

J. N. POWERS.
 SWITCH FOR ELECTRIC FIRING DEVICES.
 APPLICATION FILED JUNE 7, 1916.

1,302,968.

Patented May 6, 1919.

Fig. 1.

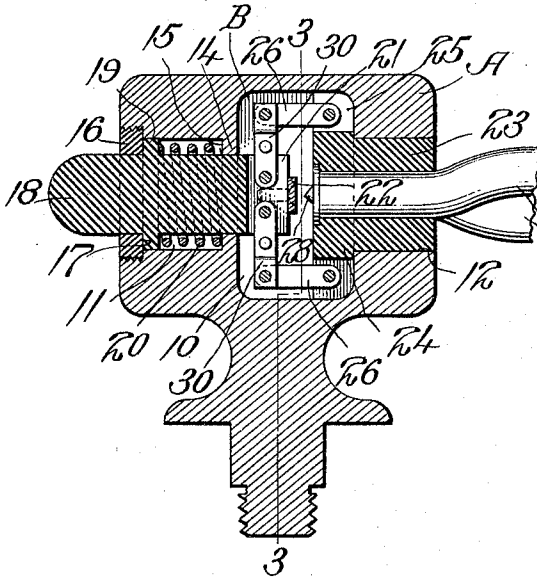


Fig. 3.

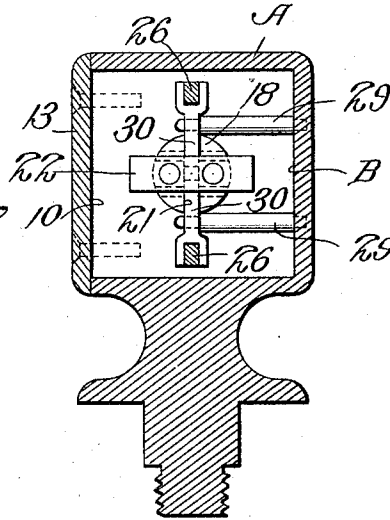


Fig. 2.

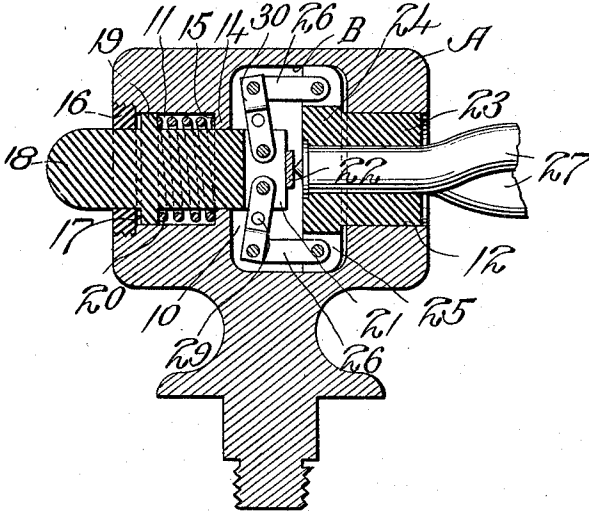
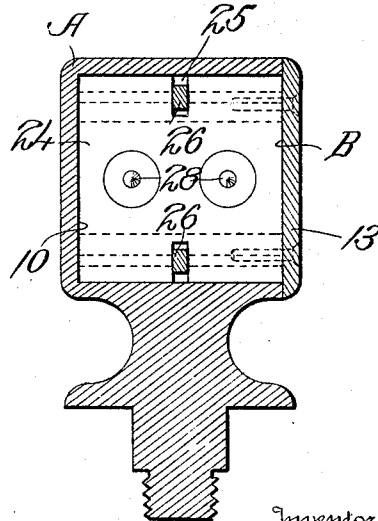


Fig. 4.



Witness

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UNITED STATES PATENT OFFICE.

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SWITCH FOR ELECTRIC FIRING DEVICES.

1,302,968.

Specification of Letters Patent.

Patented May 6, 1919.

Application filed June 7, 1916, Serial No. 102,323.

To all whom it may concern:

Be it known that I, JOHN N. POWERS, a citizen of the United States, and resident of the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Switches for Electric Firing Devices, of which the following is a specification.

My invention relates to switches for electric firing devices.

In firing guns on shipboard with a heavy sea running it is difficult, owing to the roll of the ship, to fire the gun at the proper instant to secure accuracy of aim. This is due to the fact that the time required to effect the manual closing of the firing circuit, although minute, is sufficient to result in delayed firing and consequent inaccuracy of aim. It is therefore the purpose of my invention to provide a switch for closing the firing circuits of guns wherein the relative movement of the terminal contacts of the circuit toward each other will be faster than the movement of the manually operated actuator of the switch so as to render it possible to fire the gun when correctly pointed irrespective of the roll of the ship.

