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MULTIPLE FLASH BULB CARRIER FOR PHOTOGRAPHY

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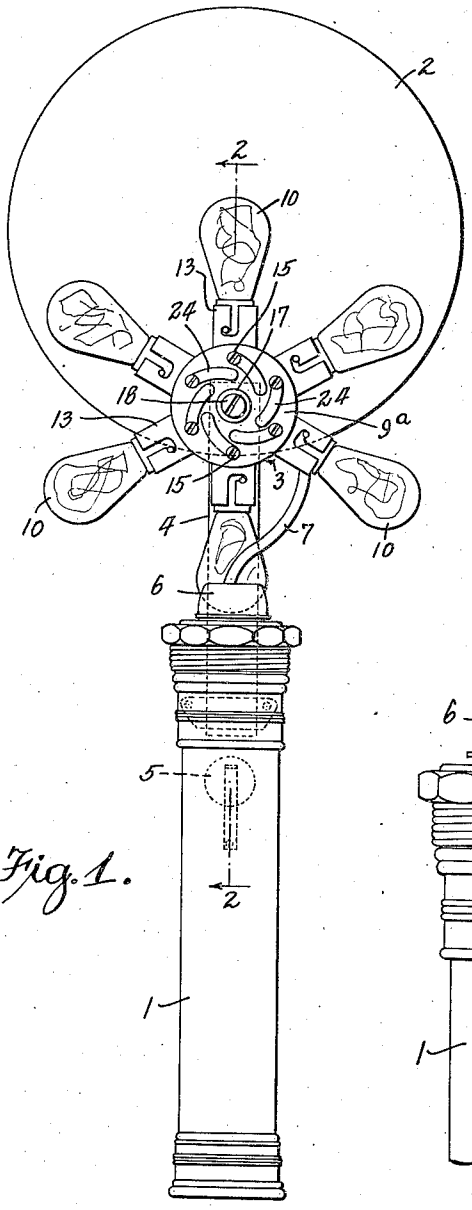


Fig. 1.

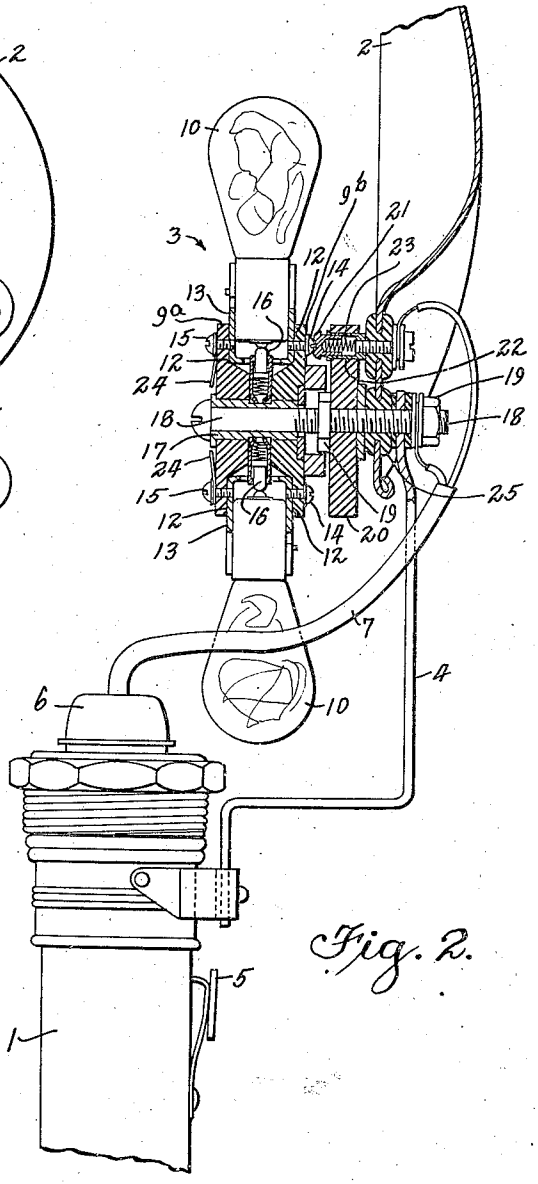


Fig. 2.

