

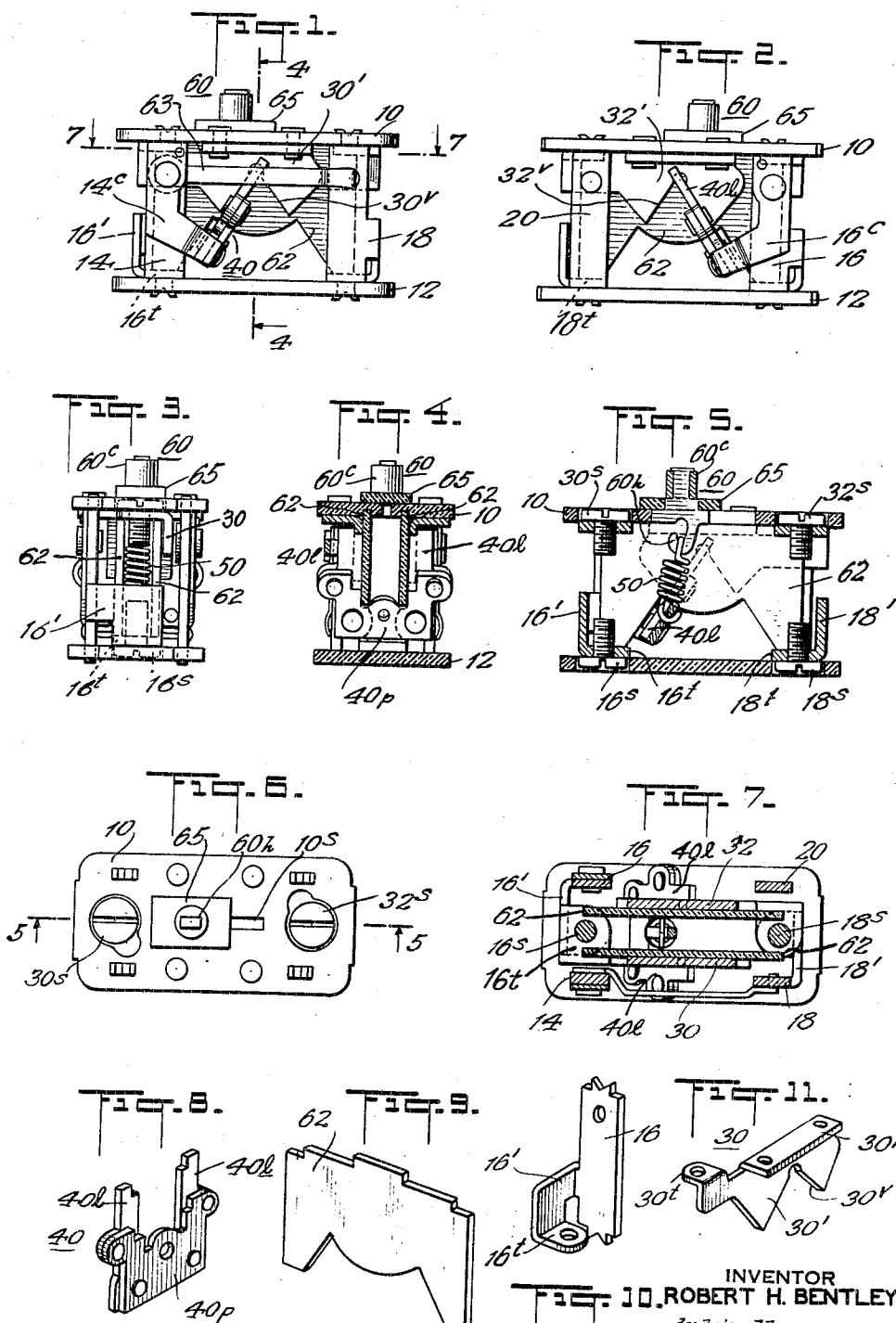
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DOUBLE POLE SNAP SWITCH

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INVENTOR
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DOUBLE POLE SNAP SWITCH

