

United States Patent

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[54] **ROCKER ARM SWITCH**
1 Claim, 1 Drawing Fig.

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[50] Field of Search. **200/(CA),**
1 (ATK), 67 (D), 67 (C), 67, 166.1

[56]

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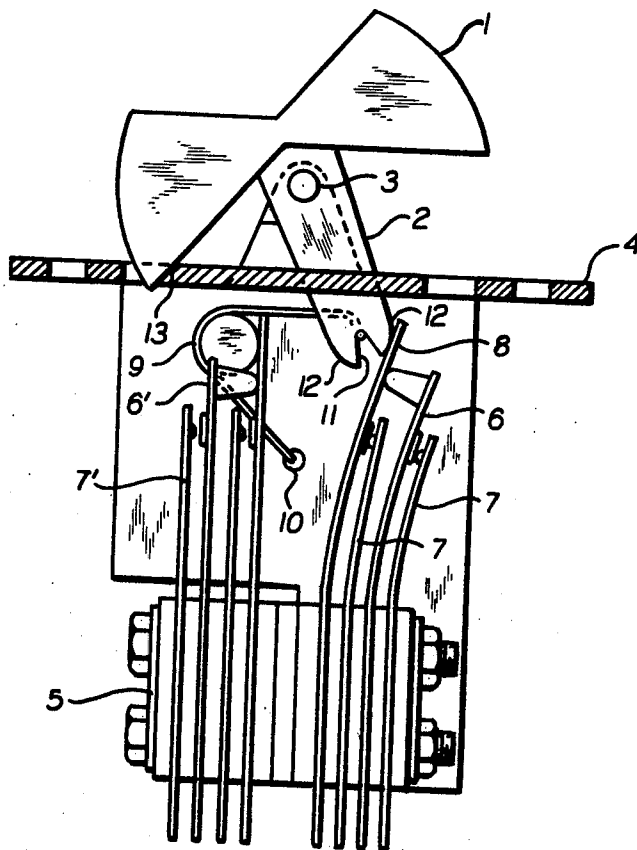
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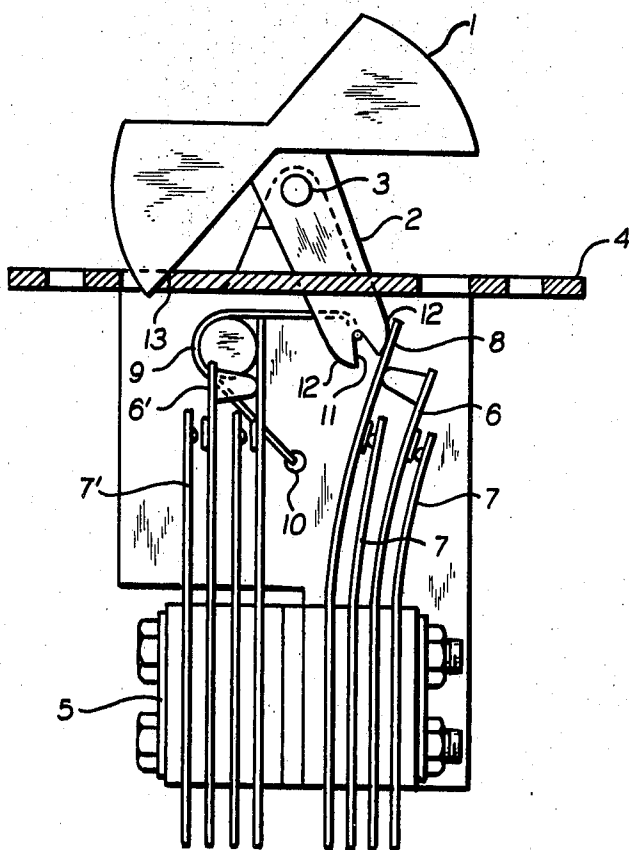
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ABSTRACT: An improved pileup switch assembly wherein a hairpin spring maintains a pileup position for each switch position.



