

Oct. 6, 1942.

L. F. PIERCE

2,298,068

ELECTRO MAGNETIC SWITCH

Filed Aug. 26, 1941

Fig. 1.

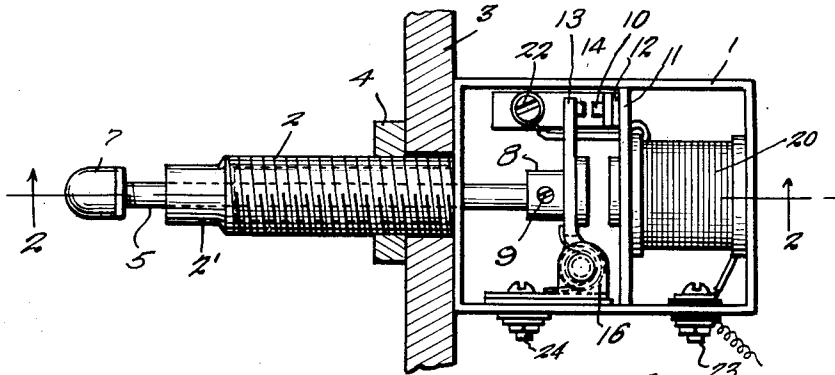


Fig. 2.

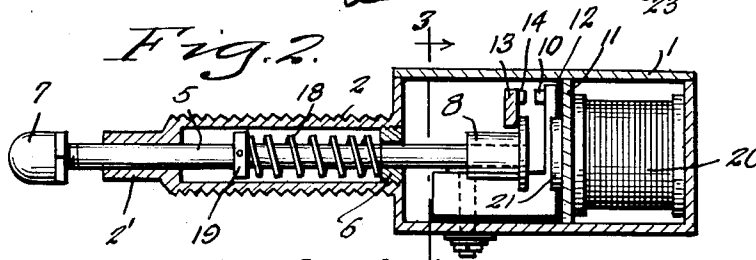


Fig. 3.

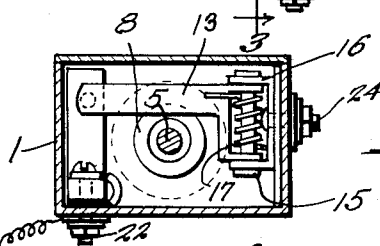
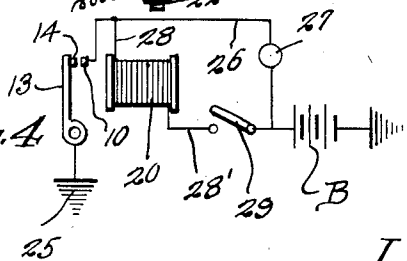


Fig. 4.



Inventor

Lyle F. Pierce

By

Clarence A. O'Brien

Attorney

UNITED STATES PATENT OFFICE

2,298,068

ELECTROMAGNETIC SWITCH

Lyle F. Pierce, Watsonville, Calif.

Original application February 16, 1940, Serial No. 319,362, now Patent No. 2,556,688, dated September 9, 1941. Divided and this application August 26, 1941, Serial No. 408,388

1 Claim. (Cl. 200—87)

This invention relates to an electro-magnetic switch, the general object of the invention being to provide a switch for controlling a circuit, with means whereby the circuit is closed by inward movement of a plunger, magnetic means for holding the plunger in switch closing position and a manually operated switch for opening the circuit.

This application is a division of an application filed by me on February 16, 1940, for Tire inflation signals, Serial No. 319,362, and maturing into Patent No. 2,556,688, dated September 9, 1941.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claim.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which—

Figure 1 is a longitudinal sectional view through the switch.

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

Figure 3 is a section on the line 3—3 of Figure 2.

Figure 4 is a diagrammatic view of the circuit.

In these views the numeral 1 indicates the casing having a threaded nipple 2 connected with one end thereof, this nipple being adapted to pass through a supporting member 3 and to be fastened to the same by a nut 4 threaded on the nipple 2. A plunger rod 5 is slidably supported in the nipple by passing through a bore in the reduced outer end 2' of the nipple and through a bushing 6 threaded in the inner end of the nipple with a head 7 threaded to the outer end of the plunger rod and a flange member 8 fastened to its inner end by means of a screw 9 or the like. A stationary contact 10 is carried by a partition 11 in the casing, the contact being insulated from the interior part of the casing as shown at 12. A switch arm 13 carries a contact 14 for engaging the contact 10 and this arm is provided with a forked end which is pivoted on a stud 15 passing through a U-shaped bracket 16 connected to one side wall of the casing. A spring 17 on the stud 15 tends to move the switch arm in a direction to place the contact 14 against the contact 10 but a spring 18 on the plunger rod is stronger than the spring 17 so that the switch arm is normally held out of engagement with the

contact 10. The spring 18 bears against a collar 19 on the rod and against the bushing 6. An electro-magnet 20 is arranged in the casing with its armature 21 passing through the partition 11. One conductor of the magnet is connected to the terminal 22 and the other to the terminal 23 and the switch arm is electrically connected to a terminal 24 which is adapted to be grounded as shown at 25 in Figure 4. The battery is shown at B in Figure 4 and a circuit 26 connects the battery with the contact 10 and contains a signal or alarm 27 and wires 28 and 28' connect the terminals 22 and 23 of the magnet with the circuit 26, a manually operated switch 29 being located between the battery and the conductor 28'.

Thus it will be seen that when the plunger rod is pushed inwardly it will cause the switch arm 13 to engage the contact 10 and thus the circuit to the magnet will be closed as well as to the alarm or signal 27, provided the switch 29 is closed. Thus the magnet will be energized and its armature engaging the flange member 8 on the inner end of the rod 5 will hold the rod in its inward position against the action of the spring 18 and thus the circuit will remain closed until the switch 29 is moved to open position to de-energize the magnet and then the spring 18 will move the plunger to switch opening position, it being seen that the flange on the member 8 engaging the switch arm will open the same but when the flange member is moved inwardly against the armature the spring 17 of the switch arm will move the arm to closed position.

This electro-magnetic switch can be used in various ways and as brought out in the before-mentioned application it is used to close a signal or alarm circuit when the head 7 of the plunger rod is engaged by a second plunger carried by the wheel of a vehicle and projected when the tire of the wheel is partly deflated, the projection of the second plunger causing the same to engage the head 7 so as to push the rod inwardly to close the circuit to the alarm and magnet.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claim.

Having described the invention, what is claimed as new is:

In a switch, a casing, a stationary contact in

said casing, a contact carrying switch arm pivoted to one side of the casing for swinging movement toward and from the stationary contact to engage and disengage the contact thereon with the stationary contact, respectively, a spring operatively connected to said arm to move the same toward said stationary contact, means to move said arm from said stationary contact, comprising a plunger slidably mounted in said casing for

advance and retraction and extending past said arm, said plunger having a disk-like end flange for engagement with said arm upon retraction of the plunger, means to retract the plunger comprising a spring stronger than said first-mentioned spring, and means to retain said plunger advanced comprising an electromagnet.

LYLE F. PIERCE.