July 1, 1930. A. D. OWEN 1,768,858

PEDAL SWITCH

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Fig. 2

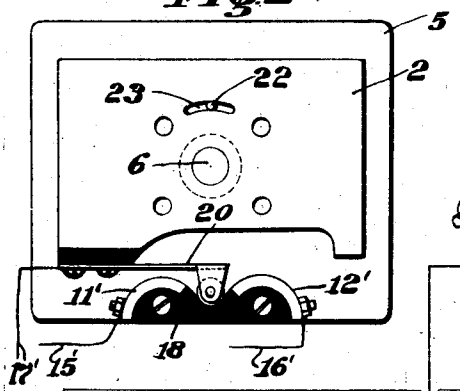


Fig. 1

Fig. 3

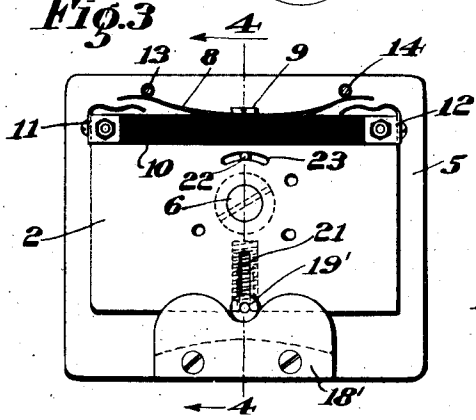
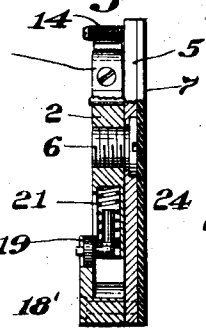


Fig. 4



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Fig. 5

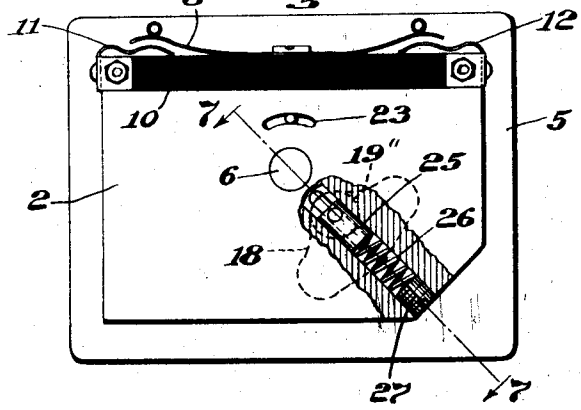


Fig. 7

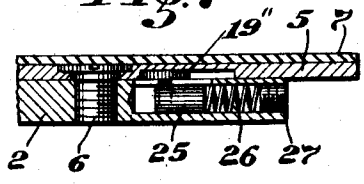


Fig. 8

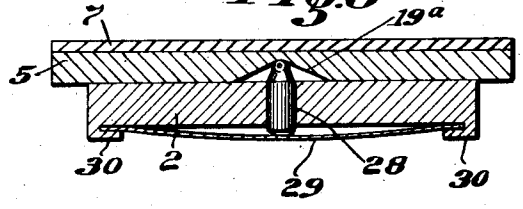
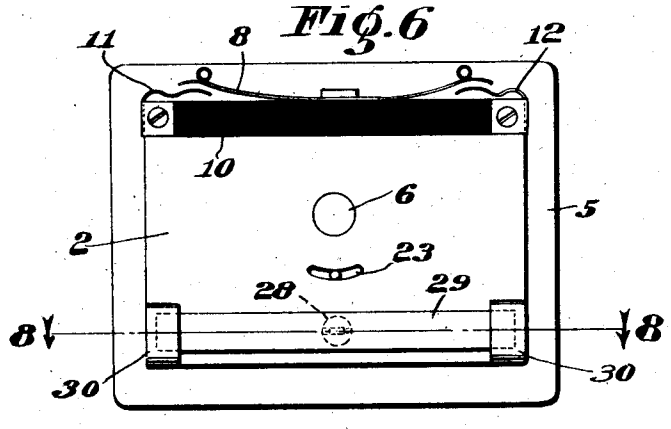


Fig. 6



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UNITED STATES PATENT OFFICE

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PEDAL SWITCH

Application filed November 11, 1927. Serial No. 232,498.

It is now a common practice to equip motor vehicles with electrically operated direction signals under the control of the driver for indicating whether he intends to turn to the right or left. A signal system of this character involves switches for operating the signals, and the present invention is especially concerned with a switching mechanism adapted for this purpose.

It has been proposed heretofore to apply such switching mechanism to the clutch or brake pedal of a motor vehicle, and it is the chief object of the present invention to improve switching mechanisms of this type with a view to reducing their cost of manufacture, while at the same time providing an exceptionally sturdy and reliable switch construction.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a perspective view of the rearward side of a switch construction embodying this invention, showing the mounting of the switch on a pedal;

Figs. 2 and 3 are rear elevations of modified constructions;

Fig. 4 is a cross-sectional view on the line 4—4, Fig. 3;

Figs. 5 and 6 are rear elevations of further modifications of the invention; and

Figs. 7 and 8 are cross-sectional views on the line 7—7, Fig. 5, and 8—8, Fig. 6, respectively.

Referring first to Fig. 1, the construction there shown comprises a switch base 2 secured to a pedal 3 by four screws 4. Secured to the face of this base by a pivot stud or screw (not shown) is a foot plate 5 which preferably is provided with a rubber facing 7. This mounting permits the foot plate to rock in substantially its own plane about the axis of the pivot, and this rocking movement is utilized to operate either a right or left electric switch depending upon the direction of said rocking movement.