More specifically it is my purpose to provide a switch for closing the firing circuits of guns wherein two movable contacts are employed together with means whereby the movement of one contact will effect a simultaneous and opposite movement of the other contact.

In the drawings chosen to illustrate my invention the scope whereof is set forth in the claims—

Figure 1 is a longitudinal section of my improved switch with the parts in normal or open position;

Fig. 2, a view similar to Fig. 1 showing the switch operated to closed position;

Fig. 3, a section on the line 3—3 of Fig. 1 looking to the left, and

Fig. 4, a view similar to Fig. 3 looking to the right.

Referring to the drawings my improved switch is shown as comprising a body A having a longitudinal passage B there-through. This passage includes an enlarged central portion 10 and end portions 11 and 12. The central portion 10 and end portion 12 open through the side of the body A and are closed by a plate 13 suitably secured to

the body. The end portion 11 of the passage B is reduced as at 14 to form a shoulder 15 and the diameter of this reduced portion 14 is equal to the inner diameter of a ring 16 threaded in the outer end of the portion 11 of the passage, said ring providing a shoulder 17. Slidable in the ring 16 and reduced portion 14 is a switch actuator in the form of a plunger or button 18. This plunger is provided with a circumscribing flange 19 disposed in the portion 11 of the passage and adapted to engage the shoulder 17 to limit movement of the plunger in one direction. A spring 20 encircles the plunger 18 and bears against the flange 19 and shoulder 15 and serves to normally hold the plunger in the position shown in Fig. 1 or in a position to maintain the switch open. The plunger 18 is provided with a transverse recess 21 opening through its inner end. Secured across the inner end of this plunger is a bridge contact 22 which is adapted to connect the terminal contacts of a firing circuit as will hereinafter appear.

Slidably mounted in the end portion 12 of the passage A is a terminal carrier 23 the inner end of which extends into the portion 10 of the passage and is enlarged as at 24. This enlarged portion 24 is provided with opposite recesses 25 in which are pivoted respectively the ends of links 26. Suitably mounted in the carrier 23 are the terminal wires 27 of a firing circuit and the ends of the wires are provided respectively with contacts 28 adapted to be connected by the contact 22 to close the circuit.

Mounted in the body A and extending transversely of the portion 10 of the passage B on either side of the plunger 18 are pivot pins 29. Mounted on each pin 29 is a lever one end of which extends into the recess 21 and is pivotally connected to the plunger 18 while the other end is pivotally connected to the related link 26.

In operation it will be obvious that when the plunger 18 is forced inwardly its motion will be transmitted through the levers 30 and links 26 to the carrier 23 and the latter will be moved inwardly simultaneously until the contact 22 engages contacts 28 and closes the circuit. From this construction and operation it will be apparent that the closing of the circuit is effected twice as fast as would be the case if the contacts 28 were stationary.

I desire it to be understood however, that it is not essential in my invention that both contacts of the switch be movable, it being only necessary in carrying the invention into
5 practice that the relative movement of the contacts toward each other be faster than the movement of the manually operated actuator of the switch. For instance the movable contact of the switch could be mounted on a piv-
10 oted arm with the manually operated actuator in engagement with the arm between the pivot of the latter and the contact. Furthermore; by changing the positions of the pivot pin 29 the rapidity of movement of the
15 terminal carrier under the influence of the movement of the plunger 18 can be increased.

While I have described my invention in the best form known to me at present it will be obvious that same can be changed in de-
20 tail construction and arrangement and by desirable additions by the exercise of only ordinary mechanical skill and without departing from the spirit of the invention.

I claim:—

- 25 1. An electric switch of the class described comprising a casing, cooperating contacts slidably mounted in the casing, and connec-

tions between the contacts operating upon movement of a contact to produce a simultaneous and opposite movement of the other 30 contact.

2. An electric switch of the class described comprising a casing, cooperating contacts slidably mounted in the casing, a rocking lever pivoted in the casing and having one 35 end pivotally connected to one of said contacts, and a link connecting the other end of said lever with the other contacts.

3. An electric switch of the class described comprising a casing, cooperating contacts 40 slidably mounted in the casing, connections between said contacts whereby the movement of one contact will produce a simultaneous and opposite movement of the other contact, and spring means for normally hold- 45 ing said contacts at the limit of their movement away from each other.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JOHN N. POWERS.

Witnesses:

FRANK W. CUMMINS,
PAUL A. WINTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."