

Nov. 5, 1957

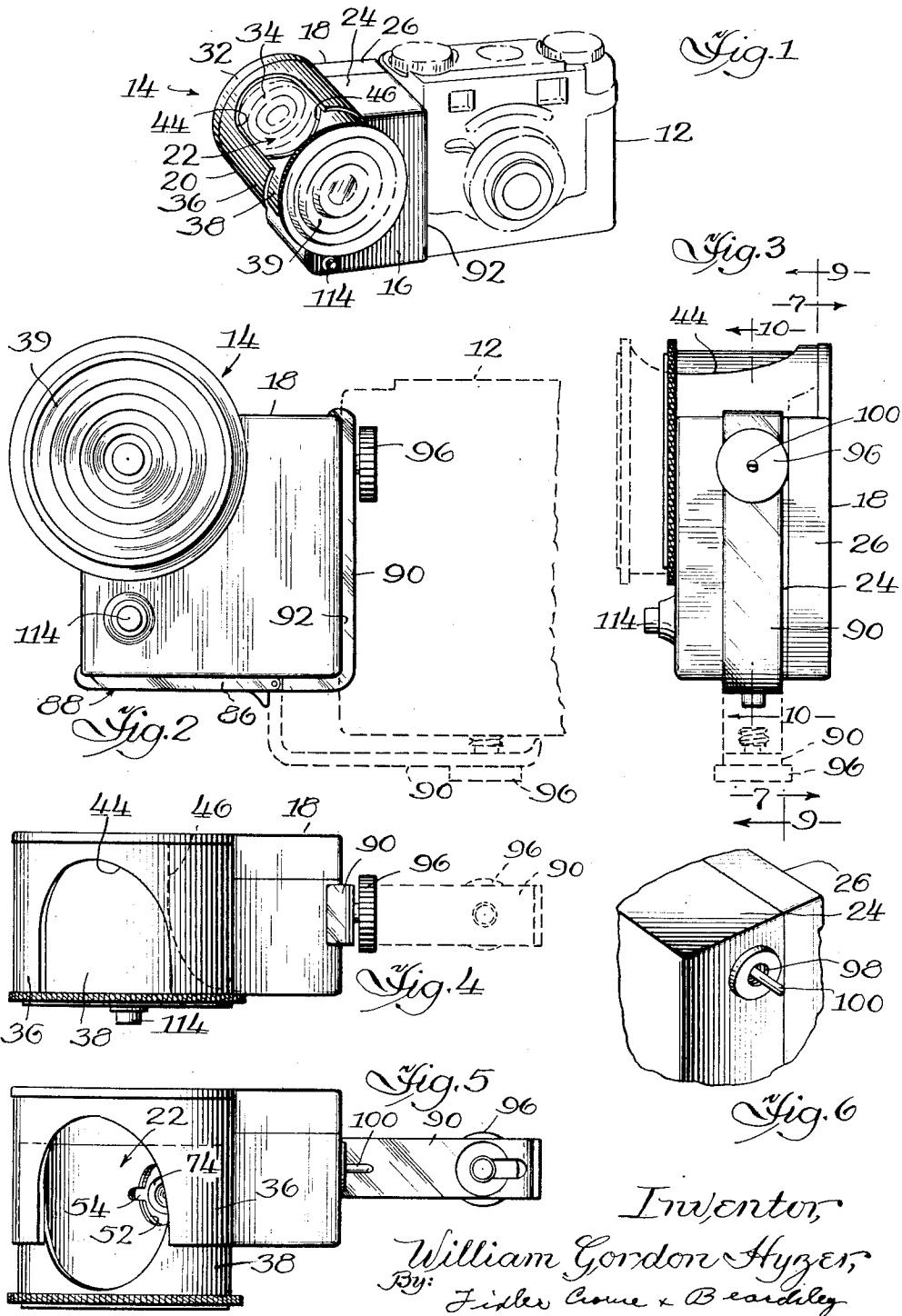
W. G. HYZER

2,811,907

PHOTO-FLASH ATTACHMENT FOR CAMERAS

Filed Feb. 13, 1953

4 Sheets-Sheet 1



Inventor,
William Gordon Hyzer,
By: Fidler Crome & Beardsley
Attys

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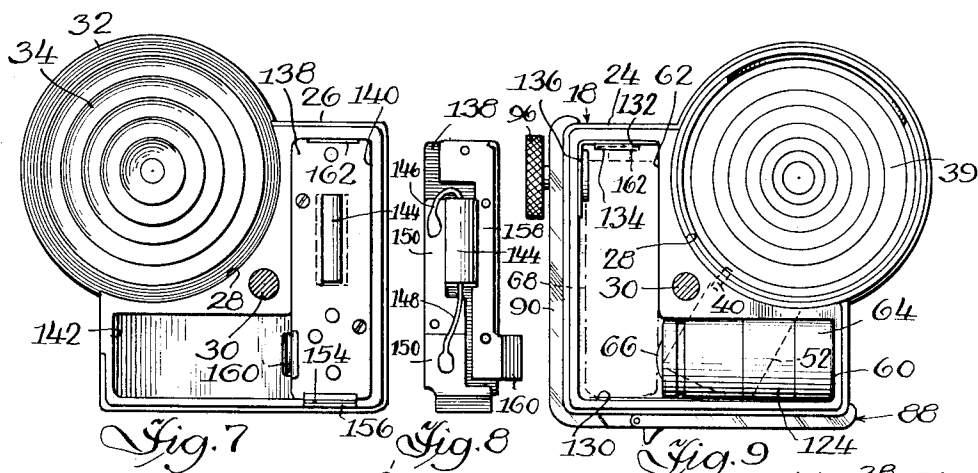
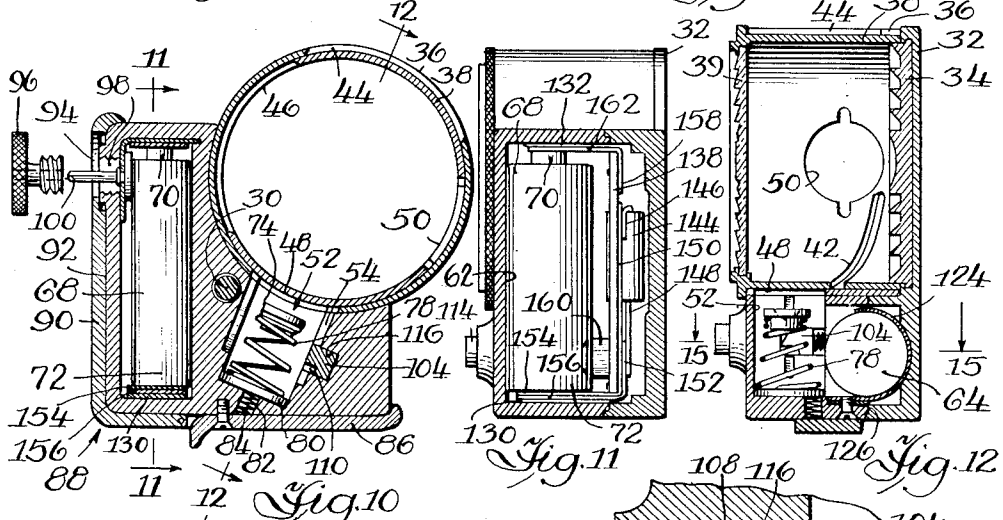
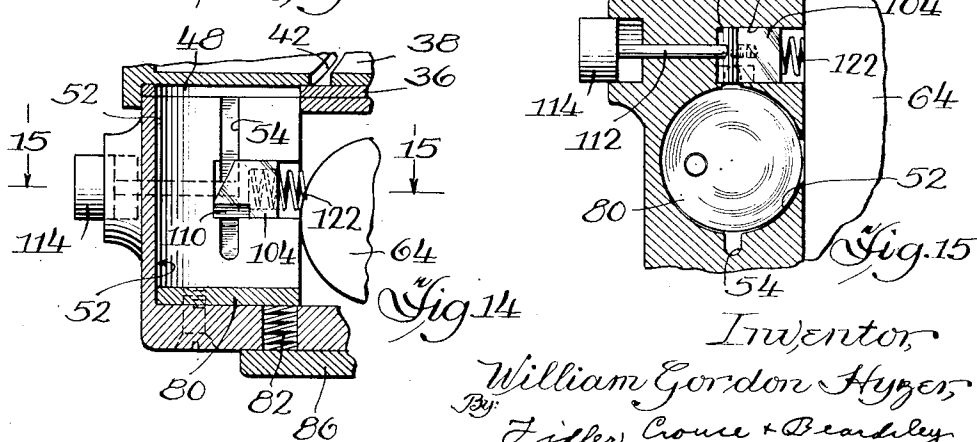
W. G. HYZER

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PHOTO-FLASH ATTACHMENT FOR CAMERAS

