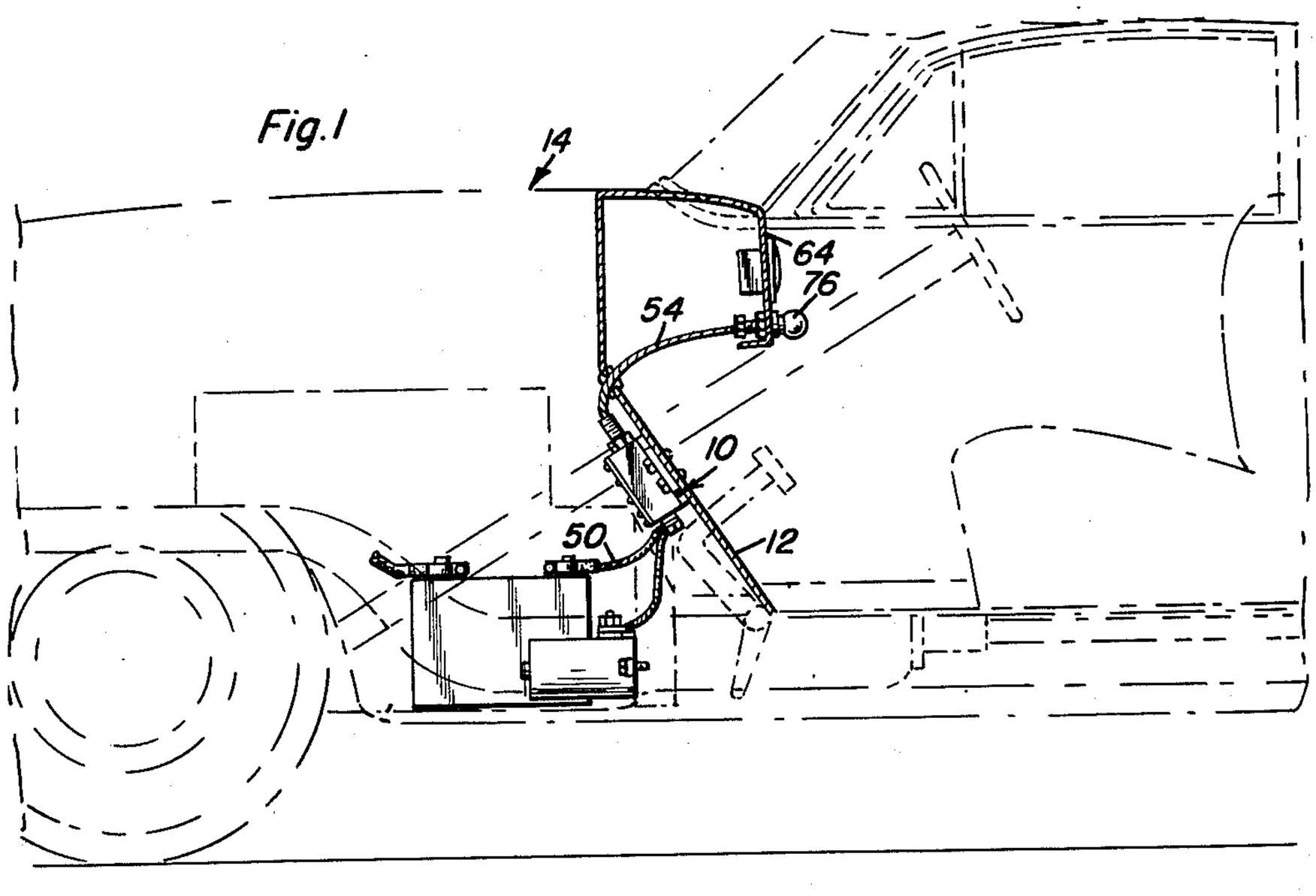
Nov. 17, 1953 L. A. DICKINSON 2,659,791

SAFETY SWITCH

Filed Nov. 27, 1950

Fig. 1



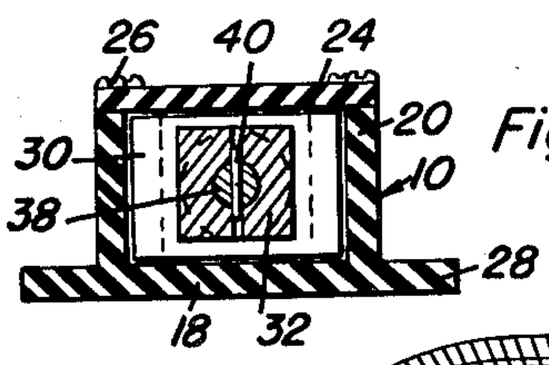


Fig. 3

Fig. 2

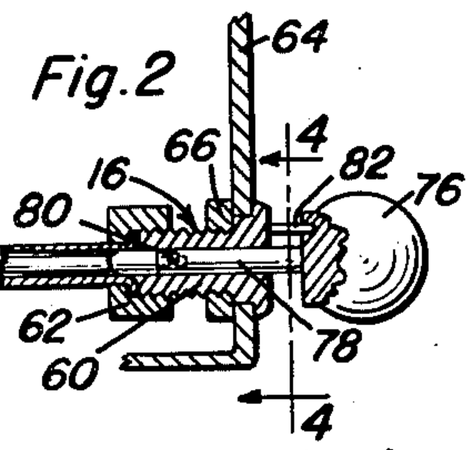
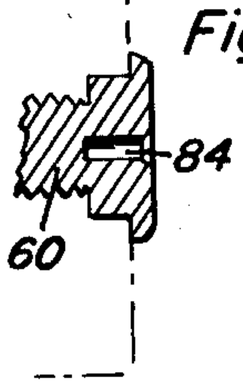


