

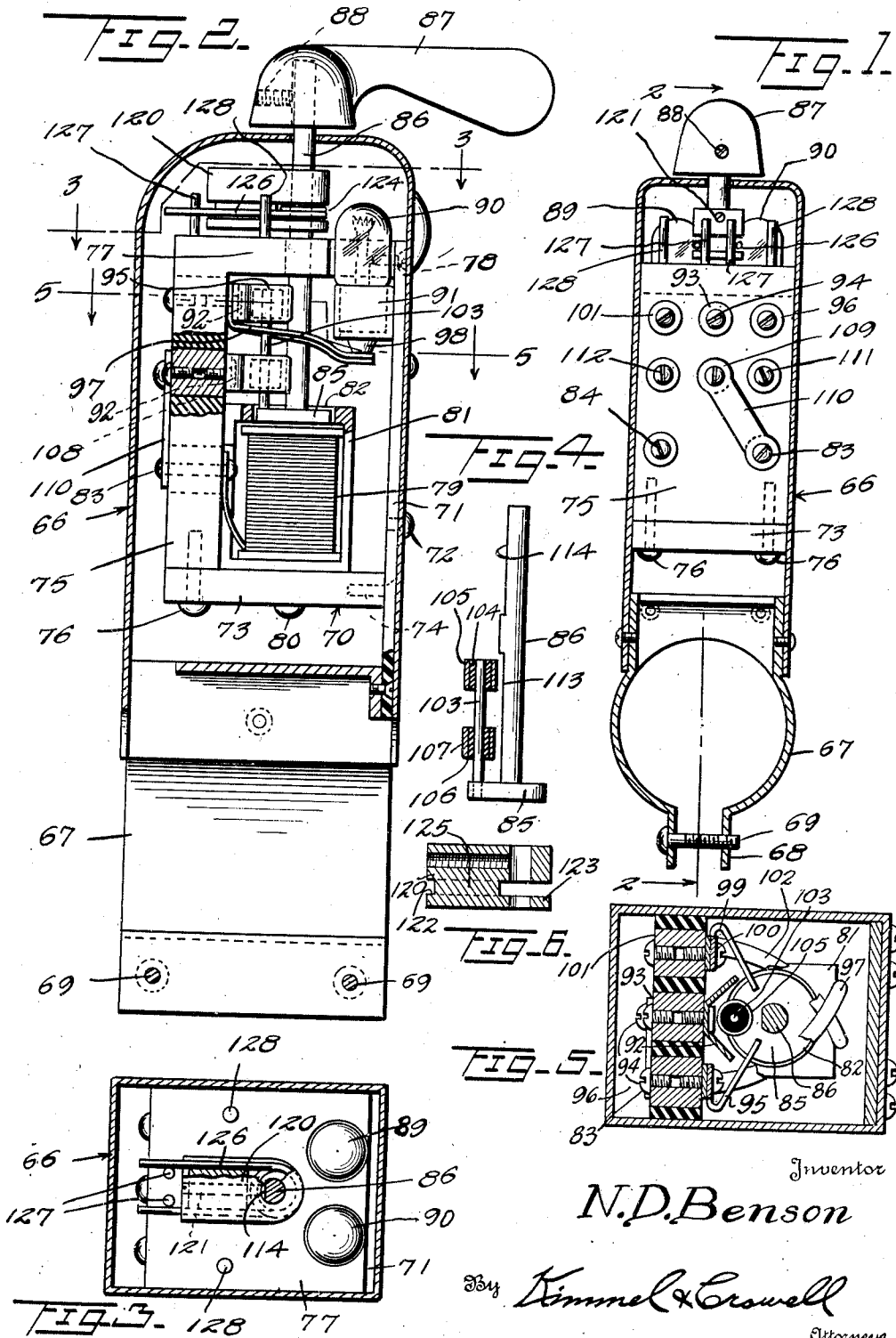
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VEHICLE DIRECTION SIGNAL SWITCH

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VEHICLE DIRECTION SIGNAL SWITCH

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5 Claims. (Cl. 200—87)

This invention relates to vehicle direction signals and more particularly to a manually operated switch therefor.

The object of this invention is to provide a direction signal of this kind which includes means whereby the operator of the vehicle can readily determine whether the signal is operating so that in the event the signal is not operating, the operator will be able to readily correct the difficulty.

A further object of this invention is to provide a magnetic switch holding means interposed in a signal circuit so as to hold one switch structure in a selected closed position during the movement of the vehicle, the device including means whereby the magnetic holding means is rendered ineffective upon defect in the signal circuit caused by burning out of one or more of the signal lights.

To the foregoing objects and to others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing, wherein embodiments of the invention are disclosed, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a longitudinal section partly in detail of a magnetically operated switch used with this invention,

Figure 2 is a sectional view taken on the line 2—2 of Figure 1,

Figure 3 is a sectional view taken on the line 3—3 of Figure 2,

Figure 4 is a detail side elevation partly in section of the switch closing and holding means embodied in the structure shown in Figures 1 and 2,

Figure 5 is a sectional view taken on the line 5—5 of Figure 2, and

Figure 6 is a vertical section through the switch returning means embodied in the structure shown in Figures 1 and 2.