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ROCKER ARM SWITCH

BACKGROUND OF THE INVENTION

This invention relates to electrical switches. The invention more particularly relates to improved switching action for pileup switches. Often an operator presses on a switch arm or button with insufficient force to complete the switching action. The operator may be unaware of the incomplete switching action because he is misled by his touching the arm or button with what he thought was sufficient pressure. If the actuation of switches in a prescribed sequence is essential to the safety of equipment or personnel, positive switch action is vital. Where generally the switching action is completed by the operator in sequential rapid switching operational procedure requirements, fingertip pressure control becomes vitally necessary for the safe operation of equipment and reduction of hazardous condition for personnel.

SUMMARY OF THE INVENTION

The principal aim of the invention is to eliminate the disadvantage of switching action requiring the followthrough pressure applied by the operator to assure completeness of switching action and to provide positive switching action by fingertip control pressure. This positive switching action can be obtained in either or both directions, whichever is required.

DESCRIPTION OF THE DRAWING

The FIG. illustrates an embodiment of the pileup switch, showing the rocker arm in one of its two positions.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing, the rocker arm 1, from which a lever arm 2 protrudes, is pivotally pinned through the fulcrum point 3 to the frame 4 of the switch assembly. The drawing shows a multiple contact stack 5 which is mounted on the frame 4 and may consist of more or less of the contact strips 6, 7 than shown. To be operational, the multiple contact stack 5 should contain at least a set of contact strips 7, 8. The hairpin spring 9 is rotatably retained between the switch frame 4 and rocker arm 1 by insertion of a crimped end of spring 9 in the frame 4 at aperture 10 and the other crimped end in lever arm 2 at slot 11.

The pileup switch assembly shown in the drawing has two positions, one of which is illustrated. In this position the bearing surface 12 of the lever arm 2 forces contact strip 8 against contact strip 7 and against contact strip 6 which in turn is forced against another contact strip 7. Depending on the multiple number of contact strips 6 and 7 included in stack 5, successive alternate strips 6 would be forced against successive alternate strips 7, each forming a pair of contact making electrical connection between the two contact strips 6 and 7.

The hairpin spring 9 provides the force necessary to cause contact limited only by the edge 13 of the switch-arm well

which receives the rocker arm 1. This limiting provision prevents the lever arm 2 from slipping past contact strip 8 to a position on the other side of the strip, permitting the contact strips 6 and 7, and 7 and 8 to open, but allows hairpin spring 9 to apply sufficient force to hold contact strips 6 and 8 against contact strip 7 to obtain electrical connection.

The positive holding action is obtained from the hairpin spring 9 force applied against the stack 5 and generally in the direction of initial movement. The location of one of the crimped ends of the hairpin spring 9 at aperture 10 determines the position in which the rocker arm 1 is in dead center. In the drawing, the position for dead center is spatially equal distanced between contact strips 8 and 8'. When the switching movement is made in either direction of dead center, the switching action continues under the force of hairpin spring 9. The positive holding action is completed without further pressure being applied by the operator. In this manner the completed holding action results in that pressure sufficient to pile up the contact strips 6, 7 and 8 and retain the position until switched to another position with positive switching action.

While there has been described what is at present considered to be preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention. It is to be understood that the above described arrangement is simply illustrative of the application of the principle of the invention and numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof. It is, therefore, intended that the matter contained in this description and the accompanying drawings be considered as illustrative and not as limiting.

I claim:

1. In a pileup switch having a frame, a fingertip operated rocker arm pivotally mounted on said frame and having stop positions on either side of the pivot point thereof, a lever arm dependent from said rocker arm, the end of which moves in a minor arc the limits of which on either side of a dead center position are proscribed by said stop positions, two sets of normally open electrical contact strips, one on either side of said dead center position and adapted to be placed in a closed position when said lever arm is positioned thereagainst; a hairpin spring adapted to so position said lever arm alternately against one or the other of said electrical contact strips; comprising a generally U-shaped hairpin spring one end of which is attached to said frame in a position below the end of said lever arm and the other end of which is attached to the end of said lever arm, and a pivot attached to said frame at a point generally in line with said minor arc and to one side of said dead center, said hairpin spring passing thereabout and being pivotally retained by said pivot, said hairpin spring being effective to snap said lever over to said stop position in the direction of movement of said lever arm past said dead center.