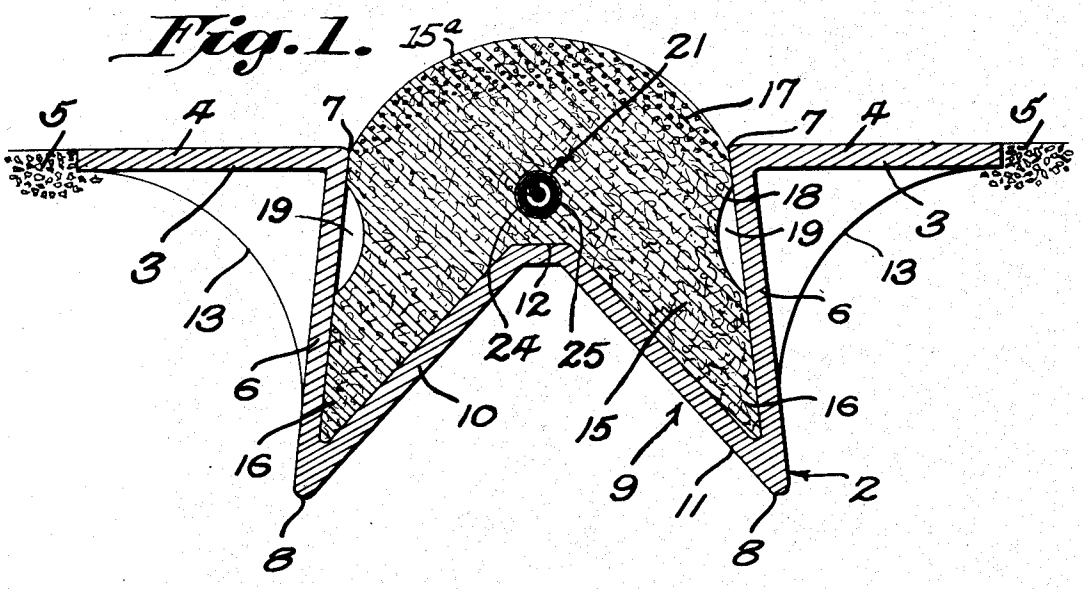
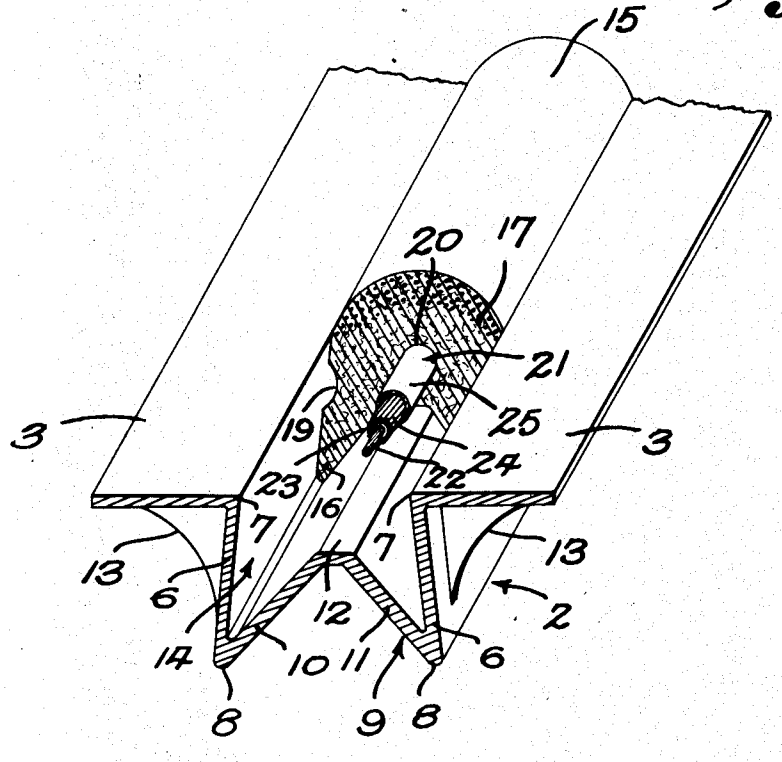


Fig. 2.