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4 Sheets-Sheet 2



Inventor,
William Gordon Hyzer,
By: Filler Crouse & Beardsley
Attys

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W. G. HYZER

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PHOTO-FLASH ATTACHMENT FOR CAMERAS

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4 Sheets-Sheet 3

Fig. 13

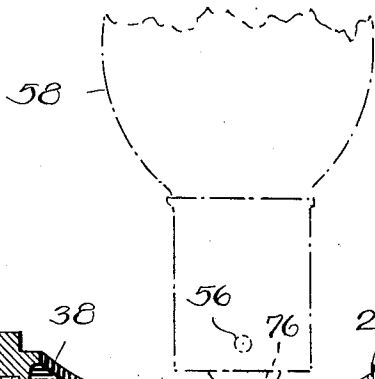
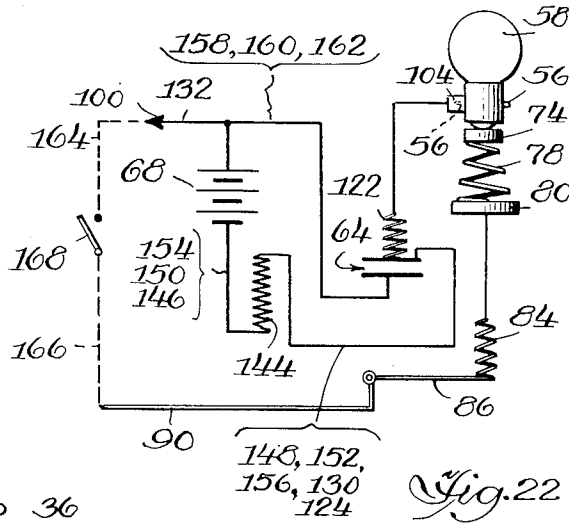
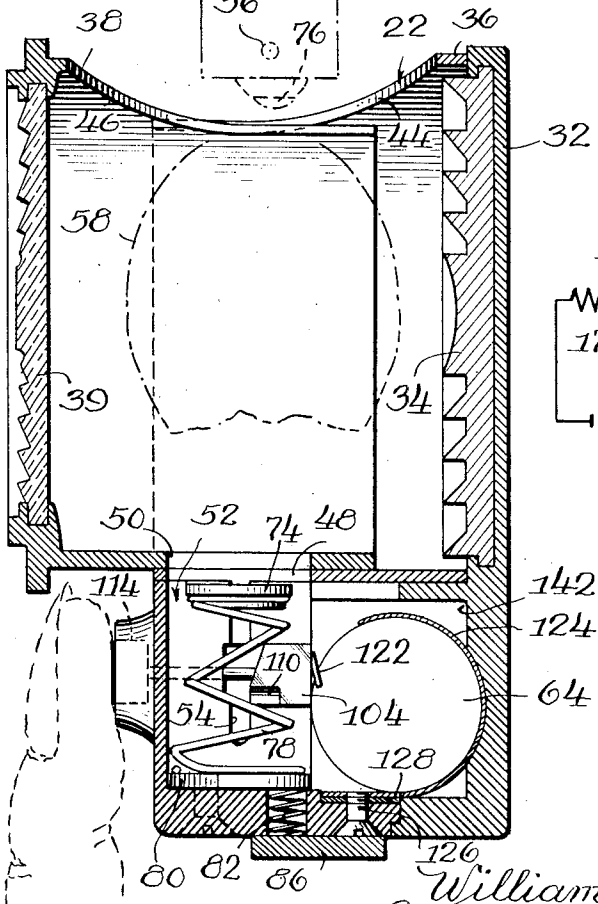
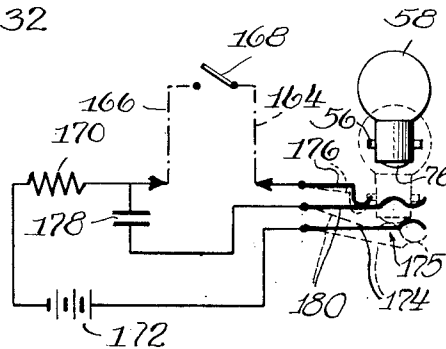


