May 16, 1933. C. B. MAHAN 1,909,699

STOP LIGHT SWITCH

Filed Nov. 3, 1930

Fig. 1.

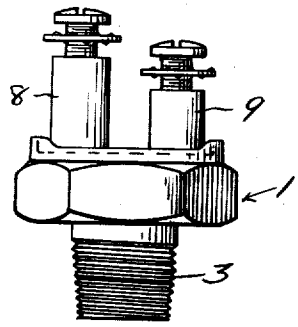


Fig. 2.

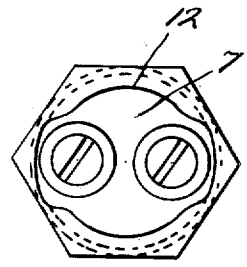
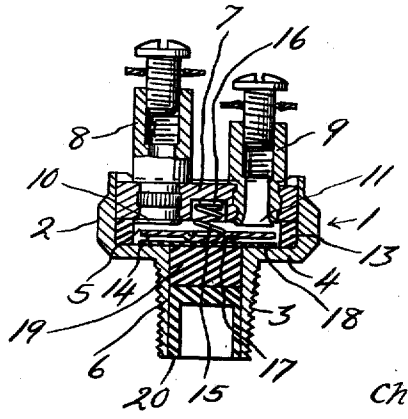


Fig. 3.



INVENTOR

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Patented May 16, 1933

1,909,699

UNITED STATES PATENT OFFICE

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STOP LIGHT SWITCH

Application filed November 3, 1930. Serial No. 493,150.

The invention relates to stop light switches and refers more particularly to switches adapted for use in connection with stop lights of motor vehicles and operated by fluid under pressure.

The invention has for one of its objects the provision of an improved stop light switch which is so constructed that it is very small and compact and may be readily manufactured. Another object is to so construct the switch that it does not leak and is responsive to a very definite range of pressures. A further object is to so construct the switch that its part or parts which are subjected to most wear may be readily removed and replaced without disassembling the casing, terminals and contact member of the switch.

These and other objects of the invention will be apparent from the following description, taken in connection with the accompanying drawing, in which

Figure 1 is a side elevation of a switch embodying my invention;

Figure 2 is a top plan view thereof;

Figure 3 is a longitudinal section therethrough.

The switch has the metal casing 1 comprising the cup 2 and the extension 3 projecting axially of the cup from its base 4. This extension is externally threaded for engagement with the support for the switch. The cup 2 forms the enlarged portion 5 of a chamber and the extension 3 forms the reduced portion 6 of the chamber. The cup 2 is closed by means of the cover 7 which is formed of suitable insulating material and has rigidly secured thereto and extending transversely thereof the metal binding posts 8 and 9, which provide the terminals 10 and 11 respectively within the enlarged chamber portion 5. This cover is permanently fixedly secured in place by crimping over the upper reduced flange portion 12 of the cup between the binding posts to clamp the cover against the spacer 13 which is formed of suitable insulating material and which is located within the enlarged chamber portion and abuts the base for the cup. 14 is a contact member within the enlarged chamber portion and adapted to engage the terminals 10 and 11 to electrically connect the same. This contact member is in the nature of a flexible disk and it is positioned by means of the coil spring 15 having its upper end extending within the central recess 16 in the lower portion of the cover 7 and its lower end engaging the central depression 17 formed in the contact member. This coil spring is constructed to provide a predetermined resistance to the movement of the contact member toward the terminals. 18 is a suitable insulating member between the contact member 14 and the base 4 of the cup.

For the purpose of actuating the contact member to move the same into engagement with the terminals, there are the solid and cupped pistons 19 and 20 respectively located within and slidably engaging the reduced chamber portion 6. Both of these pistons are preferably formed of rubber and the solid piston is located between the contact member and the cupped piston. The cupped piston faces away from the contact member or the solid piston so that upon being subjected to fluid under pressure, such as the liquid medium used in operating hydraulic brakes of a motor vehicle, this fluid under pressure expands the flange of the cupped piston so that the same firmly engages the wall of the reduced chamber portion and forms a seal, thereby preventing the passage of the fluid between the cupped piston and the wall of the reduced chamber portion. Upon the application of sufficient pressure the cupped piston and the solid piston will be moved longitudinally to force the contact member against the resistance offered by the coil spring 7 into engagement with the terminals 10 and 11, to thereby complete the electric circuit. Upon the removal of this pressure the coil spring will return the contact member and the pistons to their normal positions.

The construction is such that the switch is very small and compact, the distance between the opposite flats formed upon the cup for engagement with a wrench being three-quarters of an inch or less and the

diameter of the pistons being three-eighths of an inch or less. Furthermore, the construction is such that the pistons which are subject to the most wear may be readily withdrawn or inserted into the casing and, more particularly, its extension through the opening at its lower end, so that the casing, the cover and the contact member of the switch need not be disassembled to replace these parts. Furthermore, by reason of this construction any variation in the hardness and thickness of the rubber forming the pistons which may occur in manufacture using production methods does not destroy the efficient operation of the switch, so that it remains responsive to a very definite range of pressures.

What I claim as my invention is:

1. A stop light switch, comprising a casing having a chamber with enlarged and reduced portions, a cover for said enlarged portion secured to said casing, terminals carried by said cover and extending within said enlarged portion, a contact member within said enlarged portion and engageable with said terminals, means yieldably holding said contact member away from said terminals, a solid piston within said reduced portion, and a cupped piston also within said reduced portion for moving said solid piston and thereby said contact member toward said terminals upon admission of fluid under pressure into said reduced portion.

2. A stop light switch, comprising a casing having a chamber with an opening thereinto, a cover for said chamber secured to said casing, terminals carried by said cover and extending within said chamber, a contact member within said chamber and engageable with said terminals, means yieldably holding said contact member away from said terminals, and solid and cupped pistons insertable into and removable from said chamber through said opening, said solid piston being between said cupped piston and contact member and said cupped piston facing away from said contact member.

3. A stop light switch, comprising a casing having a cup and an externally threaded portion extending from the base of said cup, a cover for said cup secured thereto, terminals carried by said cover and extending within said cup, a contact member within said cup and engageable with said terminals, means yieldably holding said contact member away from said terminals, and solid and cupped pistons within said externally threaded portion, said solid piston being between said cupped piston and contact member and said cupped piston facing away from said contact member, whereby upon admission of fluid under pressure into said externally threaded portion said cupped piston forms a sliding seal and forces through said solid piston said contact member toward said terminals.

In testimony whereof I affix my signature.

CHARLES B. MAHAN.

CERTIFICATE OF CORRECTION.

Patent No. 1,909,699. May 16, 1933.

CHARLES B. MAHAN.

It is hereby certified that the name of the assignee in the above numbered patent was erroneously described and specified as "Kelsay-Hayes Wheel Corporation" whereas said name should have been described and specified as "Kelsey-Hayes Wheel Corporation" as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of August, A. D. 1933.

(Seal)

M. J. Moore.
Acting Commissioner of Patents.