G. A. LEY.

TESTING APPARATUS FOR FLASH LIGHTS.

APPLICATION FILED AUG. 27, 1915.

1,217,026.

Patented Feb. 20, 1917.

2 SHEETS—SHEET 1.

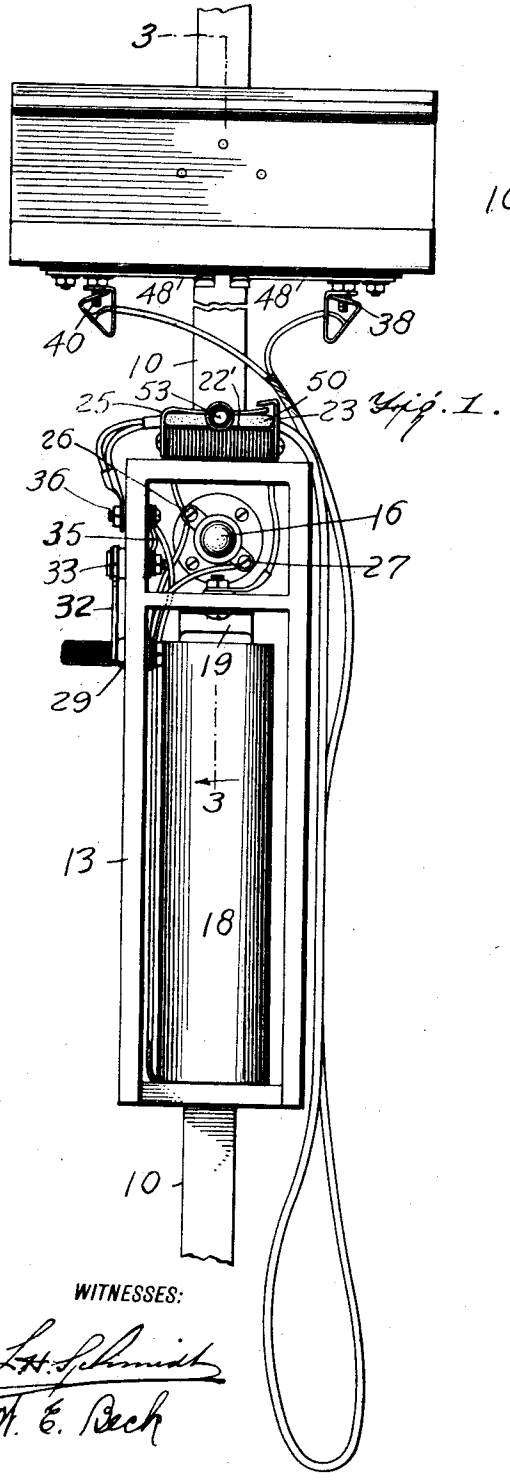


Fig. 1.