Fig. 23

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Inventor,
William Gordon Hyzer,
By: Fidler, Crowe & Beardsley Attys.

Nov. 5, 1957

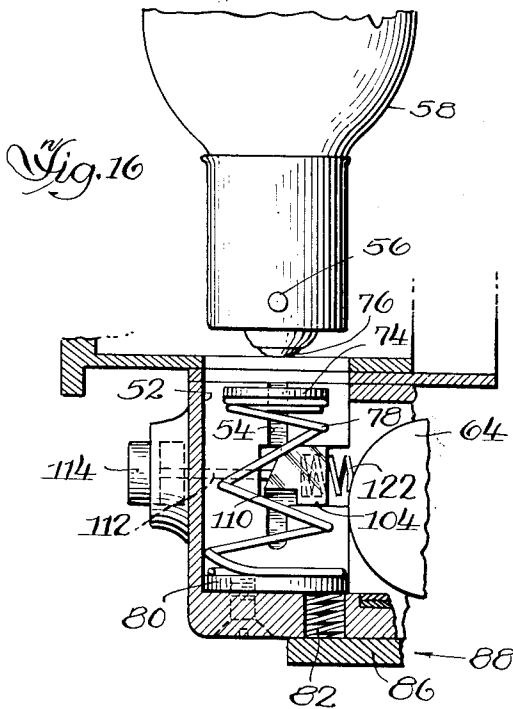
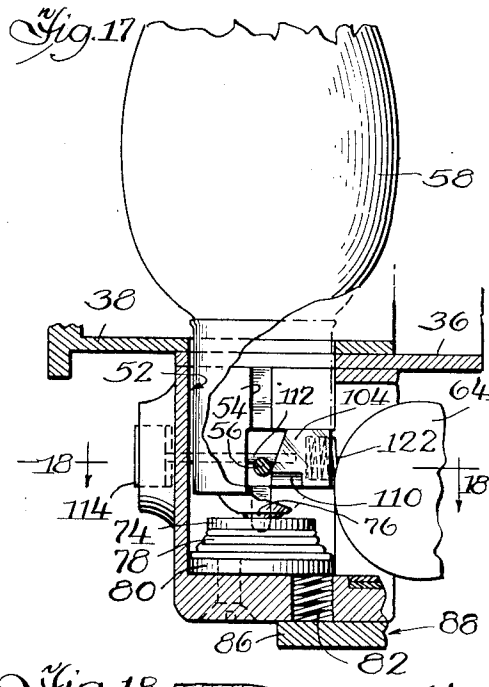
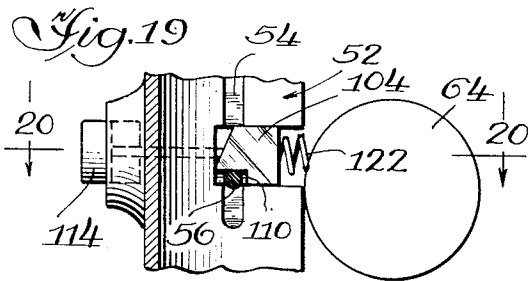
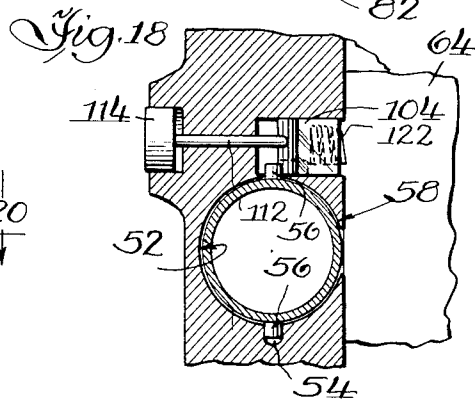
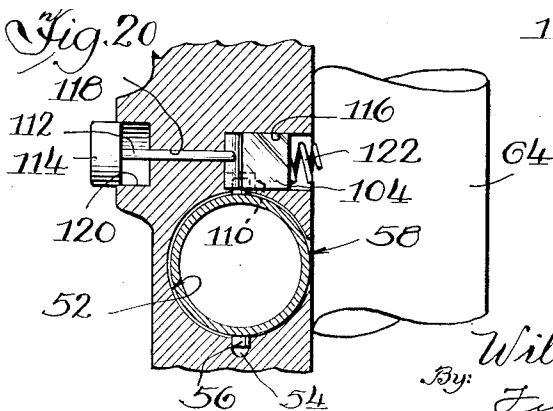
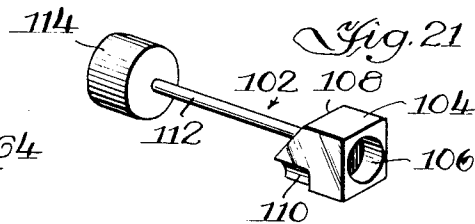
W. G. HYZER

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PHOTO-FLASH ATTACHMENT FOR CAMERAS

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4 Sheets-Sheet 4



Inventor,
William Gordon Hyzer,
By: Filler Crouse & Beardsley
Attys.

