United States Patent

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[73] Assignee **Honeywell Inc.**
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[33] **Japan**
[31] **43/15756**

[54] **FLASHBULB HOLDER FOR PHOTOGRAPHIC FLASHGUNS**
3 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** ..... **240/1.3,** 339/45 T
[51] **Int. Cl.** **H01r 13/62**
[50] **Field of Search** ..... 240/1.3; 339/32, 33, 45 T

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ABSTRACT: A flashbulb holder for a photographic flashgun is shown having a housing with an opening into which various-sized flashbulbs are inserted between a pair of pivoted holding members mounted on opposite sides of the opening. A pair of base contact members engage the flashbulbs, as they are inserted between the holding members, for urging the bases of the flashbulbs against the inner edges of the holding members. A potential source connects to the base members for selectively energizing the flashbulbs.

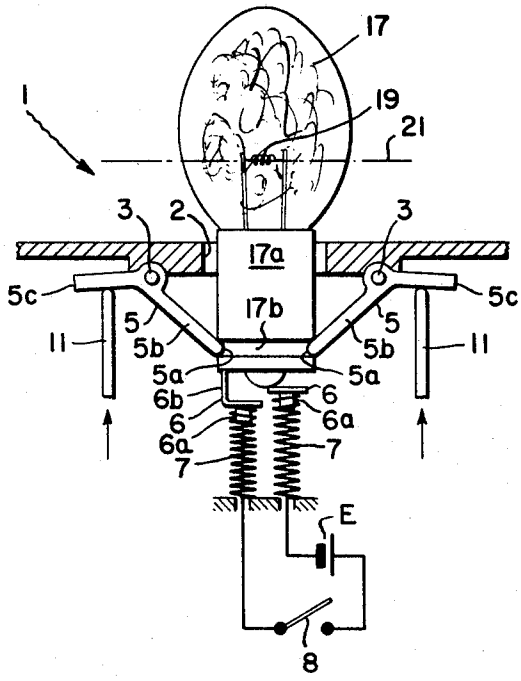


FIG. 1A

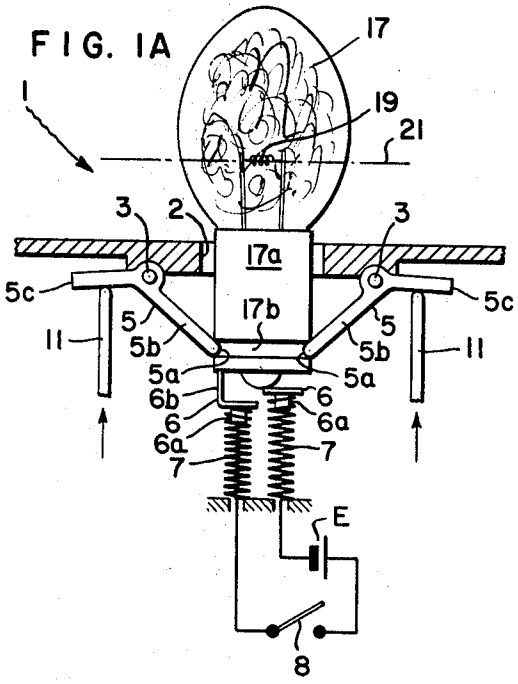


FIG. 1B

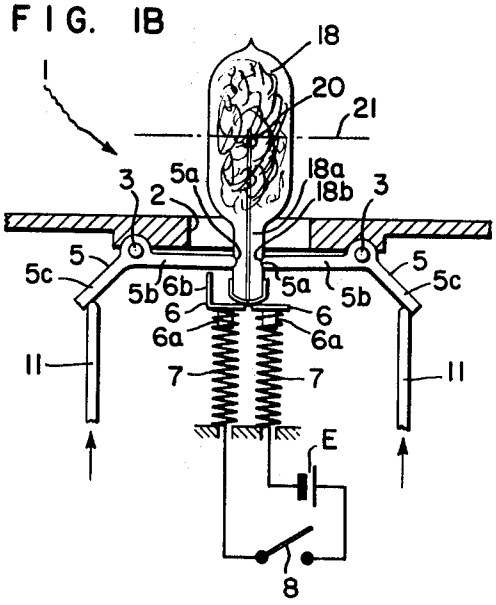


FIG. 3

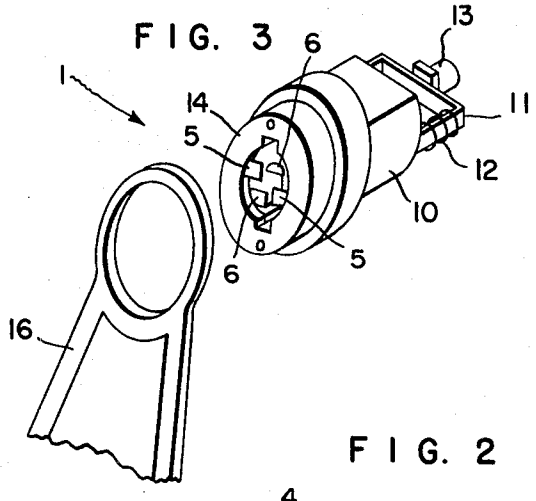


FIG. 2

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FLASHBULB HOLDER FOR PHOTOGRAPHIC FLASHGUNS

The present invention relates to a flashbulb holder for a photographic flashgun which mounts a flashbulb having a base of any type or size in such a location that the center of illumination of the flashbulb is in an aligned relationship with the focal position of a reflector associated with the flashgun.

Prior art photographic flashguns are generally adapted to receive a flashbulb of a particular base size. When it is desired to utilize a flashbulb of a different base size, it is normally required to obtain a different flashgun. Some prior art flashguns, however, are arranged to receive flashbulbs of various base sizes. These flashguns are provided with a reflector having a particular mirror surface adapted for a particular flashbulb which cannot be modified to efficiently reflect the light of the various-sized flashbulbs mounted therein.

Prior art flashguns are not adapted to receive the older bayonet-type flashbulb and the newer AG-type flashbulb within the same flashbulb-holding socket. Further, the prior art flashguns are not capable of receiving a plurality of flashbulbs in such a manner that the center of flash corresponds with the focal position of the reflector.

Accordingly, it is an object of the present invention to provide a flashgun with a flashbulb-holding socket which is capable of mounting various-size flashbulbs.

Another object of the present invention is to provide a flashgun which is capable of mounting a plurality of flashbulbs having their center of flash aligned with the focal position of the flashgun reflector.

