

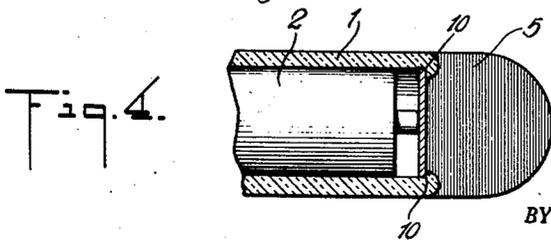
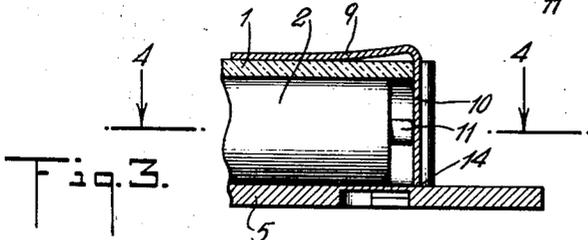
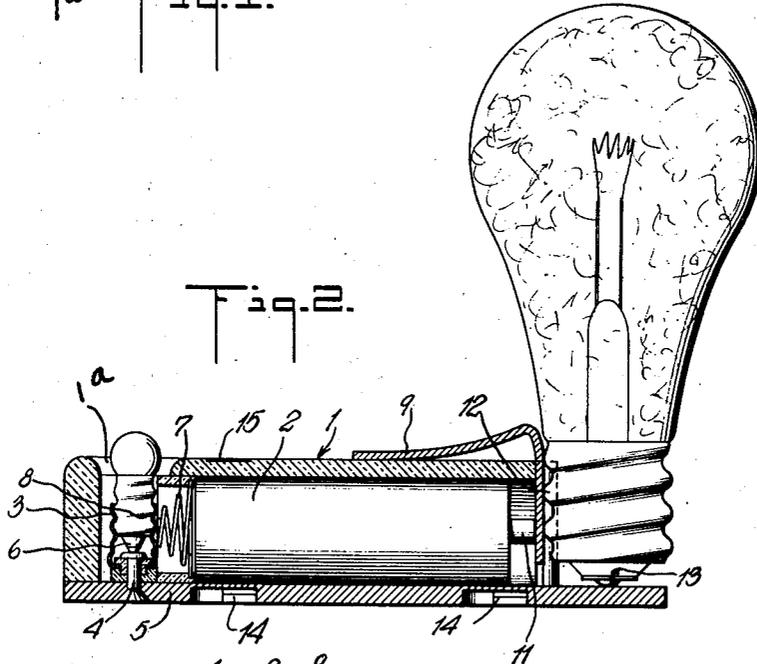
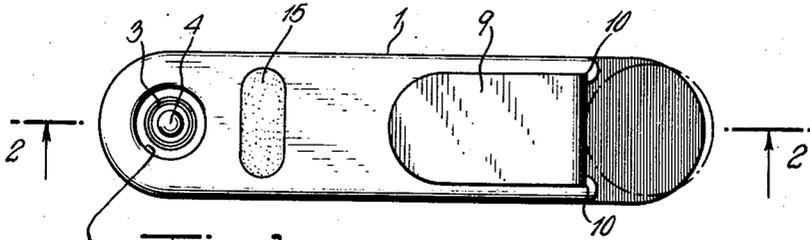
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PHOTOGRAPHIC FLASH BULB TESTER

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PHOTOGRAPHIC FLASH BULB TESTER

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1 Claim. (Cl. 175-183)

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This invention is a photographic flash bulb tester adapted to be used to test the operativeness of photographic flash bulbs and incorporating features permitting the tester to test its own working condition and to function as a flashlight. It is compact and may be attached to a camera and used without detachment, or it may be used while held in the hand. It is inexpensive to manufacture and is reliable and foolproof in its operation.

The accompanying drawings illustrate an example of this flash bulb tester as follows:

Fig. 1 is a top view;

Fig. 2 is a longitudinal section taken from the line 2-2 in Fig. 1;

Fig. 3 shows a detail of Fig. 2 in operation; and

Fig. 4 is a section taken from the line 4-4 in Fig. 3.

More specifically, these drawings show an open bottomed shell 1, preferably a plastic molding but made of dielectric material in any event, of a size suitable for containing a flashlight dry battery cell 2. This cell should be of the type having a dielectric cylindrical cover slipped over it.

The shell 1 has a hole 1a in its top near one end, and a miniature screw base electric bulb socket shell 3 has its open end aligned with this hole 1a by its center contactor 4 being riveted to a metal plate 5 completely enclosing the open bottom of the shell 1 and extending beyond its end opposite the one having this hole 1a. This plate may be permanently or removably fastened to the shell 1. The usual insulation is provided between the socket shell 3 and the center contactor 4 and metal plate 5. A miniature screw base electric bulb 6 is screwed into the socket shell 3, the arrangement being such that the bulb's glass globe projects or is at least visible through the hole 1a. The arrangement shown permits ready replacement of the bulb.

A spiral compression spring 7 establishes contact between the end of the battery 2, where its container electrode is exposed, and the socket shell 3. If desired, a spacing element 8 may be used between the end of the battery 2 and the socket shell 3, to provide a solid abutment for this end of the battery. The opposite end of the shell 1 is open so the latter may be passed longitudinally through it.