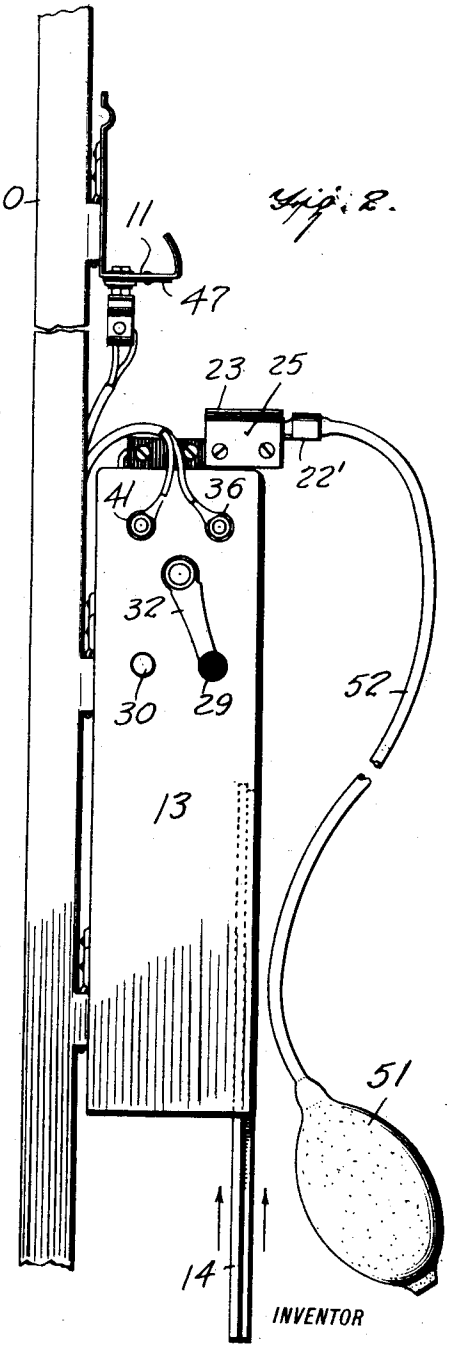


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 4.

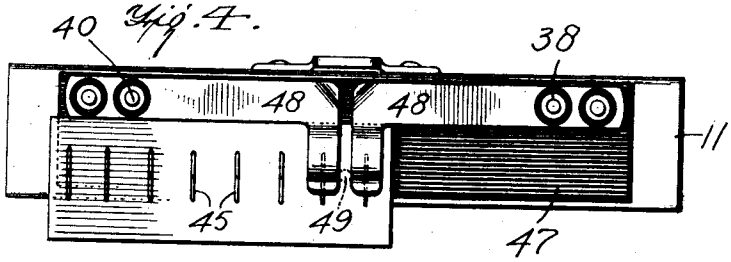


Fig. 5.

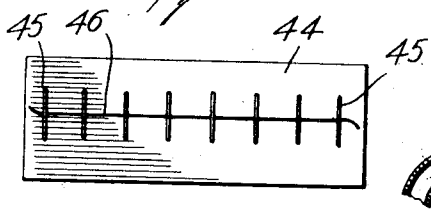


Fig. 3.

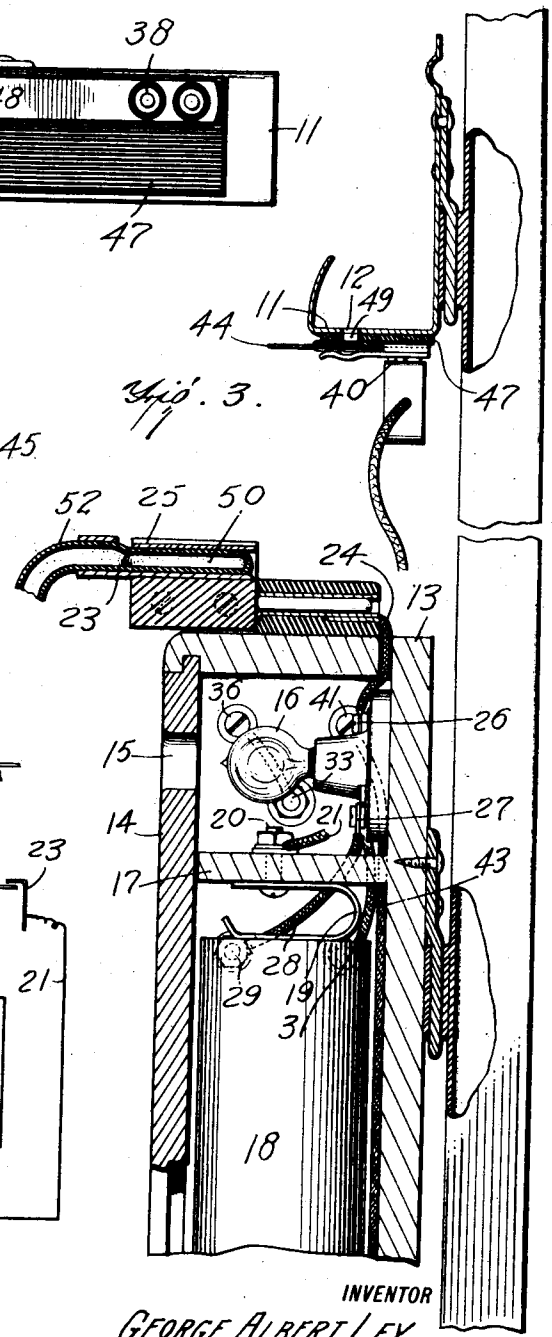
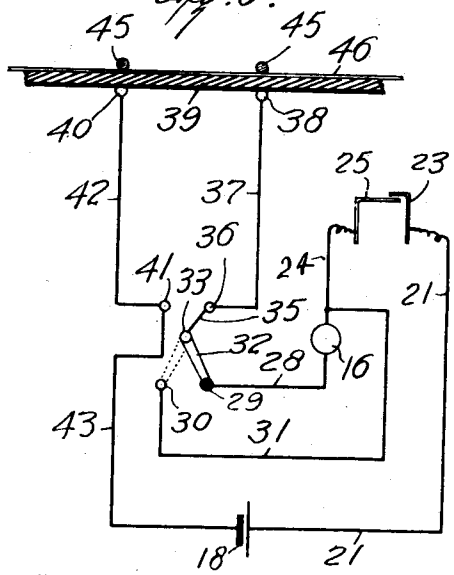