Fig. 6



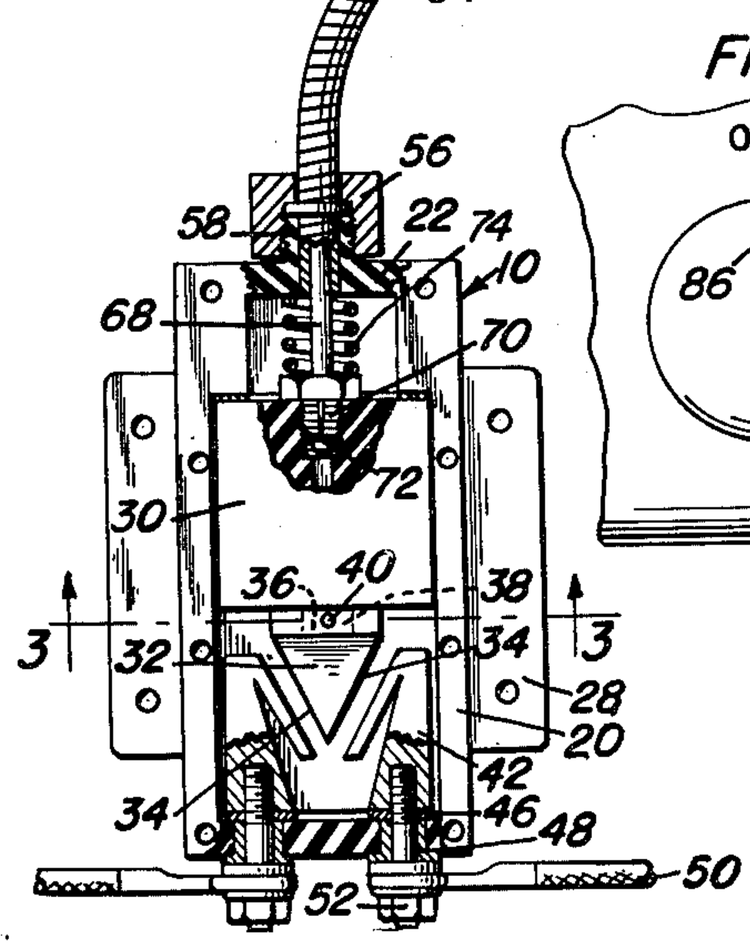


Fig. 5

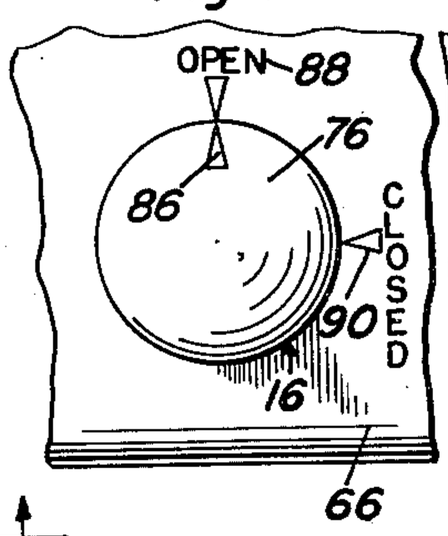
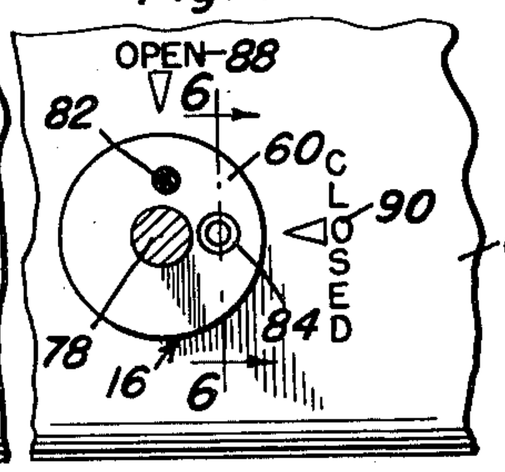


Fig. 4



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SAFETY SWITCH

Lee A. Dickinson, Ben Lomond, Calif.

Application November 27, 1950, Serial No. 197,700

1 Claim. (Cl. 200—161)

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This invention comprises novel and useful improvements in switches, and more particularly pertains to what is commonly known as the master switch in a battery charging system.

An important object of this invention is to provide a master switch for battery charging systems which will electrically bridge the contact terminals in an improved manner whereby the impedance to the flow of current through the switch, when the latter is in its circuit closing position will be reduced to a minimum and to consequently reduce the heating of the switch.

Another important object of this invention is to provide a switch which is normally urged into terminal bridging position, and which is movable by means of a reciprocably mounted actuator into its open position, which actuator is rotatable to lock the switch in its open position.

An important feature of this invention resides in the provision of a pair of spaced contact terminals having relatively converging fingers on the free ends thereof, with a contact block having relatively converging sides which are engageable with the contact fingers.

Another feature of this invention resides in the provision of a switch, in accordance with the foregoing feature with a means yieldingly urging the block into engagement with the contact fingers whereby the latter establish contact with a relatively large area of the block thereby reducing contact resistance between the fingers and the block.

These, together with various ancillary objects and features are attained by this device, a preferred embodiment of which has been illustrated in the accompanying drawings wherein:

Figure 1 is a diagrammatic view of the switch assembly shown mounted on a vehicle;

Figure 2 is a front elevational view of the switch with the cover removed, parts being broken away and shown in section to show details of construction;

Figure 3 is a transverse sectional view of the switch, taken on the plane 3—3 of Figure 2;

Figure 4 is a fragmentary sectional view of the switch actuator, taken on the plane 3—3 of Figure 2;

Figure 5 is a fragmentary end elevational view of the actuator; and,

Figure 6 is a fragmentary longitudinal sectional view of the actuator, taken on the plane 6—6 of Figure 4.

Reference is now made more specifically to the accompanying drawings wherein there is shown

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a master switch, indicated generally by the numeral 10 which is adapted to be mounted as on the floorboard 12 of the vehicle 14, and which switch is provided with an actuator 16.