Referring to the drawing there is disclosed an automatically operable switch structure which is adapted to be initially set manually by the operator of the vehicle and by means of which the operator of the vehicle can readily determine whether the signal lights on one side of the vehicle or the other side are operating. This switch closing structure as shown includes a housing 66 which at one end thereof is provided with a pair of clamping arms 67 having ears 68

through which a bolt 69 engages in order that housing 66 may, if desired, be clamped onto the steering column of the vehicle. A frame structure generally designated as 70 formed throughout of insulation material is mounted within the housing 66 and includes a vertically disposed plate 71 secured to the wall of the housing 66 by fastening devices 72. A bottom member 73 is secured to the vertical member 71 as by fastening members 74 and an inner insulation member 75 is secured to the lower member 73 and extends in parallel relation with the vertical member 71 as by fastening members 76. An upper frame member 77 may be formed integrally with the vertical member 75 and extends in the direction of the vertical member 71 and is secured thereto by fastening means 78. An electro-magnetic coil 79 is secured to the lower frame member 73 by fastening means 80 and a metal core 81 extends about the coil 79 being provided at its upper portion with a substantially annular core portion 82. One end of the coil 79 is connected to a terminal 83 and the other end is connected to a terminal 84. A disc-shaped armature 85 is disposed within the annular portion 82 of the core and a shaft or stem 86 is connected to the armature 85 and extends upwardly therefrom. An operating handle 87 is secured to the upper end of the stem or shaft 86 by means of a set screw 88 or other fastening means.

A pair of pilot lights 89 and 90 are mounted in the housing 66, engaging in sockets 91 carried by the housing 66 and electrically connected to the outer casing forming the housing 66. There is a socket 91 for the lamp 90 similar to the socket 91 for the lamp 89. A substantially V-shaped contact member 92 is secured to a metal bushing 93 extending through the insulation 75 and a terminal 94 is connected to the bushing 93. A second substantially V-shaped contact 95 is secured to a metal bushing 96 disposed in the insulation 75 and projects across the adjacent end of one side of the contact 92, being disposed in spaced relation thereto as shown in Figure 5.

A connector 97 is connected at one end to the contact 95 and at the other end engages the central terminal 98 carried by the pilot 89. A second contact 99 of substantially V-shaped construction similar to the contact 95 is secured as by a fastening member 100 to a metal insert or sleeve 101 which is positioned within the insulating member 75. The contact member 99 projects across and in spaced relation to the opposite side of the V-shaped member 92 and is normally

spaced from the contact 92. A pilot light connector strip 102 is connected at one end to the contact member 99, being interposed between the base of this contact member 99 and the insert 101 and projects across or in intersecting relation to the connector strip 97, engaging the central terminal of the pilot light 90 in the same manner as the connector strip 97 engages the central terminal 98 in pilot light 89.

An upstanding pin 103 is secured at its lower end to the plate or armature 85 at one side of the center thereof and an upper insulation member 104 provided with a metal ring or contact member 105 is secured adjacent the upper end of the pin 103. A second insulation member 105 is secured to the pin 103 in spaced relation to the insulation member 104 and is provided with a bridging ring 107. The circuit closing member 105 is disposed between the sides of the V-shaped contact member 92 and upon rotation of the shaft 86 and the armature 85 in one direction the bridging member 105 is adapted to engage one side of the contact member 92 and also the contact member 95, bridging the space between these two contacts and closing a circuit through the connector strip 97 to the pilot light 89. Upon rotation of the shaft 86 and the armature 85 in the opposite direction, the bridging member 105 engages the opposite side of the V-shaped contact member 92 and also the contact member 99. The second bridging member 107 is adapted to engage a V-shaped contact member 103 constructed similar to the contact 92 which is secured to a terminal 109 and connected to the terminal 83 by a connecting strip 110. Terminals 111 and 112 are connected to contact members similar in every detail to the contact members 95 and 99 so that rotation of the shaft 86 and the armature 85 will close a circuit to a selected pilot light and also a circuit to selected signal lights as will be hereinafter described.

The shaft or stem 86 is provided with a flattened or cut-out portion 113 confronting the two bridging members 105 and 107 and is also provided with a second flattened portion 114 on the upper end of which the handle 87 is mounted. A block 120 is secured as by a set screw 121 to the shaft or stem 86 and is provided with a groove 122 on opposite sides thereof and also with a cut-out portion 123 in which the convolutions 124 of a handle returning spring are positioned. The convolutions 124 engage about that portion of the stem 86 extending through the cut-out portion 123. The block or body 120 is provided with an eccentrically disposed portion 125 and the two arms 126 formed with the spring 124 engage in the groove 122 on opposite sides of the eccentric portion 125 so that as the shaft or stem 86 is rotated one of these arms 126 will be swung about the axis of the shaft 86. Preferably, a pair of pins 127 are secured to the frame 70 in spaced apart relation and the two arms 126 engage on opposite sides of the pins 127. In this manner when the block 120 is swung in one direction, one of the arms 126 will move therewith away from its associated pin 127 and the other arm will bear against its associated pin 127 so that the movable arm will be tensioned and act as a lever or handle returning means for returning the handle 87 to neutral or circuit breaking position. A pair of stop pins 128 are secured to the frame 70 and provide a means for limiting the swinging movement of the handle 87 through engagement of one of the spring arms 126 therewith.