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2,811,907

PHOTO-FLASH ATTACHMENT FOR CAMERAS

William Gordon Hyzer, Janesville, Wis., assignor to The Parker Pen Company, Janesville, Wis., a corporation of Wisconsin

Application February 13, 1953, Serial No. 336,730

4 Claims. (Cl. 95—11.5)

This invention relates to photo-flash attachments for cameras. Such an attachment, popularly known as a "flash gun," includes a photo-flash bulb and means for energizing it by or simultaneously with the actuation of the shutter of the camera to which the attachment is connected.

An object of the present invention is to provide an improved photo-flash attachment for cameras.

Another object is to provide a photo-flash attachment of small and compact construction especially adapted for attachment to relatively small cameras.

Another object is to provide a photo-flash attachment of relatively small size and adapted to employ a light bulb of small size but which by reason of its novel construction produces illumination comparable to that produced by the large, prior types of photo-flash attachments.

Another object is to provide a photo-flash attachment wherein the reflector and light bulb socket are adapted to be inclosed and protected against damage or the introduction of dust and other foreign matter when the attachment is not in use.

Still another object is to provide a photo-flash attachment embodying an improved electrical circuit arrangement for energizing the light bulb, which is simple and compact and which provides a substantial energizing current from a small source of electrical energy such as a small dry battery.

A further object is to provide a photo-flash attachment embodying an improved electrical circuit whereby the light bulb cannot be accidentally energized upon insertion into its receiving socket but can be energized, whether intentionally or accidentally, only after it has remained in the socket for a short period of time.

Other objects and advantages will appear from the following description taken in connection with the appended drawings, wherein:

Fig. 1 is a reduced scale, perspective view of a photo-flash attachment constructed according to the present invention applied to a camera;

Fig. 2 is a front elevational view of the attachment and showing in dot-dash lines a portion of a camera and the position of the mounting bracket when the attachment is applied to the camera;

Fig. 3 is an elevational view from the right of Fig. 2;

Fig. 4 is a plan view of the attachment showing the bulb casing in closed position;

Fig. 5 is a view similar to Fig. 4 but with the bulb casing open and the mounting bracket in position for securement to the camera;

Fig. 6 is a fragmentary, perspective view of a portion of the attachment showing one of the exposed terminal portions of the electrical circuit therein;

Fig. 7 is a view of the inside of the cover portion of the attachment taken substantially on the line 7—7 of Fig. 3;

Fig. 8 is a view of the mounting panel shown in the right hand side of Fig. 7 but viewed from the side opposite that shown in Fig. 7;

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Fig. 9 is a view of the inside of the main portion of the attachment taken on line 9—9 of Fig. 3;

Fig. 10 is a sectional view taken on line 10—10 of Fig. 3;

Fig. 11 is a sectional view taken on line 11—11 of Fig. 10;

Fig. 12 is a sectional view taken on line 12—12 of Fig. 10;

Fig. 13 is an enlarged, cross-sectional view of the attachment oriented according to Fig. 12 but with the bulb casing in open position and showing the bulb in a position assumed in either inserting or removing the bulb therefrom, and showing the bulb latch means in unlatched position;

Fig. 14 is a fragmentary, sectional, view, on an enlarged scale, showing the lower left hand portion of Fig. 13, with the latch means in latching position and with certain elements omitted;

Fig. 15 is an enlarged, fragmentary, sectional view taken on line 15—15 of Fig. 12;

Fig. 16 is a view similar to the lower left hand corner of Fig. 13 but showing the bulb in position just before it is inserted in the socket;

Fig. 17 is a view similar to Fig. 16 but with the bulb shown in position just before its final fully inserted position, a portion of the bulb being broken away;

Fig. 18 is a fragmentary, sectional view taken on line 18—18 of Fig. 17;

Fig. 19 is a fragmentary, sectional view oriented according to Fig. 17, showing the latching means in latching position and an element of the bulb in the position assumed relative to the latch means;

Fig. 20 is a fragmentary, sectional view taken substantially on the line 20—20 of Fig. 19;

Fig. 21 is a perspective view of the latch means for latching the bulb in position in the socket;

Fig. 22 is a circuit diagram of the preferred form of circuit embodied in the camera attachment; and

Fig. 23 is a circuit diagram of a modified circuit for embodiment in the attachment.

The camera photo-flash attachment of the present invention is adapted for mounting on or attachment to a camera for energizing the flash bulb carried in the attachment at a predetermined time with respect to the opening of the shutter in the camera, which is usually at substantially the instant the shutter reaches its full open position. Such cameras include of course means for actuating the shutter, and they also include elements capable of functioning as electrical circuit elements, and the means for actuating the shutter functions as switch means for completing a circuit through the circuit elements. The circuit elements have terminal portions exposed to the exterior for electrical contact engagement with corresponding exposed terminal portions in the circuit of the attachment when the attachment is mounted on the camera. The camera 12 of Fig. 1 is such a camera and has the exposed terminal portions mentioned, and the attachment 14 embodying the present invention has exposed terminal portions of its circuit arranged for electrical contact engagement with the terminal portions of the circuit elements of the camera.

The photo-flash attachment and camera are shown in Fig. 1 with the front side presented to the observer. The attachment 14 includes a body 18 which is adapted to be directly attached to the camera and a bulb casing 20 having an opening 22 in one position of the elements of the bulb casing for insertion of the flash bulb into the casing and removal therefrom. The bulb casing is generally cylindrical in shape and the opening 22 is formed in the cylindrical wall portion thereof for insertion of the bulb therethrough, the bulb being inserted in a socket in the

body 18 at the side of the casing diametrically opposite the large opening 22.