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This invention relates to snap switches, more particularly it relates to double pole snap switches in which the movable switch member is actuated by the movement of a slidable thumb member to which a spring is attached, which in turn will actuate a movable switch yoke when the thumb member is moved past a dead center position. It is an object of my invention to provide a compact switch mechanism having provision for breaking a circuit at two points one in each line of the circuit to any electric device which may be controlled by the switch. Another object is to make a snap switch with a slidable actuator which is adapted by the agency of a tensioned spring to move a yoke member which in turn will break a circuit with a snap movement, simultaneously at two points in the circuit, the yoke and actuator being held together by the tensioned spring. Other objects and the advantages of my invention will appear as it is described in connection with the accompanying drawings.

In the drawings:

Figure 1 is an elevation view of one side of my snap switch.

Figure 2 is an elevation view of the other side of my snap switch.

Figure 3 is an elevation view of one end of my snap switch.

Figure 4 is an elevation section view of my invention taken on line 4—4 of Fig. 1.

Figure 5 is an elevation section view of my invention taken on line 5—5 of Fig. 6.

Figure 6 is a plan view of my invention.

Figure 7 is a sectional view taken on line 7—7 of Fig. 1.

Figure 8 is a detailed perspective view of the movable switch yoke used in my invention.

Figure 9 is a detailed section view of an insulating plate used between the switch yoke and the switch actuator of my invention.

Figure 10 is a detailed perspective view of one of the post and wire terminal members used in my invention.

Figure 11 is a detailed perspective view of one of the combined wire terminal and bearing members used in my invention.

Referring to the drawings the switch mechanism is located between two equal-sized rectangular insulating plates 10—12 having rounded corners. These plates are spaced apart by four flat parallel posts 14, 16, 18, 20 located at the corners of the insulating plates 10—12. The insulating plates are secured to the posts by tongues on the ends of the posts which extend through the plates and have their ends peened over thus forming a permanent connection between the posts and the plates. The posts 16, 18, which are at diagonally opposite corners of the switch are identical and have extensions 16', 18' at their lower portions which extensions are turned inwardly of the switch and at right angles to the posts and have portions 16t, 18t, turned at right angles to them so as to lie upon the upper surface of the lower insulating plate 12. These portions 16t, 18t have screw threaded apertures formed therein to accommodate binding screws 16s, 18s, for securing the ends of the lead wires. Thus these portions 16t, 18t with their screws constitute wire terminals.

Secured to two of the posts 16, 18, at one end of the switch are resilient sheet metal spring contacts 14c, 16c, which are adapted to be engaged respectively by different legs of the hereinafter described yoke member 40. Secured to the lower face of the upper plate are identical members 30, 32 which serve as bearings for the movable switch yoke 40 and also as wire terminals. Member 30 is shown in detail in Figure 11. These bearing members 30, 32 are formed from sheet metal and have bearing portions 30', 32', which lie parallel to each other between the posts 14, 16, 18, 20. Inverted V notches 30v, 32v, are cut in the bearing portions to accommodate the legs of the yoke member as will hereinafter be described.

Referring for example to the bearing member 30 each bearing member has two lugs, a terminal lug 30t and a holding lug 30h, turned at right angles to the bearing portion 30' in opposite directions, but lying in the same plane. The terminal lug 30t which is turned inwardly of the switch at one end of the bearing member has a screw threaded aperture formed therein to receive a binding screw

30s for securing the end of a lead wire. The upper plate is apertured adjacent these terminal lugs 30t, 32t to accommodate the heads of the binding screws. Thus these lugs together with their screws form wire terminals. The holding lug of each bearing member is turned outwardly of the switch above the V notch and is held to the upper plate 10 by two rivets.