A feature of the invention is the use of an L-shaped metal spring clip 9 having one leg resting on top of the shell 1 and its other leg sliding in slots 10 at the opposite sides of the end of the shell 1 opposite the electric bulb opening. These

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slots lead from the top of the shell 1 to the plate 5. The spring clip 9 is shaped so that when unstrained its legs form an acute angle relative each other, so by pushing one leg of the clip into the slots 10 a spring clamping action is effected restraining this leg from slipping out of the slots 10. The other leg bows somewhat and prevents the leg in the slots 10 from ordinarily touching the metal plate 5. Pressure applied to the top leg resting on top of the shell 1, springs the clip further so that its other leg can touch the plate 5 as shown by Fig. 3, the clip functioning as a switch in this respect for closing the circuit to the bulb 6, since the spring 7 urges the center electrode 11 of the battery 2 against the inside of the leg sliding in the slots 10. In addition to performing this function of a switch, the clip 9 functions as a closure for the open end of the shell 1, the clip being pulled out to permit battery replacement and being replaced simply by having its one leg shoved into the slots 10, the spring of the clip causing this leg to be frictionally retained in position but out of contact with the plate 5 as shown by Fig. 2.

This spring clip 9 performs the further function of providing a side contact arranged at right angles to the projecting end of the plate 5. When the clip 9 is not pressed to light the electric bulb 6, the bulb can be lit by closing the circuit between the projecting end of the plate 5 and the leg of the clip 9 that is in the slots 10. This arrangement provides for the testing of any sized photographic flash bulb by touching the screw threaded or bayoneted side 12 of the bulb against this leg of the clip 9, and its center contact 13 against the projecting end of the metal plate 5 which extends from the bottom side of the open shell end. Obviously any sized bulb can be tested. If the miniature electric lamp bulb 6 is illuminated, it is an indication that the photographic flash bulb should go off when flashed, and if the miniature bulb does not light, it is an indication that either the photographic flash bulb is defective, or at least that its igniter is defective, or that the dry cell 2 is defective or the miniature electric bulb is burned out. Without even removing the flash bulb from its testing position, it is possible to press down on the exposed leg of the spring clip 9 and push its other leg against the metal plate 5. If the miniature electric bulb then lights it is obvious that the flash bulb is defective. If the miniature bulb does not light then the testing device must

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be investigated and a new bulb or battery installed.

The resistance of the miniature bulb plus the resistance of the circuit elements, must be adjusted below the flashing resistance of the flash bulbs tested. If needed, additional electric resistance should be used.

The plate 5 is provided with fastening openings 14 of the hole and slot type, so that by providing a camera with appropriately spaced and headed projections, the testing device may be releasably attached to the camera. Whether used as a camera attachment or in the hand, the device is equally convenient.

When used on the camera the photographer must hold the camera in one hand and so will not have two hands to both hold the flash bulb in testing position and operate the spring clip element 9 to test the testing device. However, due to the association of this spring clip with the flash bulb contact arrangement, the operator can hold the flash bulb in one hand and by pressing the exposed clip leg with the fingers of that hand, test the testing device as he tests the flash bulb, whereby to be absolutely certain of his testing results. Sometimes the center contact 13 of a flash bulb is corroded, so the testing device has an abrasive inset 15 in its top. The cameraman may hold his camera with one hand and, just prior to inserting his flash bulb into his synchronizing flash gun customarily attached to his camera, he may rub the center contact lightly over the abrasive inset 15, flick the flash bulb base into position for contacting the clip 9 and plate 5 and, if the testing miniature electric lamp bulb 6 does not immediately light, he can with the fingers of the same hand holding the flash bulb, quickly depress the exposed leg of the spring clip 9 to test the testing device itself. This means that the device is adapted to the high-speed operations of news photographers, for example.

Since the testing bulb may be placed in circuit at will, the device may be used as a flashlight whenever necessary. This is of particular advantage to photographers whose work requires the use of flashlight photography, the conditions of darkness sometimes being such as to make shutter speed and lens diaphragm setting markings difficult to read. This device gives sufficient light, even if only in the nature of a glow, to provide visibility of such markings and permit proper camera setting under all conditions.

The spring clip has been described as L-shaped and it is to be understood that this term embraces similar shapes such as what might be called a J-shape. That is to say, the leg of the clip on the top of the device may be curled to provide a better or more permanent spring ac-

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tion. It is also possible to provide a projection or recess on the top of the shell for engagement by the end of this leg to brace it during springing action. The spiral spring used against the end of the battery may be substituted by flat leaf spring arrangements if this should prove a manufacturing expediency. The leg of the clip that works in the slots may have its center punched slightly outwardly to provide a recess into which the center electrode of the battery can fit to more positively hold the spring clip in position, or if the battery is reversed in position, this leg may be punched inwardly to provide better contact between it and the flat battery end which will be next it in such an instance.

I claim:

A flash bulb tester comprising an open-bottomed dielectric shell having an opening in its top at one end and its other end open, a metal plate closing the open bottom of said shell and projecting beyond its open end, said open end having side slots extending from the shell top and transversely to said plate, a spring metal L-shaped clip having legs acutely angled when unstrained with one leg sliding in said slots to close the open shell end and the other leg strained against the shell top to spring bias the first-named leg from contacting said plate and to frictionally hold it in said slots, said first-named leg being transverse to the projecting portion of said plate and defining therewith contacts for engagement by the flash bulb base terminals said shell being shaped to hold a dry cell passed longitudinally through its open end upon removal of said clip and the latter retaining the battery when replaced, an electric bulb socket inside said shell for holding an electric bulb with its glass globe visible through said shell top opening, and means for placing said bulb socket in circuit with said plate and the end terminal of a dry cell in said shell, the other battery end terminal contacting said clip leg in said slots.

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