The body 18 is made up of two parts, a main portion 24 and a cover 26 (Figs. 1, 3, 7 and 9) being composed of a suitable moldable electrical insulating material, such as a plastic. The body portion 24 and cover 26 are complementary in outline shape as viewed in fore-and-aft direction and are provided with registering arcuate surfaces forming together a recess 28 in the assembled body for receiving the bulb casing 20. The body portions 24 and 26 are detachably secured together by suitable means such as a screw 30 (Figs. 7 and 9) inserted through an aperture in the cover and threaded into a tapped hole in the main portion.

The cover 26 is provided with an extension 32, preferably integral therewith, adjacent the rear side of the attachment in the form of a plate-like element, generally circular in outline and concentric with the arcuate recess 28. A reflector 34 is mounted on the extension 32 in a suitable manner, where it is positioned to form the rear end of the bulb casing 20 and cooperates with a lens 39 mounted in the forward end of the bulb casing. The reflector and lens are both preferably of the Fresnel type, and hence relatively flat, to the end of occupying a small space axially of the casing, in keeping with the compactness of the device.

The bulb casing 20 embodies a construction enabling its closure against entrance of foreign material when not in use, but being adjustable to a condition enabling insertion of a bulb. To this end, the casing includes an outer cylindrical member 36 and an inner cylindrical member 38 telescoped in the outer member for limited rotational and longitudinal axial movement therein. The outer member is attached directly to the body portion 18 by means of a pin 40 (Fig. 9) extending through an opening in the casing member and fixed in the main portion 24 of the body. The pin 40 extends radially inwardly of the casing through a spiral slot 42 in the inner member 38 for causing limited longitudinal axial movement of the inner member in response to rotational movement of the latter. The pin 40 may be of any desired form so long as it is provided with a suitable head for the desired engagement in the slot 42. The slot 42 and pin 40 thus provide interengaging cam means for producing the longitudinal movement of the inner casing member as referred to.

The opening 22 in the casing is formed by openings in the nature of cut-out portions 44 and 46 in the outer and inner casing members respectively which in one relative position of the casing members register with each other for forming the opening 22 for insertion of the bulb, while in another relative position of the casing members, they are out of register for closing the casing. Also the casing members are formed with additional but smaller openings 48 and 50 similarly adapted to register in one position of the casing members for forming an opening registering with a socket 52 (Figs. 5 and 13) formed in the base portion 24 of the body 18. The outer casing member 36 is stationarily mounted on the body with the opening 48 in register with the socket.

The lens 39 is mounted in the inner casing member 38 by any suitable manner, preferably by means of a rim portion secured to the casing member. The lens 39 and reflector 34 are thus axially spaced apart at opposite ends of the bulb casing and axially aligned.

When the user wishes to insert a bulb in the attachment, he grasps the rim of the lens 39 and rotates the inner casing member in counterclockwise direction (Fig. 2) from closed position to open position of Fig. 5. The cutout portions 44 and 46 extend substantially the full axial length of the respective casing members, and the opening 22 formed thereby is thus of substantial size and facilitates insertion of the fingers therethrough in inserting the bulb in the socket and removing it therefrom. The bulb when inserted is disposed between the reflector

34 and lens 39. During use of the camera the casing remains open but after the camera is used and the bulb expended, the bulb is removed and the bulb casing may be closed so as to prevent entrance of foreign matter into the interior of the bulb casing and socket. The socket 52 is provided with grooves 54 (Figs. 5, 10, 12) for reception of pins 56 on the bulb 58 (Figs. 16 and 22) forming terminals on the bulb.

The attachment is constructed for easy removal of the cover 26 from the base portion 24 upon removal of the screw 30 (Figs. 7 and 9) whereupon the interior of the body is exposed (Fig. 9) and the inner side of the cover is similarly exposed (Fig. 7) rendering accessible the various elements carried by the respective parts of the body.

The base portion 24 of the body 18 (Fig. 9) is provided with suitable cavities or recesses in addition to the socket 52 for receiving certain elements for operation of the attachment. The body is essentially L-shaped having a cavity 60 in one leg and a cavity 62 in the other leg. Disposed in the cavity 60 is a capacitor 64 (Fig. 9) of suitable and well known construction in which the outer casing member forms one terminal, and having a second terminal 66. Mounted in the cavity 62 is a battery 68 also of suitable and well known construction, preferably a 22½ volt battery, having one terminal 70 at one end and another terminal 72 at its opposite end. The circuit is properly completed through the attachment only when the cover 26 is applied to the base portion 24, the portions carrying respectively interengaging elements positioned for appropriately completing the circuit.

The socket 52 is disposed toward the front side 16 of the attachment (Fig. 12) and extends generally transverse to the direction of the cavity 60 (Fig. 9), the cavity being disposed toward the rear side of the attachment (Fig. 12), while the socket and cavity have intercommunication for establishing electrical interconnection between the elements mounted therein.