The switch construction shown in Fig. 1 includes a central contact 8 in the form of a leaf spring and secured by a screw 9 to an insulating bar 10 which is fastened to the upper edge of the base 2. The opposite ends of this contact 8 overlie right and left stationary contacts 11 and 12, respectively, which are secured to the opposite ends of the insulating piece 10. Projecting rearwardly from the foot plate 5 are two pins 13 and 14, respectively, which are covered by insulating bushings and which normally rest on the opposite end portions of the central contact 8.

A typical arrangement of the circuit connections is shown in Fig. 1, the right-hand contact 11 being connected by a suitable conductor to the right direction signal 15, while the left contact 12 is similarly connected to the left signal 16. The opposite terminals of these signals are grounded, and one side of the battery 17 is grounded while the other side is connected to the central contact 8. It will thus be evident that when the foot plate 5 is rocked toward the driver's right, the right-hand switch 8, 11 will be closed and the right signal 15 will be operated. Similarly when the foot plate is rocked toward the driver's left the left-hand switch 8, 12 will be closed, thus bringing the left signal 16 into operation. This rocking movement of the foot plate is easily produced by a slight twisting motion of the foot.

In order to hold the foot plate normally in its central or neutral position a cam 18 is secured to the back of the foot plate 5, this cam having a central depression between two raised portions. A roll 19 bears on the surface of the cam and is held pressed against it by a leaf spring 20 which is secured to the lower edge of the base 2. It will be clear that the rocking movement of the foot plate in either direction away from its central position will result in moving an elevated part of the cam 18 under the roll 19 and thus tensioning the spring so that such rocking movement is yieldingly resist-

ed. As soon as the force which produced said rocking movement is released the spring 20 immediately acts through the roll 19 and cam 18 to return the foot plate to its central position.

The invention thus provides a very simple and sturdy switch construction for operating direction signals which is not liable to get out of order and is very convenient to use. It will be apparent that the cam and roll constructions can be reversed and that a great many variations can be made in the construction shown without departing from the spirit or scope of the invention. Some of these modifications are illustrated in the other figures of the drawings.

The construction shown in Fig. 2 is like that illustrated in Fig. 1 except that the insulating bar 10 and the contacts carried thereby are omitted. The spring 20 is insulated from the base 2 and performs the functions of the central contact 8 of the construction shown in Fig. 1, and the cam 18 includes metal pieces 11′ and 12′ set into it and forming contacts to cooperate with the spring 20 and the roll carried thereby to close the circuit through either the right or left direction signal when the foot plate 5 is rocked about the central pivot 6. In this construction, therefore, the cam and spring pressed roll perform the functions of switches as well as serving to hold the foot plate yieldingly in its central position. The range of rocking movement of the foot plate 5 relatively to the base 2 is limited by a pin 22 which is fixed in the foot plate and projects through a curved slot 23 formed in the base 2.

Figs. 3 and 4 show a switch construction like that shown in Fig. 1 except that the roll 19′ which cooperates with the cam 18′ is mounted on a plunger 24 which is pressed downwardly by a coiled spring 21 mounted in a hole drilled in the base 2.

Figs. 5 and 7 show a further variation of the construction shown in Fig. 1 in which the cam 18″ is formed in the rearward part of the foot plate 5. The roll 19″ which cooperates with this cam is mounted on a plunger 25 which is pressed upwardly by a spring 26 held in a bore formed in the base 2, this spring being backed up by a screw threaded plug 27. The operation is like that of the switch shown in Fig. 1.

Figs. 6 and 8 show a still further variation of the switch illustrated in Fig. 1, differing from the latter switch simply in the cam arrangement. In this embodiment of the invention the cam face 19^a is formed in the rearward part of the foot plate 5, and a plunger 28 carrying a roll, or having a rounded face to bear against the cam face, projects through the face plate 2. This plunger is backed up by a leaf spring 29, the opposite ends of which are held in slots formed in ears 30—30 projecting from the rearward side of the base. The spring pressed plunger 28 thus cooperates with the cam surface 19^a to resist any rocking movement of the foot plate away from its central position as in the construction shown in Fig. 1.

Various other changes may be made without departing from the spirit or scope of the invention. For example, while the switch base has been shown attached to a pedal, it can be secured to a pedal shank, the pedal and the shank being equivalents so far as this invention is concerned. It is contemplated, also, that switches of this character can be used conveniently in traffic towers.

Having thus described my invention, what I desire to claim as new is:

1. In a pedal switch, the combination of a base adapted to be secured to a pedal, a foot plate mounted on said base to rock in approximately its own plane from a central position to either the right or left of said position, two switches arranged to be operated, respectively, by said rocking movements, a cam, a roll cooperating therewith, and a spring for pressing said cam and roll together, said cam, roll and spring cooperating with said foot plate to return it automatically to its central position when released after being moved to operate either of said switches.

2. In a pedal switch, the combination of a base adapted to be secured to a pedal, a foot plate mounted on said base to rock in approximately its own plane from a central position to either the right or left of said position, contacts arranged to be engaged by said movements, a spring pressed roll carried by said base, and a cam carried by said plate and cooperating with said roll to return the plate automatically to its central position when released after being moved to bring said contacts into engagement.

3. In a pedal switch, the combination of a base adapted to be secured to a pedal, a foot plate mounted on said base to rock in approximately its own plane from a central position to either the right or left of said position, a spring pressed roll carried by said base, and a cam mounted on said plate in cooperative relationship to said roll, said cam including two contacts separated by an insulating member and said member having a depression between said contacts.

ALLISON DONHAM OWEN.