April 16, 1946. J. W. BUSACKER 2,398,734

SET BACK AND CENTRIFUGAL SWITCH

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FIG. 1.

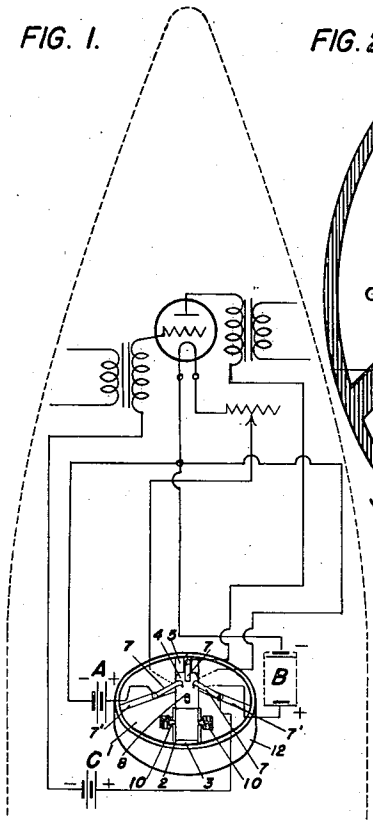


FIG. 2.

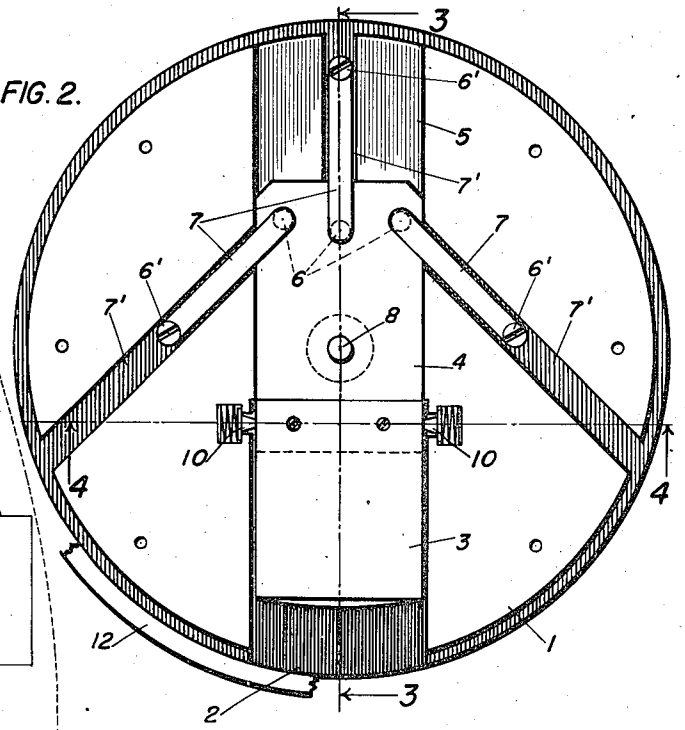


FIG. 3.

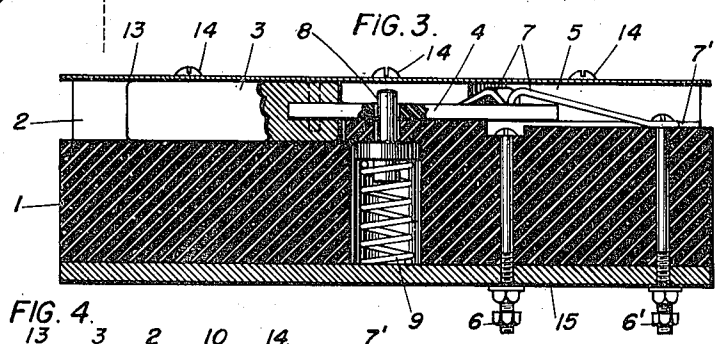
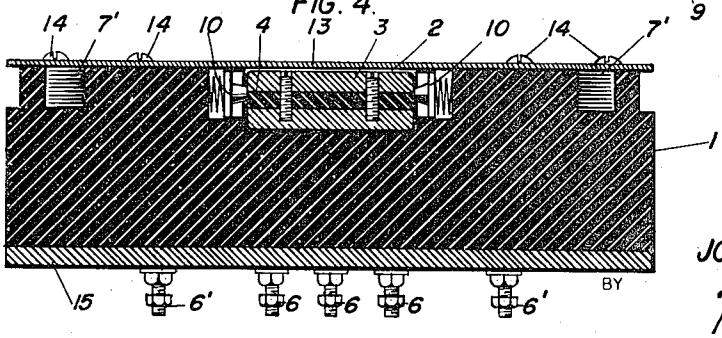


FIG. 4.



