Nov. 29, 1932. G. G. HILL 1,889,602

TREAD SWITCH

Filed Dec. 26, 1929

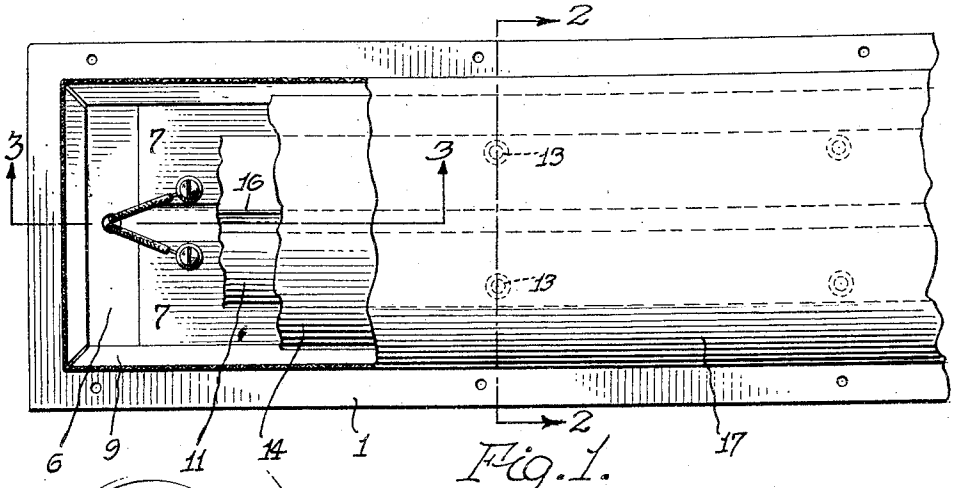


Fig. 1.

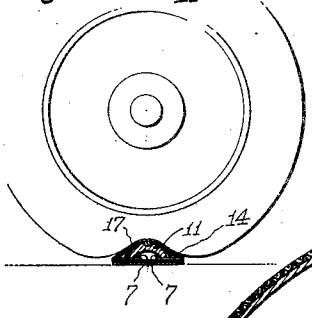


Fig. 4.

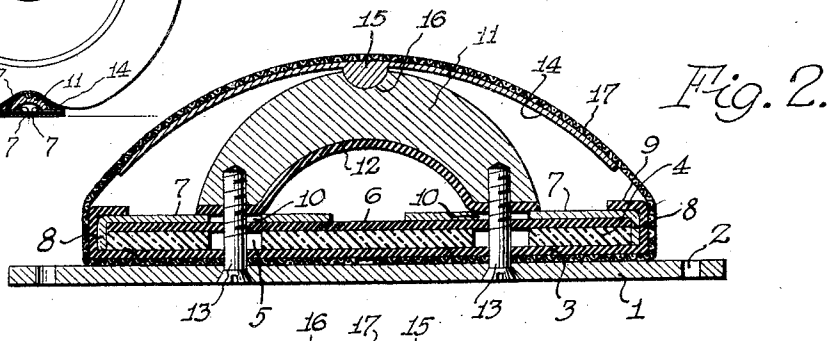


Fig. 2.

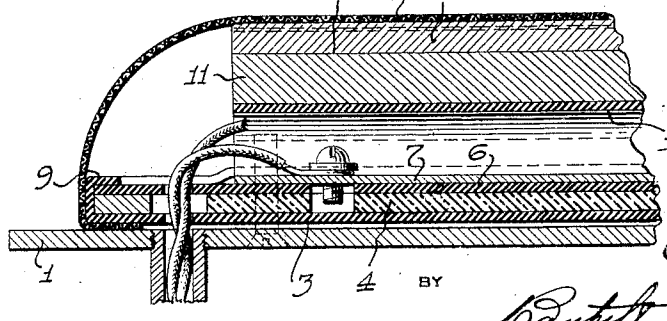


Fig. 3.

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UNITED STATES PATENT OFFICE

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TREAD SWITCH

Application filed December 26, 1929. Serial No. 416,553.

The present invention pertains to a novel tread switch designed particularly to be placed on a horizontal surface and actuated by the weight of a moving object passing thereover. A particular use for such a switch is found in connection with electrically operated garage doors controlled by the switch which in turn is operated by the automobile passing thereover in either direction.