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MULTIPLE FLASH BULB CARRIER FOR PHOTOGRAPHY

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Application January 8, 1940, Serial No. 312,876

1 Claim. (Cl. 67—31)

This invention relates to flash-light photography, and more particularly to apparatus for supporting and igniting flash-light bulbs.

Bulbs for taking flash-light pictures are well-known and in extensive use. A flash bulb comprises a sealed glass bulb containing a suitable inflammable solid material, usually a metallic foil, in an atmosphere suitable to support combustion of the material. The bulb also contains an igniter filament which is connected to terminals on the exterior of the bulb. By connecting a suitable source of current to the terminals of the bulb, the filament is heated to a sufficient temperature to ignite the inflammable material in the bulb, which burns substantially instantaneously to produce the intense light necessary to produce a satisfactory photographic exposure. Such bulbs are, of course, used only once, the inflammable material and the filament being consumed during the burning, which amounts substantially to an explosion. The glass bulb is sufficiently strong to resist the pressure developed so that no smoke or flame is discharged during the explosion.

These flash bulbs may be ignited with the current obtainable from an ordinary flash-light battery and holders have been developed for supporting a flash bulb, mirror, and flash-light battery in suitable relation to each other, the unit being readily portable and requiring no connection to an external source of energy such as a light socket. An objectionable characteristic of these prior known holders is that they employed only one flash bulb so that after taking one exposure the operator was forced to remove the dead bulb and substitute a fresh one before he could take a second exposure. This is disadvantageous since occasions sometimes occur when it would be desirable to take a series of flash-light pictures in fairly rapid succession. In addition to the disadvantage resulting from the actual time required to reload the flash apparatus, the photographer's attention is distracted from the subject being photographed while he is reloading the flash apparatus.

An object of the present invention is to provide what might be termed a magazine flash bulb apparatus, capable of successively shooting a series of flash bulbs in rapid succession without reloading.

Another object is to provide a flash apparatus readily adjustable to fire either one or a plurality of bulbs simultaneously, depending upon the intensity of flash that may be required.

Other more specific objects and features of the invention will become apparent from the following detailed description, with reference to the drawing of a particular embodiment of the invention, it being understood that changes can be made in the specific apparatus illustrated without departing from the invention.

In the drawing:

Fig. 1 is a front elevation view of an embodiment of my invention; and

Fig. 2 is a detail sectional view taken in the plane II—II of Fig. 1.

The apparatus illustrated comprises, as its essential elements, a battery case 1 which also serves as a handle, a reflector 2, and a flash bulb holder 3. The reflector 2 and holder 3 are supported from the battery case 1 by a bracket 4.

The battery case 1 may be an ordinary flash-light case containing several dry cells and having the conventional actuating switch 5 completing a circuit to the batteries within the case 1. The present assembly within the case 1 differs from the conventional flash lamp in that the usual lamp is omitted and a plug 6 is substituted therefor, this plug completing connections to a pair of wires in a cord 7 leading to the flash bulb holder 3. The apparatus within the battery case 1 is not illustrated in detail because of the fact that it corresponds to standard well-known flash-light constructions. It suffices for the purpose of the present invention to state that when the switch 5 is actuated, a circuit is completed from the battery cells within the case 1 through the electric cord 7 to the flash bulb holder 3.

The flash bulb holder 3 comprises a rotor of substantially cylindrical shape, having a plurality of flash bulb sockets 13 mounted thereon and projecting radially from the periphery of the rotor, each socket being adapted to hold a standard flash bulb 10.

The rotor 3 may be formed from two discs 9a and 9b having juxtaposed recesses 12 for receiving the socket shells 13. Each socket shell is secured to the disc 9b by a screw 14 which also functions to complete electrical connection in a manner to be described. Each shell 13 may also be secured to the rotor disc 9a by a screw 15.

