F. W. WOOD.

SWITCH.

APPLICATION FILED DEC. 22, 1910.

1,094,690. Patented Apr. 28, 1914.

Fig 1

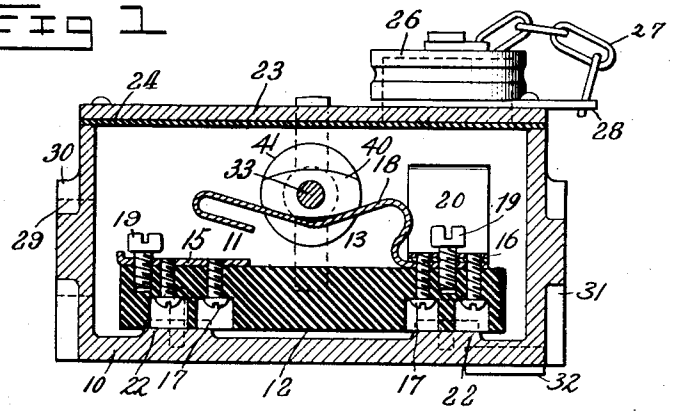
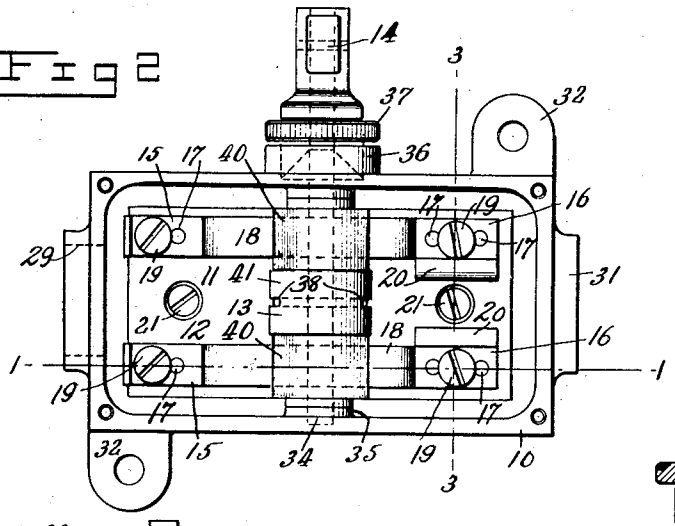


Fig 2



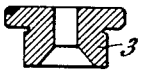
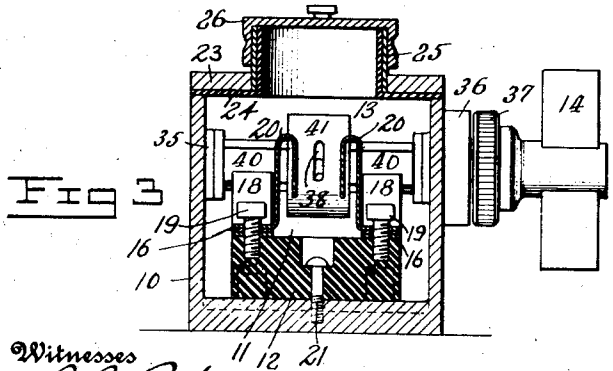


Fig 5

Fig 3



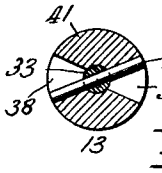


Fig 4

Witnesses

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UNITED STATES PATENT OFFICE.

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SWITCH.

1,094,690. Specification of Letters Patent. Patented Apr. 28, 1914.

Application filed December 22, 1910. Serial No. 598,687.

To all whom it may concern:

Be it known that I, FRANK W. WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Switches, of which the following is a specification.

My invention relates to switches of the inclosed type, especially adapted for use on marine vessels, and in places where moisture is apt to corrode the parts of the switch. The switch proper I place in an air and water-tight metallic casing so that all corrosive elements are prevented from entering the casing. Further the parts of the switch itself are constructed to further the reliability of its operation in the situations named. The number of moving parts and joints is reduced to a minimum, and the switch is so organized within and in connection with the casing that highly efficient results may be obtained from a switch of inexpensive construction. Coupled with these features in the organization of the switch of my invention is one leg from which branch connections may be made to the switch with ease.

In the accompanying drawings I show one embodiment of this switch of my invention.

Referring to the drawings, Figure 1 is a side elevation in section taken on line 1 of Fig. 2; Fig. 2 is a plan view of the switch of my invention with the cover plate of the inclosing casing removed to show the internal parts; Fig. 3 is a sectional end elevation taken on line 3—3 of Fig. 2, and Figs. 4 and 5 are detail views of several of the parts.

Speaking generally 10 designates the casing of the switch which is made of metal, and preferably brass.

11 designates generally the elements of the switch proper which are mounted for the most part on a base 12 of insulating material.

13 is the operating member for the switch, which member is journaled transversely of the casing 10, and provided with an operating handle 14 above the casing.