The yoke member 40 is formed of two metallic legs 40L which are bridged by an insulating plate 40p, the legs being secured to the plate by rivets. As hereinbefore indicated the yoke member 40 has its legs 40L bearing in the apex of the V notches, it being understood that the bearing members 30, 32 are so located that the edges of the V notches are in the same plane. An aperture is provided in the center of the insulating bridge plate 40p into which aperture one end of a tension spring 50 is hooked. The other end of this spring is connected to the operating member 60 of the switch. This operating member 60 comprises a hook 60h which passes through a longitudinal slot 10s in the upper insulating plate 10, and through a slidable plate 65 of insulating material which lies upon the top of the upper plate 10, and through a collar 60c. The upper end of the hook 60h, after passing through the collar 60c, is peened over to permanently hold the hook, collar, and slide plate together in the slot of the upper plate 10. Thus this operating member is permitted to slide in the slot 10s of the upper plate, and as it slides from one end to the other of the slot it carries the upper end of the tension spring 50 past a dead center position which causes the yoke member 40 to snap from one side of the V notch to the other.

In order to insulate the bearing portions of the bearing members from each other and from the tension spring and operating member, insulating plates 62 are placed on each side of the tension spring so as to lie flush against the inner faces of the bearing members. Thus the tension spring and operating member are permitted to move between these plates without danger of engaging either of the bearing members. The lower portions of these plates are cut away to permit free movement of the yoke member.

In operation, the feed wires, (not shown) from a source of power, may be connected to the wire terminals 30t and 32t and the wires to an electrical device, may be connected to the wire terminals 16t and 18t or vice versa. Thus the current will run through the bearing member 30 to the leg 40L of the yoke and then through the resilient contact 14c to the post 14. In order to conduct the current from the post 14 which has no wire terminal to the post 18 which has a wire terminal, a bus bar 63 is used to connect those posts. Thus the current goes from post 14

through the bus bar 63 to post 18 to the wire terminal 18t. From there the current goes through the translating device (not shown). Upon return the current is conducted through the switch from the wire terminal 16t through post 16 to resilient contact 16c. From this contact it goes through the leg 40L of the yoke to the bearing member 32 to its wire terminal 32t. A feed wire completes the circuit to the source.

Alternatively, the feed wires may be connected with the wire terminals 16t and 30t and the lead wires of the translating device may be connected to the terminals 18t and 32t or vice versa.

As the operating member 60 is moved from left to right (see Figure 5) the end of the tensioned spring 50 is moved past its dead center position in the plane of the yoke member and causes the yoke to snap from the left bearing surface of the V-notch to the right, thus disengaging legs 40L from contacts 14c and 16c and breaking the circuit at those two points.

From the foregoing it will be seen that the tension spring 50 is all that holds the operating member 60 and yoke 40 together, the tension of the spring holding the slide plate 65 against the surface of the upper plate 10 and at the same time holding the ends of the legs 40L in the apex of the V notches.

Many changes within the scope of my invention will occur to those skilled in the art, therefore I do not limit my invention to the specific embodiment shown.

I claim:

1. A double pole snap switch comprising an insulating member, a plurality of mutually insulated bearing members mounted thereon and adapted to be connected in an electric circuit, a yoke member having mutually insulated legs bearing in said bearing members, a plurality of mutually insulated contacts adapted to be engaged by said legs, a switch actuator, and a tensioned spring holding said yoke and said actuator on said insulating member.

2. A double pole snap switch comprising a plurality of mutually insulated contacts, a yoke member having a plurality of mutually insulated conducting legs adapted to engage said contacts, a plurality of mutually insulated bearing members for said yoke, a slidable actuator, and a tensioned spring engaging with said yoke and actuator.

3. A double pole snap switch comprising a plurality of mutually insulated contacts, a yoke member having an insulating portion and plurality of mutually insulated conducting legs adapted to engage said contacts, a plurality of mutually insulated conductive bearing members for said yoke, a slidable actuator for said yoke, and a spring connecting said actuator and said insulating portion.

4. A double pole snap switch comprising a

plurality of mutually insulated contacts, a yoke member having a plurality of mutually insulated conducting legs adapted to engage said contacts, a plurality of mutually insulated bearing members having notched bearings for the legs of said yoke, said bearing members having wire terminals formed integrally therewith.