The switch 10 includes a housing of dielectric material and which housing has a bottom wall 18, side walls 20, end walls 22, and a top wall 24 which is detachably secured to the side and end walls by fasteners 26. A pair of mounting flanges 28 may be formed integrally with the housing whereby the switch may be mounted on the vehicle.

A plunger 30, also of dielectric material is reciprocably disposed in the housing, in sliding engagement with the side walls thereof whereby the plunger is prevented from rotating.

A contact block 32, which is rectangular in cross section, is provided with relatively converging side walls 34 and a recess 36 in the top wall thereof. A projection 38 depends from the plunger 30 and extends into the recess, a suitable locking pin 40 extending through aligned bores in the block and projection to secure the block and plunger together.

A pair of relatively spaced resilient contact terminals 42 are attached to one of the end walls 22 and extend toward the other end wall of the housing. A resilient contact finger 44 is attached to the free ends of each of the terminals, which fingers extend toward the wall to which the terminals are attached and converge relative to each other. It is intended that the fingers 44 be relatively thinner than the terminals so that the fingers will yield, when engaged by the side walls 34 of the block, before the terminals 42 spread outwardly. Thus, the fingers 44 will tend to conform to the side walls 34 of the block, the resiliency of the terminals serving to bias the fingers into firm engagement with the block to reduce the contact resistance therebetween. Contact posts 46 extend through the flanged conductor sleeves 48 in the end wall 22 and are threadedly securely to the terminals 42, the conductors 50 being attached to the posts as by nuts 52.

The plunger actuator includes a Bowden wire housing 54, attached at one end by the gland 56 to the externally threaded boss 58 on the end wall 22 remote from that to which the terminals are attached, the other end of the housing being attached to the flanged sleeve 60 by the gland 62. The sleeve 60 is adapted to be attached to the vehicle dashboard 64, as by nut 66. The Bowden wire cable 68 extends through the Bowden wire housing and has one end secured to the plunger by the split sleeve assembly

70 which is threadedly received in a bore 72 in the plunger. A coil spring 74 is disposed about the cable 68 between the split sleeve assembly and the adjacent end wall 22, to yieldingly bias the plunger and block into terminal bridging position.

An actuator knob 76, having an actuator rod 78 thereon which is slidably and rotatably disposed in the sleeve 60 and rotatably coupled to the cable 64, as at 80, is provided to move the block 32 out of terminal bridging position. In order to retain the block out of circuit closing position, the knob 76 is provided with a finger 82 which engages the face of the sleeve 60, which knob is rotatable so that the finger will register with the bore 84 in the sleeve so that the spring may act to urge the finger 82 into the bore 84, and the block 32 into terminal bridging position. Obviously an index mark 86 may be carried by the rod to register with the indicia 88 and 90 which respectively designate the open and closed positions of the switch actuator.

It may be noted, at this time, that the switch disclosed in this application is particularly adapted to be used as a master switch in a battery charging system, in view of the relatively high electrical currents encountered by such a master switch, and the desirability of a simple remote control actuator therefor.

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

A switch comprising a housing of dielectric material, said housing having a uniform non-

circular passage therein, a plunger of insulating material slidably received by said passage, spaced contacts mounted in said housing, a bridging contact carried by said plunger, actuating means for said plunger comprising a flanged sleeve, a flexible tubular housing fixed to the end of said sleeve and to the end of the switch housing, said switch housing having an aperture registering with the bore of said tubular housing, a flexible actuating cable attached to said plunger and extending through said tubular housing, resilient means in said switch housing yieldingly urging said plunger into switch bridging relation, an actuator rod slidably and rotatably received in said sleeve, said rod being rotatively connected to said flexible cable, an actuating knob on said rod, a spacing finger fixed on said knob and extending into contact with the flange of said sleeve, said flange having a bore adapted to receive said finger.

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