

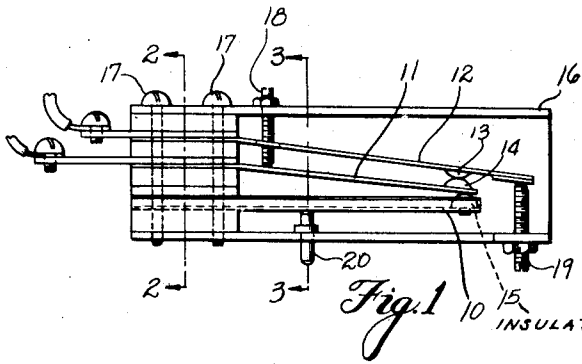
April 23, 1946.

R. H. JORDAN

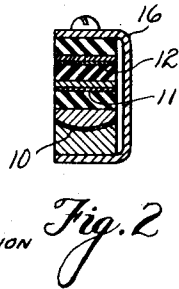
2,399,123

QUICK-ACTION MECHANISM

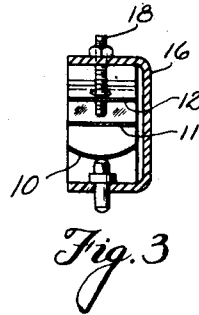
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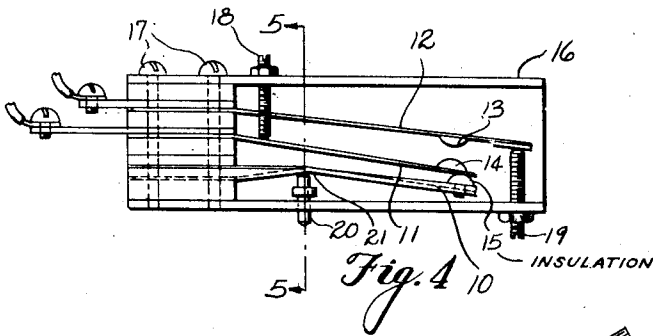
*Fig. 1*



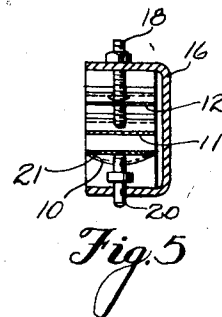
*Fig. 2*



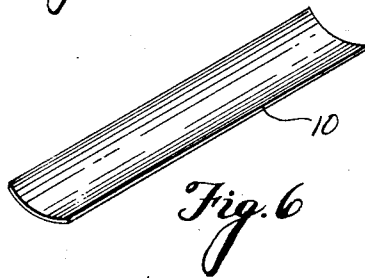
*Fig. 3*



*Fig. 4*



*Fig. 5*



*Fig. 6*

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# UNITED STATES PATENT OFFICE

2,399,123

## QUICK-ACTION MECHANISM

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Application September 15, 1943, Serial No. 502,480

1 Claim. (Cl. 200—67)

My invention relates to a mechanism to give a quick-action movement and more particularly to a quick-action switch.

An object of my invention is the provision of a quick acting switch which may be made of a few simple parts and yet be durable in operation.

Another object of my invention is the provision of a quick-action movement comprising at least two springs of unequal strength opposing each other, together with means for weakening the stronger spring by reducing its rigidity to a value that the weaker spring becomes the stronger.

Another object of my invention is the provision of a channelled flat spring which when weakened, or which when its rigidity is reduced, will give a quick acting movement.

Another object of my invention is to utilize the quick acting movement of a channelled flat spring to operate a pair of contacts for quickly interrupting an electrical circuit.

Other objects and fuller understanding of my invention may be had by referring to the following description and claim, taken in conjunction with the accompanying drawing, in which:

Figure 1 represents a side elevational view of a switch embodying the features of my invention;

Figure 2 is a cross-sectional view taken along the line 2—2 of Figure 1;

Figure 3 is a cross-sectional view taken along the line 3—3 of Figure 1;

Figure 4 is a side elevational view of the device shown in Figure 1, with the contacts shown in their open position;

Figure 5 is a cross-sectional view taken along the line 5—5 of Figure 4; and

Figure 6 is a perspective view of a channelled flat spring employed in my invention.