5. A double pole snap switch comprising an insulating member a plurality of mutually insulated metallic posts mounted thereon, a plurality of fixed contacts secured to certain of said posts, a plurality of metallic mutually insulated bearing members mounted on said insulating member, a yoke member having a plurality of mutually insulated conductive legs bearing in said bearing members and adapted to engage with said fixed contacts, and actuating mechanism to move said yoke with a snap motion.

6. A double pole snap switch comprising a plurality of mutually insulated metallic posts, certain of said posts having wire terminals, a plurality of fixed contacts secured on certain of said posts, a yoke member having a plurality of mutually insulated conducting legs adapted to engage said contacts, a plurality of mutually insulated conducting bearing members for the legs of said yoke member, said bearing members being provided with wire terminals, and actuating mechanism for moving said yoke member with a snap.

7. A double pole snap switch comprising an insulating member, a plurality of mutually insulated metallic posts mounted thereon, a plurality of fixed contacts secured to certain of said posts, a plurality of metallic mutually insulated notched bearing members mounted on said insulating member, a yoke member having a plurality of mutually insulated conductive legs loosely held in said bearing member and adapted to engage with said fixed contacts, and actuating mechanism to move said yoke with a snap motion.

8. A double pole snap switch comprising a plurality of mutually insulated metallic posts, certain of said posts having wire terminals, a plurality of fixed contacts secured on certain of said posts, a yoke member having a plurality of mutually insulated conducting legs adapted to engage said contacts, a plurality of mutually insulated conducting bearing members for the legs of said yoke member, said bearing members being provided with wire terminals, an operating member movable in a straight line, and a tensioned spring connecting said yoke and operating member to move said yoke with a snap and holding said operator and yoke in assembled relation.

9. A double pole snap switch comprising a pair of insulating plates, a plurality of posts holding said plates in spaced parallel relation,

a plurality of stationary contacts secured to certain of said posts, a plurality of metallic bearing members, a yoke member having conducting legs secured together by an insulating bridge and adapted to engage with said fixed contacts, a shiftable actuator, and a spring connecting said actuator and yoke, whereby said yoke is caused to move with a snap and said yoke and actuator are held in assembled relation.

10. A double pole snap switch comprising a pair of insulating plates, a plurality of posts holding said plates in spaced parallel relation, a plurality of stationary contacts secured to certain of said posts, certain of said posts being provided with wire terminals, and being identically formed, a plurality of identical metallic bearing members provided with wire terminals, a yoke member having conducting legs secured together by an insulating bridge and adapted to engage with said fixed contacts, a shiftable actuator, and a spring connecting said actuator and yoke, whereby said yoke and actuator are held in assembled relation.

11. A double pole snap switch comprising a pair of insulating plates, a plurality of posts holding said plates in spaced parallel relation, certain of said posts having wire terminal portions, a plurality of mutually insulated bearing members having wire terminal portions, all of said terminal portions lying adjacent said plates, said plates being apertured adjacent all said terminal portions to receive binding screws for securing lead wires to said terminal portions, stationary contacts secured to certain of said posts, and a movable switch yoke adapted to engage and disengage said contacts.

12. A double pole snap switch comprising a pair of insulating plates, a plurality of posts holding said plates in spaced parallel relation, a plurality of stationary contacts secured to certain of said posts, certain of said posts being provided with wire terminals, a plurality of metallic bearing members provided with wire terminals, a yoke member having conducting legs secured together by an insulating bridge and adapted to engage with said fixed contacts, an actuator slidable upon the outer surface of one of said insulating plates, and a tensioned spring connecting said yoke and actuator, whereby said yoke legs are held against said bearing members and said actuator is held against said outer surface of said insulating plate.

13. A double pole snap switch comprising an insulating member, a plurality of mutually insulated metallic bearing members secured thereon, a yoke member having mutually insulated metallic legs bearing on said bearing members, fixed contacts adapted to be engaged by said legs, an actuator, a tensioned spring engaging with said actuator

and yoke and movable between said bearing members, and insulating plates parallel to the plane of motion of said spring and located on each side of said spring between it
5 and said bearing members.

In testimony whereof I have signed my name to this specification.

ROBERT H. BENTLEY.

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