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TESTING APPARATUS FOR FLASH-LIGHTS.

1,217,026. Specification of Letters Patent. Patented Feb. 20, 1917.

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To all whom it may concern:

Be it known that I, GEORGE ALBERT LEY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented an Improvement in Testing Apparatus for Flash-Lights, of which the following is a specification.

This invention is an improvement in testing mechanism, and has particular reference to a device associated with a flash light apparatus for testing the ignition system thereof.

It is desirable, when employing flashlight apparatus, to first test the ignition device to assure the proper burning of the flash powder.

Testing apparatus of this character has been designed in which an electrically operated buzzer is used in connection with a fuse to determine whether the latter is in proper position for ignition. Such apparatus has been found costly and inefficient in adequately performing its functions.

In order to overcome these objections the present invention has been designed and has for one of its objects to provide a testing mechanism which is of a simple and compact nature and which is positive in operation.

Another object is to provide an electric circuit in which there is interposed, among other elements, a lamp and a pneumatically operated contact member for closing said circuit when it is desired to both test the ignition fuse and ignite the flash powder.

A further object is the provision of a lamp of considerable greater resistance than the igniting fuse so that only as much current will pass through the fuse as the lamp will consume, which will result in the lighting of the lamp, when the fuse is properly adjusted, without making the latter hot enough to ignite the flash powder, thus making it possible and safe to test the apparatus after the powder has been placed on the fuse.

The inventive idea involved is capable of receiving a variety of mechanical expressions, one of which, for the purpose of illustrating the invention, is shown in the accompanying drawings, in which

Figure 1 is a front elevation of the testing device showing the same in connection with the pan for holding the flash powder.

Fig. 2 is a side elevation.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a bottom plan view of the flash powder pan showing the connecting fuse in position.

Fig. 5 is a plan view of the fuse used in connection with the invention.

Fig. 6 is a diagrammatic illustration of the electrical circuit employed in connection with the invention.

Referring more particularly to the accompanying drawings, the numeral 10 indicates a portion of the standard of a flash light apparatus to which is connected in any suitable manner the flash powder pan or holder 11 having a small opening 12 therein for a purpose which will appear in the course of the description.

The testing device which comprises one of the essential features of this invention includes an elongated preferably rectangular casing 13 having a removable front 14 provided with an opening 15 through which the lamp 16 mounted in the casing is visible. This casing is attached to the standard 10, as best illustrated in Fig. 3, and is provided interiorly thereof with a partition 17 below which the battery 18 is mounted.