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UNITED STATES PATENT OFFICE

1,998,942

TREADLE SWITCH

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6 Claims. (Cl. 200—86)

My invention relates to treadle switches, and more particularly a treadle switch adapted to be used in conjunction with a traffic signal to receive actuations from the passage of vehicles thereover, the wheels of which contact the treadle.

An object of my invention is to provide a switch which may be placed in or on the road surface in position to be contacted by the wheel of a vehicle passing thereover, and in which the contact elements will be closed upon pressure being applied at any point in the length of the switch.

An object of my invention is to provide a switch of such simple and durable construction that it may be used in or on roads or streets of any character of surface, may be used under the most severe conditions of traffic and weight, and which will not be affected by any form of weather, atmospheric conditions, temperature, water, snow, and only by the formation of ice thereover too thick to transmit pressure to the switch elements.

An object of my invention is to provide an economical switch for adaptation to a conventional signaling system for highway intersections, and which may readily be adapted for use in conjunction with garage door opening mechanism, and such other electrical apparatus as may be operated by a switch of this character.

To the above and other purposes which may hereinafter appear my invention consists in the novel construction, arrangement and combination of parts as hereinafter fully, clearly and concisely described, definitely pointed out in my claims and illustrated by the accompanying drawing in which—

Fig. 1 is a view in cross section of the treadle switch.

Fig. 2 is a perspective view of a portion of the treadle switch, parts being broken way to disclose portions otherwise hidden.

The treadle switch comprises a supporting member 2, having two flat flanges 3 at either side adapted to be set into the pavement of a street so that the upper surface 4 will be level with the pavement as indicated at 5. The flanges 3 are joined to spaced side wall members 6 which are inclined at a slight angle to each other, being closer together at their upper edges 7 than at their lower edges 8, at which point they are joined to an angular lower supporting member 9, composed of two inclined sections 10 and 11, having their highest point at approximately the center of the supporting member 2, and provided at that point with a flat connecting bridge 12 provided for the purpose of furnishing vertical support at that point. The flanges 3 may be provided with supporting webs 13 at spaced intervals in the length of the structure resting against the side wall members 6. It is intended that this entire structure be constructed of metal suitable to meet extreme weather conditions, preferably cast in a mold, and may be of any length required.

The side walls 6 together with the lower supporting member 9 form a recess 14, provided for the purpose of receiving and supporting a resilient member 15 being of a substantially angular shape to conform to the angular shape of the walls of the recess 14. The resilient member 15 is composed preferably of rubber and has a bifurcated lower portion comprising two spaced angularly related sections 16 particularly designed to closely contact the inner faces of the wall members 6 and the lower supporting member 9, and the bridge 12.

The resilient member 15 is further provided with a convex surface portion 15a having a reinforcing element 17 incorporated therein and is designed to contact the side walls 6 at their upper edges 7 to prevent entrance of dirt or water at that point. Expansion movement of the resilient member 15 in a direction crossways to its length, and at a point opposite its center is provided by the channels 18 which run the length of the resilient member 15 and provide the recesses 19 for the expansion of the adjoining portion of the resilient member 15 thereinto.

The resilient member 15 is further provided with a channel 20 at approximately the center of the resilient member 15 and adapted to reside directly above the bridge 12. The channel 20 is provided for the purpose of receiving an electric switch cable 21 and supporting it in a position to receive pressure applied to the convex surface 15a of the resilient member 15; the bridge 12 is provided for the purpose of supporting the resilient member 15 at the central point and consequently the cable 21 to receive pressure applied to the surface 15a; the recesses 19 are provided for the purpose of allowing the central portion of the resilient member 15 to expand sideways to effect transmission of pressure to the surface 15a in a downward direction to the switch cable 21 as supported by the bridge 12.

The resilient member 15 is supported and retained in the supporting structure 2 by means of the angular relation of the walls 6 together with the lower supporting member 9. This resilient

member 15, as recited, is designed to be composed preferably of rubber, to be made in a mold, and in any length desired for the purpose required. The reinforcing element 17 may be of any desired material, such as the conventional fabric filler used in the construction of automobile tires.

