May 6, 1952 A. E. FELTON ET AL 2,595,569

ELECTRIC SWITCH

Filed July 7, 1949

Fig. 1.

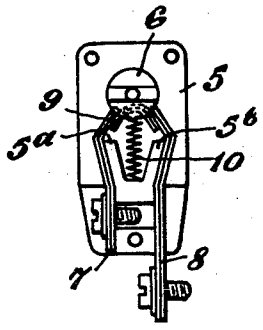
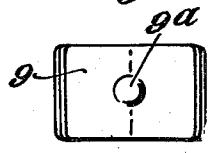


Fig. 2.

Fig. 3.

Fig. 4.



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Patented May 6, 1952

2,595,569

UNITED STATES PATENT OFFICE

2,595,569

ELECTRIC SWITCH

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Application July 7, 1949, Serial No. 103,456
In Great Britain November 4, 1948

3 Claims. (Cl. 200—153)

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This invention has reference to improvements in or connected with electric switches of the kind wherein the moving contact is operated by a rotatable or rockable cam in opposition to a spring, the said contact being adapted to close a circuit between a pair of fixed blade contacts mounted in the switch housing.

The object of the present invention is to minimize any pitting of the contacts in the making and breaking of the circuit.

The invention consists of an electric switch mechanism of the kind referred to characterised by a slidable spring loaded contact situated between a pair of convergent fixed contacts whereby upon rotation or rocking of the operative cam a facial wiping action obtains between the moving and fixed contacts in the course of the making and breaking operations for the purpose stated.

The invention will now be described with particular reference to the accompanying drawings, in which:

Fig. 1 represents in end elevation a portion of a rotary switch mechanism sufficient for an understanding of the present invention.

Fig. 2 represents a perspective view of the moving contact isolated from the switch mechanism,

Fig. 3 is a section through the moving contact seen in Fig. 2, and

Fig. 4 is a plan view from below of the moving contact seen in Fig. 2.

Describing now one embodiment of the present invention in its application to an electric switch operated by the rotation of a knob by which the movements of the operative cam is effected; a block of insulating material 5 is provided with a transverse hollow cylindrical bore within which is located a cam 6 which is capable of being rotated by means of the operating knob (not shown). The block is provided with channels in one face to accommodate a pair of fixed blade contacts 7 and 8 which are directed outwardly and then inwardly so as to converge toward the cam 6. Situated within a recess between these blade contacts is an approximately V-shaped moving contact 9, which is urged towards the cam 6 by means of a coiled compression spring 10 engaging the interior of the block 5 at one end and a tit 9^a formed in the angle of the moving contact 9 and integral therewith at the other end.

When the apex of this moving contact 9 is in register with a dwell on the cam 6 the limbs of the moving contact are in facial abutment with the converging ends of the fixed blade contacts 7 and 8 which are so inclined as to be parallel with the limbs of the moving contact with

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which they make a surface contact. If the cam 9 is rotated a lift thereof tends to slide the moving contact 9 down the inner face of one of the fixed blade contacts 7 or 8 and away from the opposite blade contact, the fixed contact down which the moving contact 9 slides being determined by the direction of rotation of the cam 6. This sliding movement obtains until the lower end of one of the limbs of the moving contact abuts against a step 5^a or 5^b in the block 5.

It will be understood that the moving contact 9 is thus not restricted to move radially away from the cam 6, but is moved away at an angle to the radius due to the thrust of the cam. This movement effects a partial wiping of the outer face of the moving contact 9 with the abutting inner face of the appropriate fixed blade contact 7 or 8 until the one edge of the moving contact reaches the step 5^a or 5^b when a slight rocking motion of the moving contact obtains to complete the circuit break of an electric circuit, and thus minimize pitting.

The cam operation can be effected by a rocking instead of a rotary motion, and the invention can be applied to a tumbler or dolly operated switch.

We claim:

1. In an electric circuit controlling switch, in combination, a pair of fixedly mounted contacts the contact surfaces of which converge toward each other, a generally V-shaped movable contact the exterior surfaces of which cooperate with the converging contact surfaces, a spring that engages the interior surface of the movable contact and urges it against the fixed contacts and a switch operator that is rotatable about an axis generally parallel to the line of intersection of the sides of the movable contact and that has a portion cooperating with the apex of the V-shaped piece to drive the V-shaped piece along the contact surface of one of the fixed contacts.

2. In an electric circuit controlling switch, in combination, a pair of fixedly mounted contacts the contacting surfaces of which converge toward each other, a movable V-shaped contact positioned in the angle between the converging fixed contacts, a spring that engages the interior surface of the movable contact and urges it into contacting relation with the fixed contacts, and a cam that is rotatable about an axis located along the intersection of the planes containing the contacting surfaces and that has portions adapted to engage the apex of the movable contact.

3. In an electric circuit controlling switch, in combination, a pair of fixedly mounted contacts

the contacting surfaces of which converge toward each other, a movable contact positioned in the angle between the converging fixed contacts with a surface mating with each of the fixed contacts, a spring intermediate the fixed contacts and engaging the movable contact to urge it into contact with the fixed contacts, and a switch operator having a portion cooperating with the movable contact which portion has a path of movement that is generally parallel to one of the fixed contact surfaces in a plane generally normal to both fixed contact surfaces, whereby said switch operator drives the movable contact along one of the fixed contact surfaces as it breaks contact with the other.

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