Mounted in the socket 52 is a bulb seat 74 of suitable electrically conductive material adapted for engagement by the end terminal contact 76 of the bulb (Fig. 16) and arranged for axial movement in the socket. The bulb seat is resiliently urged toward the open end of the socket by a compression spring 78 of electrically conductive material, engaging and electrically connected to the bulb seat and a disc 80 which is also of electrically conductive material seated against the floor or inner wall of the socket. Extending from the inner wall of the socket 52 is a small diameter bore 82 (Figs. 10 and 12) in which is disposed an electrically conductive spring 84 interconnecting the disc 80 and the element 86 of the mounting bracket 88 which also includes another element 90 hingedly mounted to the element 86. The element 86 is secured to the portion 24 of the body 18 by suitable means such as screws. The mounting bracket 88 is made up of suitable electrically conductive material, for example, aluminum, and forms an exposed terminal element for contact engagement with an element of the camera as referred to above. For this purpose the extended or swinging end of the element 90 of the bracket is provided with a slot 94 through which a threaded shank of a lock screw 96 extends for threading into a suitable opening in the camera and engaging the terminal member of the control circuit in the camera. When the attachment is mounted on the camera, the element 90 of the bracket is disposed as in Fig. 2, but when the attachment is detached from the camera, it is desired that the mounting bracket element 90 be fixed in position against accidental swinging movement and for this purpose the body 18 is provided with an interiorly threaded aperture 98 for receiving the lock screw 96 when the bracket element is swung up into position against the surface 92 as shown in Figs. 2 and 10. The aperture 98 is provided also for the extension therethrough of

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a pin-like terminal 100 of the circuit in the attachment for insertion in an opening in the camera and engagement with a terminal portion of the control circuit in the camera. The pin 100, in so fitting in the camera, serves with the lock screw 96 to mount the attachment on the camera.

In inserting the bulb 58 into the socket 52 in the manner mentioned above, the pins 56 on opposite sides of the bulb base are fitted in the grooves 54 (Figs. 5, 10 and 13) which guide the bulb in its movement into the socket. In the inserting movement the bulb engages the bulb seat 74 (Fig. 17) and forces the latter toward the floor or inner end of the socket. The bulb is latched in its inserted position by novel latch means which also serves as an element of the circuit including the bulb. The latch means includes a plunger element shown in Fig. 21 and spring means urging the plunger into latching position with respect to the inserted bulb. The latch element of Fig. 21 includes a plunger 102 having a latching head 104 polygonal in cross section, preferably square, which has a recess 106 in one end, an inclined camming surface 108 on the opposite end and a longitudinally extending groove 110 adjacent one corner and opening through the inclined surface 108. The plunger also includes a stem 112 secured to the head 104 by suitable means, extending from the inclined surface thereof. The outer end of the stem 112 is provided with a push button 114 constituting a manually actuatable element exposed to exterior for manual release of the latching means for permitting removal of the bulb.

The plunger 102 constituting the latching means is mounted in the main portion 24 of the body 18 adjacent the socket 52 for engagement by a pin 56 of the bulb. The arrangement includes a polygonal recess 116 complementary in cross-sectional shape to the head 104 and arranged adjacent one side of and opening into the socket 52, and disposed for sliding movement of the head therein in a direction generally transverse to the longitudinal axis of the socket. The recess 116 extends in fore-and-aft direction with the push button 114 projecting forwardly through the front side 16 of the attachment (Fig. 13). The recess 116, as shown in Fig. 20, may be of relatively short longitudinal dimension communicating with a small diameter bore 118 for receiving the stem 112 terminating in an exterior recess 120 for receiving the button 114 in a convenient manner.

The recess 116 opens into the cavity 60 in which the capacitor 64 is disposed and an electrically conductive spring 122 is compressed between the capacitor 64 and the head 104, being fitted at one end in the recess 106 in the head for maintaining the spring in position (Fig. 16). It is also to be noted that the head 104 is of suitable electrically conductive material but, if desired, the stem 112 may be of insulating material. The spring 122 biases the head 104 toward the inner or closed end of its recess 116 in which position the inclined camming surface 108, or at least a portion of it, is in register with the adjacent groove 54 of the socket 52 for engagement by the corresponding pin 56 of the bulb. When the bulb is inserted in the socket, the pin in the groove 54 engages the inclined camming surface 108 and forces the head 104 against the action of the spring 122 (to the right Fig. 16), until the pin passes beyond the head whereupon the spring forces the head in the opposite direction and the pin extends into the groove 110. The steps in thus inserting the bulb are represented in Figs. 13 and 16 to 20, and in Figs. 19 and 20 the pin 56 is shown fitted in the groove 110 of the head 104.

For the purpose of releasing the bulb for removal after use, the user applies his finger to the push button 114 (Fig. 13) moving the head 104 to unlatching position and the spring 78 under the bulb seat urges the bulb outwardly for easy grasping of the bulb and removal from the bulb casing.

It is to be noted that a portion of the circuit is com-

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pleted between the bulb and capacitor 64 through the pin 56, head 104, spring 122 and the outer casing of the capacitor.

The capacitor 64 is retained normally in position by means of a spring clip 124 (Figs. 9 and 12) which is also of electrically conductive material, in contact engagement with the outer casing of the capacitor and in the form preferably of a semi-cylindrical member secured to the body by suitable means such as a screw 126 (Fig. 12) at one end of the clip, leaving the other end free for spring biasing the capacitor into proper position. The screw 126 may also serve to mount a conductor 128 in the form of a blade extending along one side of the cavity 60 in contact engagement with the clip and having a terminal portion 130 in the cavity 62 adjacent one end of the latter. The terminal portion 130 extends toward the floor of the cavity 62 and is preferably normally spring biased away from the adjacent end wall of the cavity.

Also mounted in the cavity 62 is another conductor 132 at the end opposite the terminal portion 130 having a portion 134 adjacent the floor of the cavity normally spring biased away from its adjacent wall of the cavity, the conductor 132 being L-shaped and having a portion 136 in contact engagement with the pin 100 referred to above (Figs. 6 and 10) the pin and conductor being supported in the cavity in any suitable manner.

The cover 26 of the body 18 includes a resistor 144 and certain conductors arranged so that when the cover is applied to the main portion 24 the conductors in the cover and main portion respectively interengage for interconnecting the desired circuit elements in the flashlight attachment. The resistor and conductors are preferably mounted on an insulating panel 138 (Figs. 7 and 8) secured in a recess 140 in the cover which registers with the cavity 62 when the cover is applied to the main portion, the cover also having another recess 142 registering with the cavity 60 and partially receiving the capacitor 64 (Fig. 13).