With reference to the views of the drawing, my invention comprises a rigid channelled flat spring 10, two flexible switch members 11 and 12 each having respectively contact points 13 and 14 for making and opening an electrical circuit, and a push button 20 engaging the channelled flat spring 10. The left-hand end as shown in the drawing of the channelled flat spring and the flexible switch members are mounted between suitable insulating blocks which are carried by a frame 16. The insulating blocks which hold the channelled flat spring and the flexible switch members may be suitably anchored within the switch frame 16 by means of screws 17 which completely pass through the insulated block and which extend from one side of the switch frame 16 to the other side. As mounted, the rigid channelled spring 10 comprises a cantilever beam.

The right-hand or free end of the channelled flat spring 10 carries an insulated button 15 which engages the flexible switch member 11 to constrain the two contact points 13 and 14 together to make a closed circuit for the switch. The flexible switch member 11 when not held in place by the rigid channelled spring 10 tends to separate the contacts 13 and 14 to make an open circuit for the switch. The tension of the flexible switch member 11 may be varied by a pressure set screw 18 and the position of the flexible switch member 12 may be set by means of a set screw 19.

In normal operation, the channelled flat spring 10 is rigid and can withstand the pressure of the flexible switch member 11 with the result that the contacts 13 and 14 are held in a closed position. In other words, the combination of the channelled flat spring 10 and the flexible switch member 11 comprises two springs of unequal strength opposing each other. When it is desired to open the contacts 13 and 14, it is only necessary to press the control push button 20 upwardly as shown in the drawing and deform or press the channelled flat spring 10 almost flat to weaken same. The weakened portion is indicated by the reference character 21 in Figure 5 and is located at the place where the control push button 20 engages the underneath side of the channelled flat spring. The instant that the channelled flat spring is weakened, the opposing force of the flexible switch member 11 becomes stronger than the force at the free or right-hand end of the channelled flat spring with the immediate result that the contact points 13 and 14 are opened with a quick-action movement. It is noted in my invention that the quick acting movement is accomplished by the combination of at least a rigid member 10 and a spring 11 opposing each other, together with control push button 20 for weakening or reducing the rigidity of rigid member 10 to a value that the spring 11 becomes able to move the rigid member 10, at which instant the contacts 13 and 14 are separated.

The channelled flat spring 10 may be of any suitable construction and may comprise a channelled flat spring such as the well-known steel foot rule. Considerable pressure may be exerted by the flexible switch member 11 upon the insulated button 15 without materially flexing the channelled flat spring 10. Thus, in normal operation the contact points 13 and 14 are continuously pressed together for establishing the electric circuit. Upon interrupting the electric circuit the contacts 13 and 14 quickly separate the moment that the channelled flat spring 10 is de-

formed or pressed almost flat at the portion 21 by the control push button 20. When the control push button 20 is released, the contacts 13 and 14 are again immediately closed.

Although I have described my invention with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

I claim as my invention:

A quick-acting switch comprising, in combination, a first flexible member having a contact, a second flexible member having a contact, said contacts comprising a pair of contacts, a mounting for said first and second flexible members, said first and second flexible members extending from said mounting with a space therebetween, means contacting said second flexible member and tending to spring same away from said first

flexible member and open said contacts, a relatively thin quick-acting member supported by and extending from said mounting to contact said second flexible member and constrain same from springing away from said first flexible member and thereby hold said contacts closed, said quick-acting member being substantially straight longitudinally and substantially of a concavo-convex form transversely to provide a structural strength of a greater amount than the inherent resistance to bending of the material from which it is made, and means to contact a portion of said quick-acting member between said mounting and the place of contact with said second flexible member, said means serving to bring said concavo-convex form to a straight line form transversely of the member, whereby said second flexible member may overcome the constraining of the quick-acting member and move out of contact with said first flexible member and open said contacts.

RICHARD H. JORDAN.