The switch operates as follows: The handle or operator 87 is turned so as to cause the two bridging members 105 and 107 to close the circuit between the V-shaped contacts 92 and selected contacts 95 or 99. At this time the circuit is also completed to the coil 79 so that the armature 85 is held against rotation and against the action of the U-shaped spring 126. The handle 87 will remain in the selected position until the handle is either manually operated to swing it to a circuit breaking position or until the circuits connected to the contacts 95 and 99 have been broken.

What I claim is:

1. A switch comprising a housing, an insulating member in the housing, a pair of spaced apart V-shaped contacts secured to said member, a pair of yieldable contacts associated with each of said pair of contacts and spaced therefrom, a shaft rotatably carried by said member, a disc-shaped armature fixed to one end of said shaft, a handle fixed to the other end of said shaft, a pair of spaced apart bridging contacts engageable with said V-shaped contacts and said yieldable contacts, means eccentrically securing said bridging contacts to said armature, yieldable means normally holding said bridging contacts in circuit breaking position between the divergent portions of said V-shaped contacts, and an electromagnetic holding means in said housing electrically connected to one of said pair of V-shaped contacts associated with said armature for holding said bridging contacts in circuit closing position.
2. A switch comprising a housing, an insulating member in the housing, a V-shaped contact secured to said member, a pair of yieldable contacts associated with said contact and spaced therefrom, a shaft rotatably carried by said member, a disc-shaped armature fixed to one end of said shaft, a handle on the other end of said shaft, a pin fixed to said disc and disposed in parallel offset relation to said shaft, a bridging contact fixed to and insulated from said pin, said bridging contact being engageable with said V-shaped contact and a selected one of said pair of yieldable contacts, yieldable means engaging said shaft and said member normally holding said bridging contact in circuit breaking position between the divergent portions of said V-shaped contact, and electromagnetic holding means in said housing associated with said armature for holding said bridging contact in circuit closing position.
3. A switch comprising a housing, a U-shaped insulating member in the housing, a V-shaped contact fixed to the bight of said member, a shaft journaled through one leg of said member, an armature on said shaft between the legs of said member, a pair of yieldable contacts disposed in spaced relation to the divergent arms of said first contact, a bridging contact offset from and rotatable with said shaft, said bridging contact being engageable with said V-shaped contact and a selected one of said pair of yieldable contacts, an electro-magnetic member fixed to the other leg of said insulating member and disposed adjacent to and axially aligning with said disc and electrically connected to said V-shaped contact, and yieldable means normally holding said bridging contact in circuit breaking position between the divergent portions of said V-shaped contact.
4. A switch comprising a housing, an insulating member in the housing, a V-shaped contact

fixed to said member, a shaft rotatable in said housing, an operating handle on one end of said shaft, an armature on the other end of said shaft, a pair of yieldable contacts disposed in spaced relation to the divergent arms of said first contact, a bridging contact engageable with said V-shaped contact and a selected one of said pair of yieldable contacts, means securing said bridging contact to said armature in offset relation to said shaft, an electromagnetic holding member electrically connected to said V-shaped contact and correlated with said armature for holding said bridging contact in circuit closing position, a laterally projecting part fixed to said shaft, a spring having a portion thereof about said shaft and a pair of spaced ends projecting outwardly of said part, and a pair of pins fixed to said insulated member and positioned between said projecting ends of said spring, said spring yieldably resisting rotation of said shaft in either direction and normally holding said bridging contact in circuit breaking position between the divergent portions of said V-shaped contact.

5. A switch comprising a housing, an insulating member in the housing, a V-shaped contact fixed to said member, a shaft rotatable in said housing, an operating handle on one end of said

shaft, an armature on the other end of said shaft, a pair of yieldable contacts disposed in spaced relation to the divergent arms of said first contact, a bridging contact engageable with said V-shaped contact and a selected one of said pair of yieldable contacts, means securing said bridging contact to said armature in offset relation to said shaft, an electromagnetic holding member electrically connected to said V-shaped contact correlated with said armature for holding said bridging contact in circuit closing position, a laterally projecting part fixed to said shaft, a spring having a portion thereof about said shaft and a pair of spaced ends projecting outwardly of said part, a pair of pins fixed to said insulated member and positioned between said projecting ends of said spring, said spring yieldably resisting rotation of said shaft in either direction and normally holding said bridging contact in circuit breaking position between the divergent portions of said V-shaped contact, and a second pair of pins secured to said insulated member on opposite sides of said part and engageable with one of said projecting ends to limit the rotation of said shaft in either direction.

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