The principal object of the invention is to provide a simple and inexpensive device of this character, which is also so constructed as to be operated only by such objects as an automobile wheel and not by the foot of a person or other weight that might be applied thereto. With this object in view, the device is made up essentially of two spaced contact members with an arched or other suitably shaped support therebetween. The support carries the switch blade which is in the form of a flexible conductor mounted in such a manner that its ends are normally spaced from the contacts. The device is enclosed in a fabric covering which excludes dirt and water and also limits the expansion of the flexible conductor. In order to close the switch, the conductor must be bent at both sides of a median line to bring both ends into engagement with the contacts. This flexing of the conductor can be accomplished only by a member of substantial ground-engaging area, such as an automobile tire, as distinguished from objects of less area such as stones, planks or parts of the human body.

The invention is fully disclosed by way of example in the following description and in the accompanying drawing, in which—

Figure 1 is a plan view of the device, partly broken away;

Fig. 2 is a cross section on the line 2—2 of Figure 1;

Fig. 3 is a longitudinal section on the line 3—3 of Figure 1; and

Fig. 4 is a detail view showing the action of a tire on the switch.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

In the several figures the device is shown as built upon a flat base member 1 apertured along its margin as at 2, whereby it may be anchored to the ground or to a concrete or macadam runway. Upon the base is mounted an insulating member 3 upon which rests an insulating flooring 4 having two longitudinal rows of apertures 5 as shown more clearly in Figure 2. An insulating sheet 6 is mounted upon the member 4, and on the sheet are laid two spaced contact members 7 running lengthwise of the member 4 and having their outer edges bent downwardly as at 8 against the longitudinal edges of the member 4. It will also be seen that the insulator 3 is carried over the downwardly bent portions 8 as indicated by the numeral 9. The spaced contacts 7 are also formed with apertures 10 lying over the apertures 5 for a purpose which will presently appear.

An arched supporting member 11 with an insulating lining 12 is mounted upon the contacts 7, with its ends covering the apertures 10. Screws 13 are passed upwardly from the base 1 through the registering apertures 5 and 10 and into the ends of the support 11 in order to retain the same and also clamp together the several parts which have thus far been described.

Upon the support 11 is mounted a flexible switch blade or conductor 14 which preferably consists of a spring metal. The conductor is adapted to rock on the support 11 by means of a median key or rib 15 which enters a groove 16 formed longitudinally in the crown of the support. Due to the fact that the conductor is of a spring metal and is bowed towards the contacts 7, the ends of the conductor have a tendency to withdraw and space themselves from the contacts as clearly shown in Figure 2.

The several parts above the base 1 are enclosed in a flexible covering 17 which is preferably of a waterproof and weatherproof fabric. This member is drawn rather tightly over the conductor 14 and has its ends inserted between the base 1 and the insulator 3 and held by the clamping action of the screws 13. In this manner, the covering limits the expansion of the conductor 14 and retains it in the bowed or flexed position shown in Figures 1 and 2.

In order to close the switch for the purpose of operating any mechanism governed thereby, it is necessary that both ends of the conductor 14 be brought into engagement with the contacts 7. Accordingly, pressure must be applied to the device on both sides of the rib 15, and pressure applied in this manner and of sufficient degree to bend the conductor must be derived from an object of considerable weight and ground-engaging area. The apparatus is so constructed that an automobile tire in passing over the same will furnish pressure in accordance with these requirements as illustrated in Fig. 4, whereas a lighter or smaller object which may bear upon the device will either fail to bend the conductor or will bring only one end thereof into engagement with a contact, so that in such cases the switch will not be closed.

It will be seen that the device is operable by an automobile wheel passing transversely thereover in either direction, and that it will return to its normal or open position as soon as the weight is removed therefrom.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention, as indicated by the appended claims.

What I claim is:—

1. A tread switch comprising a pair of mutually insulated switch contacts, a support mounted therebetween, a resilient conductor mounted on said support and having its ends spaced from said contacts and adapted to be bent into engagement therewith, and a flexible covering over said conductor and holding the same in a flexed condition.

2. A tread switch comprising a pair of mutually insulated switch contacts, an arched support mounted therebetween, and a flexible conductor mounted on the crown of said support and having its ends normally spaced from said contacts and adapted to be bent into engagement therewith.

3. A tread switch comprising a pair of mutually insulated switch contacts, an arched support mounted therebetween, and a flexible conductor mounted on the crown of said support and having its ends normally spaced from said contacts and adapted to be bent into engagement therewith, said conductor having a longitudinal rib received in said support and permitting a rocking movement of said conductor.

4. A tread switch comprising a pair of mutually insulated switch contacts, an arched support mounted therebetween, a resilient conductor mounted on the crown of said support and having its ends normally spaced from said contacts and adapted to be bent into engagement therewith, said conductor having a longitudinal rib received in said support and permitting a rocking movement of said conductor, and a flexible covering over said conductor and holding the same in a flexed condition.

In testimony whereof I affix my signature.

GLENN G. HILL.