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FIG. 5.

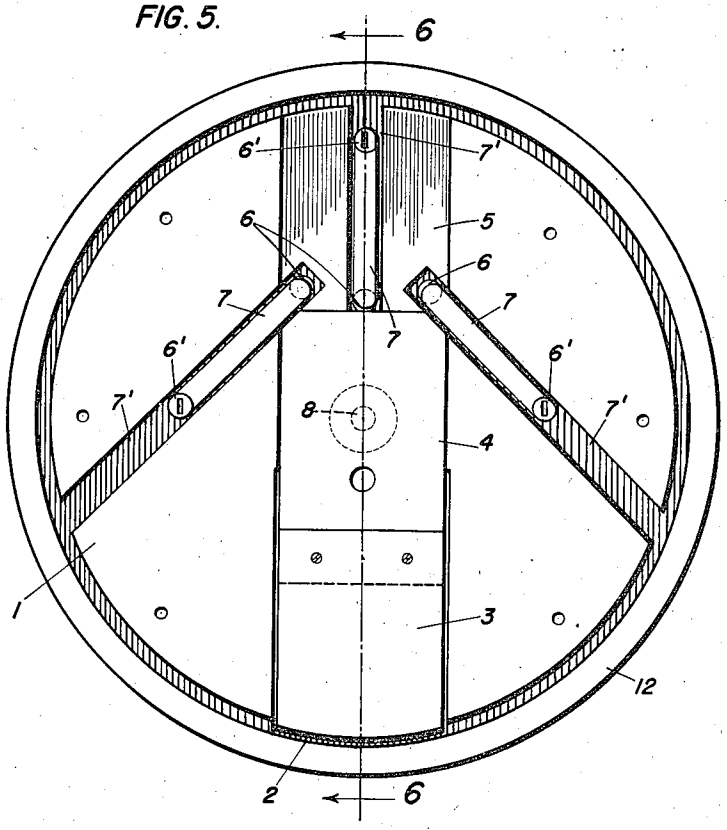
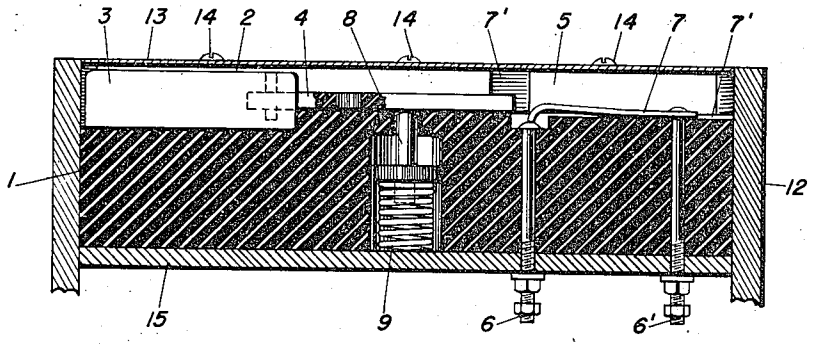


FIG. 6.



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SET BACK AND CENTRIFUGAL SWITCH

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Application September 17, 1943, Serial No. 502,832

6 Claims. (Cl. 200—80)

This invention relates to an improved set back and centrifugal switch and has, for one of its objects, to provide a device of this character which will be operative for operating a plurality of electric connections. These connections may, e. g. be those for completing the branches in the circuit of a radio amplifier in a proximity fuze system of a rotating projectile.

Another object of the invention is to provide a set back and centrifugal switch which will require both the forces of set back and centrifugal force for its operation.

Still further objects of the invention, not mentioned hereinbefore, will become apparent during the course of the following description.

In the drawings:

Figure 1 shows an outline of the nose of a projectile in which the device of the invention is shown in perspective with a wiring diagram of an amplifier circuit controlled thereby.

Figure 2 is a horizontal sectional view of the invention, partly shown in plan,

Figure 3 is a vertical sectional view taken at 3—3 of Figure 2,

Figure 4 is a vertical sectional view taken at 4—4 of Figure 2,

Figure 5 is a plan view of the device similar to that of Figure 2 but showing the parts in operative position, and

Figure 6 is a sectional view taken at 6—6 of Figure 5.