A further object of the present invention is to provide a flashgun with a simplified method of ejecting the flashbulb therefrom.

Still a further object is to provide an improved flashgun-holding socket which is simple in construction, low in cost, and dependable in operation.

In accomplishing these and other objects, there is provided a flashbulb holder for a photographic flashgun having a pair of flashbulb-holding means pivoted on opposite sides of a guide opening located within the housing. The flashbulb-holding means effectively close the guide opening from the inside. As a flashbulb is inserted between the flashbulb-holding means into the guide opening, it engages base contact means which are resiliently urged against the flashbulb. The flashbulb is inserted until the opposite inner edges of the flashbulb-holding means engage and hold the flashbulb against the urging of the base contact means for retaining it within the socket.

Further objects and many of the attendant advantages of the present invention will become apparent from the following description, when considered with reference to the accompanying drawings, wherein:

FIGS. 1*a* and 1*b* are vertical sections diagrammatically showing holding positions of the flashbulb holder for two different types of flashbulbs;

FIG. 2 is an exploded perspective view of the flashbulb holder according to the present invention; and

FIG. 3 is a perspective view of the flashbulb holder according to the present invention.

Referring now to the drawings, and more particularly to FIGS. 1*a* and 1*b*, a flashbulb holder is shown generally at 1 having guide opening 2 which receives any one of a plurality of various-sized flashbulbs. The guide opening 2 is closed by a pair of flashbulb-holding members 5 which are pivotally supported on opposite sides of the opening upon pins 3. The flashbulb-holding members 5 operate to close the guide opening 2 and are urged into the closing position by springs 4, FIG. 2, coiled upon the pins 3.

As best seen in FIG. 2, the flashbulb-holding members 5 each include a main portion 5*b* having upper and lower halves, one of which extends as a tab which terminates at an inner edge 5*a*. Each tab extends from its flashbulb-holding member toward the recess, formed by the absence of a tab half on the opposite flashbulb-mounting member, for closing the guide opening 2. A portion of each flashbulb-holding member extends from the fulcrum point formed by the pins 3 away from the opening 2. This extended portion forms a tail portion 5*c* which cooperates with the ejector arrangement of the flashbulb holder to be described hereinbelow. A pair of base contact members 6 is located at the bottom of the guide opening 2 within the holder 1. Rods 6*a* extend from the base members 6 for attaching a pair of springs 7 thereto. The springs urge the base contact members 6 against the base of a flashbulb, as it is inserted into the guide opening 2 of the flashbulb holder 1.