The panel 138 may be of any suitable insulating material, being relatively rigid for supporting the elements mounted thereon, and for appropriate mounting in the cover 26. The panel may be mounted on the cover by suitable means such as screws. The panel may have an aperture for partially receiving the resistor 144, the latter being secured in position on the panel by suitable means. The resistor is provided with leads 146 and 148 connected, as by soldering, to respective conductors 150 and 152 secured to the panel, as by riveting. The conductors 150 and 152 for convenience in assembling and mounting them, have portions overlapping, with suitable insulation therebetween. The conductors terminate in spring fingers, or blades, 154 and 156 turned perpendicular into the panel for extension into the cavity 62 (Fig. 11) and engagement with the battery 68 and terminal 130 respectively. The spring fingers are insulated from one another in a manner similar to that of the main portions of the conductors.

The panel 138 also mounts another conductor 158, having a contact terminal portion, or finger 160 turned generally perpendicularly to the panel for contact engagement with the terminal 66 of the capacitor 64 (Figs. 9 and 11) as well as an additional spring finger 162 for extension into the cavity 62 and contact engagement with the terminal 70 to the battery and the conductor 132, and hence the pin 100.

The panel 138 is mounted in the cover 26 in the position shown in Fig. 7 with the spring fingers 154, 156, 160 and 162 extending upwardly or toward the observer. The cover is applied to the main portion 24 of the body (Fig. 9) by turning the cover over and fitting it there-to so that the side of the cover presented in Fig. 7 is lowermost or disposed inwardly, whereby the spring fingers extend into the cavity 62, whereupon the spring fingers 154 and 156 together are fitted between the ter-

minal 72 of the battery and the conductor terminal 130, while the spring finger 162 is inserted between the battery terminal 70 and the conductor terminal 132, resulting in a snug engagement between the battery and the respective contact terminals, the various elements being relatively dimensioned to accomplish such snug engagement.

Attention is directed to the circuit diagram of Fig. 22 which shows the interrelationship of the elements described above forming a part of the circuit in the flash light attachment. The elements in the camera serving as circuit elements are indicated at 164 and 166 and the switch means 168 is constituted by the manipulatable element of the camera utilized for actuating the shutter. The switch means serves to complete a circuit through the circuit elements 164 and 166, and thereby through the various elements in the flashlight attachment.

When the attachment is mounted on the camera, and with the bulb inserted therein, the circuit through the attachment when the switch 168 is open is as follows: battery 68, and the resistor 144 and capacitor 64 connected in series across the battery. The conductors in the circuit diagram are identified according to the various elements forming them, i. e., the conductor between the battery 68 and resistor 144 is constituted by the spring finger 154, conductor 150 and lead 146; the conductor between the resistor and the capacitor consists of the lead 148, conductor 152, spring finger 156, contact terminal 130 and spring clip 124; and the conductor between the capacitor 64 and the battery consists of spring finger 160, conductor 158 and spring finger 162. The circuit including the battery and capacitor remains closed, and the capacitor becomes charged and remains charged until discharged through the bulb upon completion of the remainder of the circuit in response to closing the switch 168.

The circuit through the camera and attachment, which includes the switch 168 and which comes into operation for energizing the bulb upon closing the switch, is as follows: from the switch 168 through circuit element 164 of the camera, pin 100, conductor terminal 132, spring finger 162, conductor 158, spring finger 160 to one terminal of the capacitor; leading from the other terminal of the capacitor is the spring 122, latch head 104 and the adjacent contact terminal pin 56 of the bulb; the other terminal of the bulb engages the bulb seat 74, the circuit continuing through spring 78, disc 80, and spring 84 to the element 86 of the mounting bracket 88; the circuit then continues through the other element 90 of the mounting bracket and circuit element 166 in the camera to the switch 168. The circuit just described is closed through the switch 168, and when the switch is thus closed, the capacitor 64 is discharged through the bulb, producing an intense illumination of short duration.

The present invention also encompasses means for preventing battery drain through the capacitor when the flash attachment is not in use. To this end a circuit arrangement is provided in which the capacitor is connected in circuit with the battery only when the bulb is in place in the flash attachment, and at all times when a bulb is not in the attachment, it is disposed in an open circuit, with respect to the battery, so that leakage through the capacitor will not occur, and hence battery drain from that source will be eliminated. The circuit of Fig. 23 includes such an arrangement. This circuit includes the circuit elements 164 and 166 and switch means 168 in the camera and described in connection with the previous circuit. Connected in series with the circuit element 166 is a resistor 170, battery 172 and a switch blade 174 of a switch means 175 positioned adjacent the socket for receiving the bulb 58 and positioned for closing by the bulb in response to insertion of the bulb into the socket. Connected with the other circuit element 164 is another switch blade 176 of switch means 175, also positioned adjacent the bulb socket, for engagement by the terminal

pin 56 of the bulb; connected in series with the circuit element 166 is a capacitor 178 and a third switch blade 180 also positioned adjacent the socket for engagement by the bulb 58. The switch blades are self-biased by their inherent resiliency to their normal positions shown in full lines in Fig. 23, wherein the switch blades 180 and 176 are in contact engagement and the switch blades 174 and 180 are separated. When the bulb is inserted in the socket, the pin 56 of the bulb engages the switch blade 176 and the end contact terminal 76 of the bulb engages switch blade 180 and completes a current through the bulb. The bulb flexes the switch blade 180 into contact engagement with the switch blade 174, establishing a circuit including the resistor and capacitor in series across the battery. The positions of the switch blades when the bulb is in the socket are shown in dotted lines.