One terminal of the battery 18 is connected through the contact member 19, binding post 20, and wire 21 to the stationary contact member 23 of the detachable plug switch 22′ mounted upon the top of the casing 13. A wire 24 connects the movable contact member 25 of the switch to one of the binding posts 26 of the lamp 16. The other binding post 27 of said lamp is connected by the wire 28 with the binding post 29 mounted on the outside of the casing 13. The other binding post 30 on the outside of the casing has one end of the wire 31 connected thereto the other end of which is secured to the wire 24 leading from the movable contact member 25 to the lamp terminal 26. A switch 32 is pivoted to the casing at the binding post 33 and is adapted to contact with either of the binding posts 29 and 30 for throwing the lamp 16 in and out of the circuit. A short wire 35 connects the binding post 33 with another binding post 36, the latter being in turn connected by a wire 37 to one of the binding posts 38 of the fuse which is generally indicated by the numeral 39. The other binding post 40 of the fuse is connected to the post 41 by a wire 42, said post 41 being in turn con-

nected by a wire 43 with the other terminal of the battery 18 thus completing the circuit.

The fuse used in connection with this invention comprises a base 44 having a plurality of short bars 45 extending transversely thereacross and extending longitudinally of the base and joining the bars 45 is a small wire 46 which gives the fuse a lower resistance than that of the lamp 16.

Secured to the bottom of the flash powder holder 11 and separated therefrom by the insulation 47 are a pair of substantially L-shaped spring contact members 48 the short arms of which extend on either side of the opening 12 in the holder 11, the insulation 47 being also provided with a small opening 49 adapted to register with the opening 12 so that powder in the opening 12 will drop through said opening and come in contact with the wire 46 of the fuse, the latter being inserted between the short arms of the contact members 48 and the insulation 47 so that adjacent bars 45 will be in contact with said short arms as best illustrated in Fig. 4. After the length of the wire 46 between the first two bars 45 has been burned in order to ignite the flash powder the entire fuse may be moved down in order to form a contact between the spring contacts 48 and the second bar of the first-named pair of bars and the next succeeding bar.

A device for pneumatically closing the contacts 23 and 25 is provided and consists of an expansible element 50 connected to a bulb 51 by a rubber tube 52 so that when said bulb is compressed the element 50 will be caused to expand and close the contacts 23 and 25. The apparatus is now in position either for a test or for the ignition of the flash powder.

Should a test be desired the switch 32 is thrown to the position shown in Fig. 6 when the current will pass through the contacts 23 and 25 and lamp 16 to the fuse 39, said current passing through that portion of the wire 46 between the bars 45 which are in engagement with the spring contacts 48 and thence back to the other terminal of the battery 18. Since the resistance of the lamp is much higher than that of the fuse and as only as much current can pass through the fuse as the lamp will consume, the latter will light without causing the fuse to ignite the flash powder. Therefore when the switch 32 is thrown to the position described if the lamp 16 is lighted it will be indicated that the apparatus is in condition for igniting the flash powder. The switch 32 is then thrown to contact with the terminal 30 when the lamp 16 will be cut out of the circuit and the current pass directly through the fuse. That portion of the wire 46 between the bars 45 will then become hot enough to ignite the small amount of flash powder which has dropped through the openings 12 and 49 in the holder 11 and insulation 47, respectively, thus properly igniting the powder in said holders.

I claim:

1. The combination with a flashlight apparatus; of a testing device therefor including a casing having a partition for dividing the same into compartments, a lamp in one of said compartments and connected to a source of current in the other compartment, a fuse also connected to said source of current, stationary and movable contact members mounted on said casing, and a pneumatically operated means having a portion interposed between said contact members and operated for closing the circuit produced by said source of current, through said lamp and fuse.

2. In a flashlight apparatus, a flash powder holder having an opening therein, contact members carried by said holder and having portions thereof extending on either side of said opening, an insulating element interposed between said contact members and said holder, and also having an opening adapted to register with the opening in said holder, and a fuse adapted to be mounted between said contact members and said insulating element whereby the flash powder will pass through said registering openings and be ignited by contact with said fuse.

3. The combination with a flashlight apparatus; of a testing device therefor, including a casing having compartments, a lamp in one of said compartments and connected to a source of current in the other compartment, a fuse also connected to said source of current, stationary and movable contact members mounted on said casing, and means including an expansible element for operating said contact members to close the circuit produced by said source of current.

4. In a flashlight apparatus, a flash powder holder having an opening therein, an insulating element associated with said holder and also having an opening registering with the first named opening, contact members carried by said holder, and a fuse mounted between said contact members and said insulating element whereby to ignite the powder passing through said registering openings.

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