The flashbulb holder is provided with an electrical circuit which includes a switch 8 that normally works in synchronism with the shutter of a camera, not shown. A potential energy source is provided, such as a DC battery E, having its negative terminal connected through the spring 7 to one of the base members 6 and its positive contact connected to the common terminal of the switch 8. The normally open terminal of the switch 8 is then connected through the second spring 7 to the second base member 6. This circuit operates to fire a flashbulb when the switch 8 is closed by the action of the camera shutter, as will be described hereinbelow.

As shown in FIG. 2, the flashbulb housing is formed from a socket 10 having a centrally relieved portion along its longitudinal axis that forms the lower portion of the guide opening 2. The rods 6*a* pass through the socket 10 and are retained therein, as by shoulders. The springs 7 are mounted over each rod 6*a* for urging the base contact members 6 along the guide opening 2 toward the flashbulb-holding members 5. A tab portion 6*b* extends from the edge of one of the base contact members to contact the outer edge of the base of a larger flashbulb, as the flashbulb is inserted into the guide opening 2. This contact pushes the base contact member 6 down and out of the way for allowing the second base contact member 6 to contact the center of the larger flashbulb. When smaller flashbulbs are utilized within the flashbulb holder 1 the two base contact members each contact the base of the flashbulb. This arrangement will be further described hereinbelow.

The socket 10 is also provided with a pair of slots which receive the legs of a U-shaped ejector 11. The ejector 11 is provided with a pair of springs 12 for urging the ejector away from the tail portions 5*c* of the flashbulb-holding members 5. A pushbutton 13 is arranged to engage the base of the U-shaped ejector 11. The pins 3 and springs 4, which pivotally mount the holding members 5, fit within a relieved portion located at the top of the guide opening 2 within the socket 10. A holding frame 14 is placed over the pins 3 and holding members 5 for securing them within the guide opening 2.

The outer periphery of the holding frame 14 provides a cylindrical shoulder upon which reflector blades 16 may be rotatably mounted. Retaining of the reflector blades is accomplished by a reflector-holding plate 15 secured, as by screws, against the holding frame 14.

Referring now to FIGS. 1*a* and 1*b*, the operation of the flashbulb holder will now be explained. As a larger flashbulb 17 having a bayonet-type or M-type base 17*a* is inserted into the opening 2, the holding members 5 yield in a downward direction against the urging of the springs 4 for enlarging the guide opening 2. Upon further insertion, the tab 6*b* on one of the base contact means 6 contacts the outer lowermost edge of the base 17*a* for causing the base contact 6 to yield with the inward thrust. The flashbulb 17 is inserted until the inner edges 5*a* of the holding members 5 fall into a groove 17*b* within the base 17*a*. At this point, the urging of the springs 4 cause the inner edges 5*a* to engage the groove 17*b* and hold the flashbulb 17 against the outward force exerted by the spring-loaded base contact member 60. The tab 6*b*, having forced its base contact member down below the flashbulb 17, contacts the edge of the flashbulb base 17*a*; while the second base contact member 6 contacts the center contact of the base 17*a*. Thus, when the switch 8 is closed, the positive terminal of the potential source E is connected through spring 7, base contact 6 and tab 6*b* to the outer edge of the flashbulb 17. The negative terminal of the potential source E is connected through the second spring 7 to the second base contact 6 and

then to the center contact of the flashbulb base for firing the flashbulb. After the flashbulb **17** has been fired, the pushbutton **13** is depressed for urging the legs of the U-shaped ejector **11** upwardly against the tail portions **5***c* of the holding members **5**. This causes the main portion **5***b* of the holding members **5** to be pivoted downwardly for releasing their hold on the groove **17***b* and allowing the spring-loaded base contact members **6** to urge the flashbulb **17** from the socket.