Assuming normal operation of the flash attachment provided with the circuit of Fig. 23, the switch 168 is open when the bulb is inserted in the socket. In such a condition, after the bulb is inserted in the socket, the switch blades 174 and 180 close the circuit including the capacitor and battery, as well as the resistor, whereupon the capacitor is charged. It remains charged until the switch 168 is closed when it is desired to take the photograph, and when the switch 168 is so closed a circuit including the switch and the capacitor is closed through the bulb which discharges the capacitor and energizes the bulb.

After the bulb 58 is removed, as when expended, the switch blades 174 and 180 separate, opening the circuit which includes the capacitor and battery, and hence there is no battery drain when the bulb is out of the attachment and the attachment is not in use. Hence battery life is promoted since current from the battery does not flow except when charging the capacitor when the bulb is in position in the socket.

The circuit arrangement of Fig. 23 also includes a safety feature for providing that if a bulb is inserted in the flash attachment when the switch means 168 is closed, as when it is closed by accident or unintentionally, the bulb will not be immediately energized. It occasionally happens that a bulb bursts or explodes when energized, and if it should explode when it is being handled, injury to the hand could occur. To prevent such accident, the circuit of Fig. 23 is provided with means enabling energization of the bulb only after a time delay following insertion to enable the user to withdraw his hand before energization of the bulb.

As noted above, the switch blades 174 and 180 are normally open, that is, they are open when there is no bulb in the socket, and in such event the circuit including the capacitor and battery is open and hence normally there is no charge on the capacitor. The circuit including the capacitor and battery is closed through the switch blades 174 and 180 only after the bulb is inserted in the socket. It is thus only after the bulb is so inserted that the capacitor becomes charged. Accordingly if the switch 168 should be in closed position when the bulb is inserted, the capacitor, being charged only after a circuit through the switch blades 174 and 180 is completed, would require a period of time for charging, and before it has had an opportunity for charging, and discharging through the bulb, the user would have inserted the bulb and removed his hand from the danger position before discharge and possible breakage of the bulb occurred.

The normal positions of the switch blades in the switch means 175 (full line positions) when the bulb is removed from the socket assures that the capacitor would be discharged if the switch means 168 is closed. The switch blades 180 and 176 are closed and if the switch 168 should be closed, a circuit through the capacitor would be established providing a constant discharged condition of the capacitor so long as the switch 168 is closed and there is no bulb in the socket. Accordingly, if a bulb

should be inserted in the socket in such circumstance, there would be no accidental discharge of the bulb due to a previously charged capacitor..

I claim:

1. A camera flashlight attachment comprising a body having a front side, means for attaching said body to a camera, a bulb casing carried by said body including outer and inner telescoped cylindrical members having an axis extending fore-and-aft relative to said body, the outer member being mounted directly to said body and the inner member being carried by the outer member, said casing having a reflector, and the inner member having a lens adjacent its forward end axially spaced from and aligned with said reflector, said body having a socket positioned for exposure to the interior of said casing, said casing members being relatively rotatable and having cam means for moving the members relatively axially in response to rotation thereof and having a first relative position in which the forward end of said inner member and said lens are disposed forwardly of the front side of said body and in which openings in the casing members are aligned for exposing said socket to the interior of the casing, and the casing members having additional openings which are aligned in said first position forming an opening in the casing opposite said socket and extending substantially the full axial length of the casing, and the casing members having a second relative position in which the forward end of said inner casing member and said lens are disposed closely adjacent the front side of the body and said additional openings are offset whereby said casing is closed to the exterior, means carried in said body for energizing a bulb in said socket, and circuit means connecting said energizing means and a bulb in said socket and having portions exposed for connection with external control circuit means.

2. A flashlight attachment for use with a camera having elements capable of functioning as an electrical circuit with portions exposed for connection with conductor terminals and having an element capable of functioning as switch means for connecting the circuit elements, comprising a body having a surface for engagement with a surface of the camera, a reflector carried by said body, said body having a socket for receiving a bulb and positioning it adjacent said reflector, means for energizing a bulb in the socket including circuit means having one terminal exposed through said surface of the body for contact engagement with an exposed terminal portion of the circuit elements in the camera, an electrically conductive mounting bracket secured to said body including a first portion secured to the body in electrical contact engagement with another terminal portion of the bulb circuit and a second portion hinged to said first portion, said second portion being movable to a first position adjacent a side of said body protectively enclosing said one terminal and to a second position extended from said body for securement to the camera, and means for secur-

ing said second portion to the camera in electrical contact engagement with another terminal portion of the circuit elements in the camera and alternatively for securing it to said body in said first position.

3. A camera flashlight attachment comprising a body member having a lateral surface for engagement with a corresponding surface of a camera, means for attaching the body member to the camera, a cylindrical bulb casing mounted on the body member having a pair of telescopically disposed parts, one of said parts carrying a reflector and the other carrying a lens to provide in said cylindrical casing an axially spaced reflector and lens, the body member having a socket which opens to the interior of the bulb casing in a direction transverse to the cylinder axis, said telescopically disposed parts being relatively movable axially from a retracted position to an extended position for forming an opening in the casing opposite the socket and being relatively movable back to the retracted position for closing said opening, and means carried in the attachment for energizing a bulb in the socket.

4. A camera flashlight attachment comprising a body member having a lateral surface for engagement with a corresponding surface of a camera and having a relatively short fore-and-aft dimension, a cylindrical bulb casing mounted on the body member with its axis in fore-and-aft direction and including a pair of telescopically disposed parts, one of said parts carrying a reflector and the other of said parts carrying a lens to thereby provide in said cylindrical casing an axially spaced reflector and lens, said body member having a socket which opens into the bulb casing transversely of the casing's cylindrical axis, said telescopically disposed parts being relatively rotatable and being provided with cam means for rendering the parts relatively movable axially in a direction moving the reflector and lens away from each other from a retracted position to an extended first position in which an opening is formed in the casing opposite the socket and from there back in the opposite direction to the retracted position closing the opening, and means carried in the attachment for energizing a bulb in the socket.

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