The electric switch cable 21 comprises an inner metallic core 22 having a strip 23 of insulating material wound thereover in spaced spiral relation, and over the strip 23 are spirally wound a plurality of flexible wires 24, the whole covered with a suitable insulating covering 25, preferably moisture and acid proof. The core 22 is connected at one end to one side of an electric circuit (not shown) and the wires 24 connected to the other side of the same circuit. Contact between the core 22 and the wires 24 is made at substantially any point in the length of the cable upon sufficient pressure being applied thereto to bring the wires 24 into contact with the core 22 in the spaces provided by the spaced spirally wound strip 23, which normally maintains the wires 24 and the core 22 in spaced relation.

In this invention I have provided means for closing an electrical circuit by pressure, preferably by the weight of an automobile wheel passing over the switch, and to this end I have provided the supporting structure 2 which is adapted to receive and support the resilient member 15 in which the electric switch cable 21 is maintained in a position to receive the pressure applied from an outside source. Pressure applied to the convex surface portion 15a compresses the resilient member 15, which by means of the angular relation of the supporting member 2, the expansion recesses 19 and the bridge 12, is designed to concentrate the pressure transmitted at the central point or the switch cable 21.

Certain modifications and alterations will readily be apparent to one versed in the art in adapting the invention to use under the various conditions necessary to road traffic, the showing herein being the form deemed preferable at present, and these modifications may well be made without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. In a treadle switch an electric switch cable, a resilient element containing said cable, and a supporting structure with lateral flanges, sides and a bottom structure, adapted to be sunk in a street with the said flanges flush with the adjoining street surface, said structure having an open top to receive the said resilient element; and a central supporting portion rising from said bottom structure for the support of the said resilient element and cable.

2. A treadle switch comprising a resilient member having a convex surface, a bifurcated lower section and a central channel wherein is adapted to be inserted an electric switch cable; a supporting structure having lateral flanges, relatively outwardly sloping sides, and a base section formed with an upwardly extending angular member adapted to fit and support said bifurcated lower section of said resilient member.

3. A treadle switch comprising a strip of flexible and resilient material, forming in cross-section, substantially, an irregular, concavo-convex, hexagon, rectilinear, except for its convex side which is curved, and except for having in each of opposite equilateral rectilinear sides, adjacent their joinder with the curvilinear side of said sectional contour, indentations each forming, substantially, the segment of a circle and representing the cross-sectional configurations of longitudinal grooves of substantially equal dimensions extending the length of said strip; a longitudinal bore through said strip, said bore being substantially equidistant from said oppositely grooved sides and adjacent to a comparatively short rectilinear line of said sectional contour marking its points of the greatest concavity; a receptacle for said strip, of rigid material and interiorly formed to snugly fit the outer substantially straight-lined contour of said strip, and an electric switch-cable extending through said bore.

4. A treadle switch comprising a strip of flexible and resilient material forming in cross-section, substantially, irregular, concavo-convex, polygon having one side of said sectional contour convexly curvilinear, and having its oppositely disposed sides connecting with said convex side mutilated by the cross-sectional areas of oppositely disposed, longitudinal grooves in said strip, a longitudinal bore extending through said strip and perforating said cross-sectional contour at a point between those of its greatest concavity and greatest convexity, a receptacle of rigid material for said strip, interiorly formed to snugly fit all except the convex line of said contour, and except those of the grooves of said strip, an electric switch cable extending through said bore.

5. A treadle switch comprising a strip of flexible and resilient material, forming in cross-section, substantially, an irregular, concavo-convex, polygon, except for having two of its oppositely disposed sides mutilated by the cross-sectional areas of oppositely disposed longitudinal grooves in said strip; a longitudinal bore extending through said strip and perforating the plane of said cross-sectional contour adjacent its point of greatest concavity; a receptacle of rigid material for said strip, interiorly formed to snugly fit all except the convex line of its contour and those of said grooves, and an electric switch cable extending through said bore.

6. A treadle switch comprising a strip of flexible and resilient material, having, throughout its length, its upper surface convex and its lower surface reentrant, and having grooves in its oppositely disposed sides; a rigid sheath inclosing all but the upper surface of said strip, and conforming to its contour, except for the inner surfaces of said grooves, which are maintained unobstructed, and a longitudinally extending channel through said strip spaced therein adjacent points of greatest reentrance of its lower surface.

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