The switch proper comprises the insulating base 12, two pairs of fixed contacts, 15 and 16, secured to the base by screws 17 from the underside of the base, and movable spring blade contacts 18, one secured to each fixed contact, 16, at one end and projecting toward the corresponding contact 15 in each case. At their fixed ends, the spring blade contacts 18 are secured beneath the contacts 16 by the screws 17. They rise abruptly adjacent the fixed ends by an **S** bend, and extend laterally toward and over the corresponding fixed contact 15. Intermediate their end portions they are bowed, the shape of the bowed portion being angular as shown. At their free ends over the contacts 15 they are turned downwardly and under in order to make the contact made with fixed contacts 15 a yielding one, and the operation of the switch more easy and more efficient. Both the contacts 15 and 16 are provided with suitable terminal screws 19 adapted to receive line connections. The contacts 16 have secured to them attachment clips 20. These clips are secured to the contacts 16 along with the spring blade contacts 18, and project vertically upward from the near sides of the contacts 16 a certain distance, and then are turned inwardly toward each other and down. Between them they are adapted to receive an attachment plug for the making of a branch connection.

The insulating base of the switch is secured to the bottom of the metallic casing 10 by screws 21 which pass through the base and into bosses 22. The casing completely incloses the switch, and is in effect hermetically sealed. A removable cover 23 is secured to the top of the casing by a packing 24. There is a circular aperture 50 in this cover centrally above the clips 20, to permit the insertion of an attachment plug. This aperture is surrounded by an upwardly projecting collar 25 the inner walls of which are insulated as shown. A cap 26 fitted on this collar normally covers the opening. By means of chain 27 and clip 28, this cap is secured to the cover, so that when removed it may not be lost. A threaded opening 29 in a boss 30 on one end of the casing is adapted for making connection with a metallic conduit through which line wires are led to the switch. At the opposite end of the casing is provided a similar boss for the making of a similar connection. Laterally projecting ears 32 at diagonally opposite points adjacent the bottom of the casing serve for attaching the same to any part.

The operating means for the switch comprises a spindle 33 journaled transversely of the casing. At one end the spindle is journaled in a socket 34 in a boss 35, the

socket having a closed outer end, while at the other end the spindle passes through the opposite wall of the casing, and is provided with the operating handle 14. At the point of passage through the wall of the casing, the spindle is packed, the packing being located in a recess 36 surrounding the spindle, and a packing bushing 37 the inner end of which is recessed as shown in Fig. 5, being screw threaded into the recess 36 and upon the packing. The operating member 13 is connected to the spindle 33 by a lost motion connection comprising slots 38 in the member 13 and pin 39 passing through the spindle and engaging the member 13 in the slots. The operating member 13 comprises two cam shaped portions 40 at its opposite ends engaging the spring blades 18 at the bowed portions. The shape of these cams is generally elliptical. Between the cam portions is an enlarged portion 41 through which the pin 39 passes. This portion is circular.

The operation of the switch of my invention should be apparent. By turning the operating handle 14, the major axes of the cams are turned vertically, and the ends engage in the bottoms of the bowed portions of the spring blade, thus pressing the free ends of the blade to the fixed contacts 15. The spring blades may be allowed to remain in this position, the circuit being thus closed through such connection as is made from the contacts 16, this connection being a branch connection made by a plug inserted through the opening 50, or any other connection. By turning the operating handle 14 a little farther, the ends of the cams 40 are moved upon the inclined portions of the bowed spring blade, and when the angle of inclination of the cams with respect to the bowed portions becomes sufficient to overcome the friction of the parts, the spring of the blades 18 causes them to move quickly upward, carrying the cams around with respect to the spindle, by virtue of the lost motion mentioned, and giving a quick break at the contacts 15, thus insuring a cutting off of the current.

The clips 20 together with the circular aperture above them, especially adapt the switch for use in making branch connections.

While I have described the best embodiment of my invention now known to me, I desire to have it understood that my invention may be given many other forms by those skilled in the art without in any wise departing from the generic spirit. I therefore desire to cover in the annexed claim all such modifications of my invention which come within its legal purview.

I claim:—

An electric switch comprising a base of insulating material, fixed contacts secured to said base and spaced from each other, a bridging spring blade contact rigidly secured at one end to one of said fixed contacts and rising abruptly therefrom with an S-shaped bend to provide increased flexibility, said blade extending toward the other fixed contact and being bent downwardly upon itself at its free end, the body of the blade being inclined downwardly from each end toward the center thereof to form a shallow depression, and an operating cam above the blade and continually in contact therewith, said cam being provided with a turning spindle and a lost motion connection between said cam and its spindle, the shallow depression in said blade serving as a partial lock for said operating cam when the circuit is closed and the inclined surfaces on each side thereof providing an increased contact surface for said cam and a quick break when the latter is turned to open the circuit.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK W. WOOD.

Witnesses:
SAUL W. LEVY,
FRED ELZMITZ.