Electrical connections to each of the flash bulbs 10 is completed through the socket shell 13 associated therewith and a spring plunger 16 which is electrically insulated from the associated socket shell but is connected to and mounted on a central metal hub 17. This metal hub 17 is fitted snugly in axial holes provided therefor in the rotor discs 9a and 9b and functions as a bearing rotatably supporting the rotor discs. Thus the

hub 17 has an axial hole extending therethrough which receives an axle 18 having screw-threads thereon and extending through apertures provided therefor in the reflector 2 and reflector bracket 4. Nuts 19 on the threaded portion of axle 18 anchor the axle to the bracket 4 and also secure the reflector 2 to the bracket. The axle 18 and the nuts 19 thereon also function to anchor in stationary relation a brush holder 20 of insulating material having a brush 21 mounted in a metallic socket 22 in the holder 20, the brush being constantly urged forwardly by a compression spring 23. The brush 21 is spaced radially from the axle 18 the same distance as the screws 14 so that when any socket shell 13 is positioned vertically to support its flash bulb in front of the reflector 2, the brush 21 contacts the socket screw 14 associated with that shell. The brush socket 22 is connected with one of the conductors of the cord 7 and the other conductor of the cord is connected directly to the axle 18 so that when the switch 5 is actuated, one terminal of the battery within the case 1 is connected through one conductor of the cord 7 through the axle 18 and hub 17 to all of the spring plungers 16 contacting the terminals of all of the flash bulbs. At the same time the other terminal of the battery is connected through the other conductor of cord 7 to the brush holder 20 and through the brush 21 to the socket screw 14 associated with the particular socket shell 13 which is in position directly in front of the reflector 2. This flash bulb is therefore ignited.

To prepare the apparatus for a second flash, the rotor 8 is rotated through an angle sufficient to bring the next flash bulb 10 directly in front of the reflector 2, in which position the screw 14, associated with that lamp, is in contact with the brush 21, whereupon the bulb will be ignited upon subsequent closure of the switch 5. The rotor 8 may be readily rotated by grasping one of the bulbs 10 or the rotor itself with the fingers.

The structure necessary to the ignition of the flash bulbs one at a time, has been described and the operation outlined. It is sometimes desirable to have a more intense flash than can be obtained from a single bulb, and I therefore provide means for selectively igniting as many bulbs simultaneously as may be desired. The equipment for simultaneous ignition of more than one bulb comprises a switch mechanism including as elements thereof the socket screws 15 in the rotary disc 9a. As shown in Fig. 1 each of these screws 15 pivotally support a switch blade 24 of such length that it may be swung into or out of engagement with the next adjacent screw 15.

As shown in Fig. 1, all of the switch blades 24 are out of engagement with the next adjacent screw 15 so that in response to closure of the switch 5 only the vertically positioned flash bulb will be ignited. However, by throwing the switch blade 24 associated with the vertically extending active socket 9 to engage the next adjacent screw 15, these two sockets are electrically connected together so as to ignite the bulbs in both sockets when the switch 5 is actuated. Obviously by closing different numbers of the switch blades 24 on the next adjacent screw 15, any desired number of flash bulbs 10 may be ignited simultaneously to produce a flash of desired intensity.

Because of the fact that it is customary in the construction of flash-light battery cases of the type shown at 1 in the drawing, to connect the case to one terminal of the battery therewithin, it is desirable to insulate the axle 18 from the battery case 1. This may be done as shown in the drawing by providing an insulating bushing 25 in the aperture in the bracket 4 through which the axle 18 extends.

As previously indicated, for the purpose of clearly explaining the invention a specific embodiment thereof has been illustrated in detail, but it will be obvious to those skilled in the art that various departures from the specific construction shown, can be made without departing from the invention, and the latter is to be limited only as set forth in the appended claim.

I claim:

Apparatus of the type described comprising a frame member, a reflector supported on said frame member, a rotor rotatably mounted on said frame member, and having a plurality of flash lamp sockets thereon, said rotor being so positioned on said frame with respect to said reflector that rotation of said rotor successively moves flash bulbs supported in different ones of said sockets into juxtaposed relation with said reflector, an energizing circuit, and switch means actuated by rotation of said rotor for connecting each socket to said energizing circuit only while the bulb supported in that socket is positioned in front of said reflector, and auxiliary switch elements, one for each socket, for selectively connecting any of said sockets to the next adjacent socket.

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