The invention comprises a body 1 which is formed with a chamber 2 in which is mounted a weight element 3. The weight element is, as best seen in Figure 3, relatively thick and carries an insulating block 4 which is mounted for sliding movement in a suitable recess 5. Mounted in the body below the recess 5 are contact studs 6, and positioned above the studs 6 are the ends of spring contact elements 7, which are fixed in the grooves 7' provided in the body 2 by means of bolts 6'. These spring elements and their corresponding studs 6 are connected to the opposite ends of the branches of an amplifier circuit as shown diagrammatically in Figure 1.

In order to retain the weight element and insulating block in safe position, I employ a set back detent 8 which is mounted axially of the body and is normally held in engagement with the block 4 by a spring 9. If preferred, centrifugal detents of the type shown at 10 may be employed in addition to, or in lieu of, the set back detent 8. These detents may be of the frictional type or may engage into slots cut in the sides of the weight element 3 for positively locking the switch in inoperative position until they are withdrawn by the outward component of the centrifugal force acting on them when the projectile rotates at high speed.

The body 1 together with its associated parts is mounted in a casing 12 having a cover 13 fastened thereto by any suitable means, such as the screws 14. The studs 6 and bolts 6' extend through the bottom 15 of this casing for the connections of the proper terminals thereto.

The operation of the invention will now be briefly described. When in safe position, the insulating block 4 will separate the elements 7 from the studs 6 with the result that the electrical branches of the circuit in which said elements and studs are connected will be maintained open. However, upon firing of the projectile in which the device is mounted, the set back detent 8 will be moved downwardly against the compression of the spring 9 and, subsequently, the centrifugal detents, if used, will shift outwardly for freeing the weight element and the insulating block from between the spring contact elements when said elements will engage with the studs for closing the electrical contacts in the circuit.

It is thought that the construction and operation of this invention will now be understood.

What is claimed is:

1. A set back and centrifugal switch including a body, a weight element in the body for sliding movement thereon, an insulating block connected with the weight element and movable therewith, a contact stud in the body beneath the insulating block, a spring contact element above the insulating block, and means for normally retaining the weight element and insulating block in safe position with the block separating the stud from said contact element, said means being releasable for shifting the weight element and insulating block by centrifugal force for releasing the insulating block from between the stud and the spring contact element for closing of an electric circuit.

2. A set back and centrifugal switch including a body for insertion in a projectile having a diametral chamber therein, a weight and insulating block assembly slidably mounted in said chamber, the weight being normally to one side of the center of the body while the block extends to the other side thereof, one or more pairs of contacts, each pair having a stationary contact on one side of said block and a spring pressed contact on the other side, the block simultaneously separating said contacts in its normal inoperative position, a spring pressed detent at the center of the body passed through an opening in

the weight block assembly to lock it in inoperative position and movable rearwardly under setback against the spring pressure, the weight causing movement of the block clear of the contacts in response to centrifugal force acting thereon for closing the contacts.

3. A set back and centrifugal switch including a body for insertion in a projectile having a diametral chamber therein, a weight and insulating block assembly slidably mounted in said chamber, the weight being normally to one side of the center of the body while the block extends to the other side thereof, one or more pairs of contacts, each pair having a stationary contact on one side of said block and a spring pressed contact on the other side, the block simultaneously separating said contacts in its normal inoperative position, a spring pressed detent at the center of the body passed through an opening in the weight block assembly to lock it in inoperative position and movable rearwardly under setback against the spring pressure, the weight causing movement of the block clear of the contacts in response to centrifugal force acting thereon for closing the contacts, and a pair of detents at the sides of said weight and block assembly releasable in response to a component of the centrifugal force acting thereon.

4. A set back and centrifugal switch including a body for insertion in a projectile having a diametral chamber therein, a weight and insulating block assembly slidably mounted in said chamber, the weight being normally to one side of the center of the body while the block extends to the other side thereof, one or more pairs of contacts, each pair having a stationary contact on one side of said block and a spring pressed contact on the other side, the block simultaneously separating said contacts in its normal inoperative position, a pair of detents at the sides of said weight and block assembly releasable in response to a component of the centrifugal force acting thereon, the weight causing movement of the block clear of the contacts in response to centrifugal force acting thereon.

5. In a setback and centrifugal switch, the combination with a body having a diametral guide path, a fixed contact and a complementary movable contact mounted in the body, of a weight slidable under centrifugal force in the path, resilient means initially locking the weight and operable under setback to unlock the weight, and an insulator rigid with the weight initially separating said contacts.

6. In a setback and centrifugal switch, the combination with a body having a diametral face-groove, a fixed contact, and a spring conducting blade forming a complementary movable contact mounted in the body, of a weight slidable in the groove, resilient means initially locking the weight and operable under setback to unlock the weight, and an insulator rigid with the weight initially separating said contacts.

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