In FIG. **1***b*, a flashbulb **18** of the AG-type is inserted into the guide opening **2** where its base **18***a* contacts the holding members **5**. The holding members **5** resiliently yield, until the base **18***a* has passed therebetween, and then engage a groove **18***b* within the base of the flashbulb **18**. It will be noted that the base **18***a* is substantially narrower than the base **17***a* of the M-type or bayonet-type flashbulb. Thus, the tab portion **6***b* of the base contact **6** does not engage the outer edge of the base. The two base contacts **6** each engage a portion of the base **18***a* and the contact wires thereof, located on each end of the narrow base **18***a*.When the switch **8** is closed, a positive potential from the source E is applied through one base contact **6** to one side of the flashbulb base, while the potential from the source E is applied through the other base contact member to the other side thereof. Thus, activation of switch **8** causes the flashbulb **18** to fire. Again, ejection is accomplished by depressing the pushbutton **13** for engaging the tail portions **5***c* with the legs of the U-shaped ejector **11** thus urging the main portions **5***b* downwardly for allowing the spring-loaded base contact members to eject the flashbulb **18** from the holder **1**.

It will be observed that the flashbulb **17** has a center of flash or illumination **19** while the flashbulb **18** has a center of illumination **20**. These centers are located at different points within the bulbs. The present invention has been arranged to allow the illumination centers to be aligned with a focal position **21** formed by the reflector plates **16** when they are expanded and clamped together for forming the reflector mirror. Through the unique design of the flashbulb holder, the larger flashbulb **17** is inserted deeper into the flashbulb holder for aligning its center of illumination with the focal position of the reflectors **16**. Similarly, the flashbulb **18** is not inserted as deeply into the flashbulb holder for aligning its center of illumination with the focal position **21** of the reflectors **16**. Thus, the flashbulb holder of the present invention may be utilized to mount a plurality of various-sized flashbulbs having different centers of illumination, within a common flashgun having a reflector with a fixed focal position.

Accordingly, the flashgun of this invention has the advantage that it can securely hold any one of the bayonet-type, M-type or AG-type flashbulbs without regard to the form of the base and without regard to the location of the center of illumination.

Obviously, many modifications and variations of the present invention will become apparent to those skilled in the art in light of the above. Therefore, the present invention should be limited only by the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A flashbulb holder for a photographic flashgun capable of receiving various flashbulbs having variously sized bases and bulbs, comprising:

housing means having an opening therein;

a pair of flashbulb-holding means pivotally supported within said housing for receiving, one at a time, said various flashbulbs therebetween;

fulcrum means, about which said flashbulb-holding means are pivotally supported, arranged on opposite sides of said opening;

a pair of base contact means arranged for connection to a potential source and resiliently arranged to contact contacts on said base of said flashbulbs, as said flashbulbs are received between said flashbulb-holding means, for urging said flashbulbs against said flashbulb-holding means thereby holding said flashbulbs therebetween;

said pair of base contact means being resiliently arranged to be individually urged against said variously sized bases of said flashbulbs for providing proper contact with said contacts on said bases,

said flashbulb-holding means being arranged to resiliently close said opening and including tail portions extending away from said opening; and

a movable ejector means engaging said tail portions of said flashbulb-holding means for causing said flashbulb-holding means to open from said opening upon movement of said movable ejector means thereby ejecting from said holder a one of said flashbulbs held by said holding means.

2. A flashbulb holder as claimed in claim **1**, wherein:

said pair of base contact means includes spring means for resiliently mounting said base contact means within said opening of said housing means;

said pair of base contact means are symmetrically arranged within said opening of said housing means for contacting each contact of the base of a smaller based one of said flashbulbs as the latter is inserted into said opening; and

a tab portion extends from one of said pair of base contact means for contacting the edge of the base of a larger based one of said flashbulbs as the latter is inserted into said opening, thereby allowing the other of said pair of base contact means to contact the center contact of said base of said larger based flashbulb.

3. A flashbulb holder as claimed in claim **1**, wherein there are included

reflector means mounted upon said housing means and having a fixed focal position; wherein each of said flashbulbs has a center of illumination; and wherein

said flashbulb-holding means is arranged to oppositely yield for holding the base of a larger based one of said flashbulbs at one holding position thereon against the urging of said resiliently arranged base contact means while holding the base of a smaller based one of said flashbulbs at a different holding position thereon to cause the center of illumination of each of said flashbulbs to be aligned with said focal position of said reflector.