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PHOTOGRAPHIC FLASH UNIT WITH DIFFERENT SOCKETS

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Fig. 1

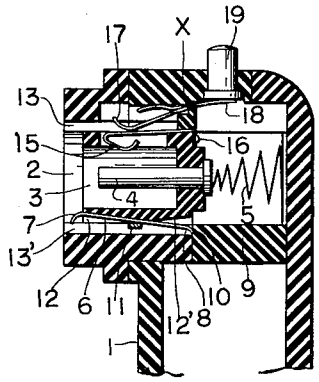
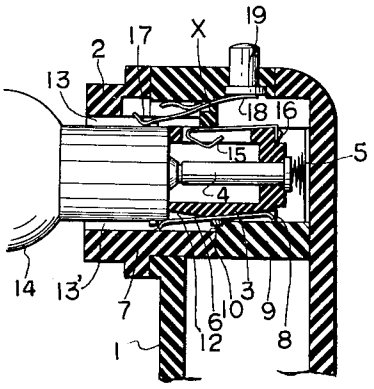


Fig. 2



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PHOTOGRAPHIC FLASH UNIT WITH DIFFERENT SOCKETS

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This invention relates to a photographic flash unit with a telescoping socket structure. More particularly, this invention relates to a photographic flash gun in which a large base flash bulb and a small base flash bulb can be successively inserted and held as required at the same spatial location.

The object of this invention is to provide a photographic flash unit wherein desired different flash bulbs can be automatically selectively inserted and fitted into sockets without requiring any manual switching operation and which has the advantages that its mechanism is durable and simple, and that its manufacturing cost is low.

This invention is characterized in that a socket of a small diameter is inserted in a socket of a large diameter, is normally in a forward position and on insertion of a small base bulb thereinto is latched in a forward position, while when a large flash bulb is inserted and fitted, the latching mechanism of the small diameter socket is released by the larger dimensions of the elements of the base of the large base flash bulbs and the small diameter socket will be forced back into the larger diameter socket, so that thereby a small base flash bulb in the normal state of the socket and a large base flash bulb at the time of such forcing back of the small diameter socket, can be inserted and fitted positively and automatically.

A clear concept of the scope and purpose of this invention may be obtained from the following description, taken in connection with the attached drawing illustrating an embodiment of the photographic flash unit according to the present invention.

FIGURE 1 is a vertically sectioned side view of the photographic flash gun socket of this invention with no flash bulb inserted thereinto.

FIGURE 2 is a partly vertically sectioned side view of the same flash gun socket with a large flash bulb inserted thereinto.

Referring to the drawing, **1** is the housing of the photographic flash gun. **2** is a large diameter socket. **3** is a small diameter socket cylinder inserted in the large diameter socket **2** and having a terminal rod **4** loosely inserted in the center and a spiral spring **5** fitted on the back so that both the central terminal rod **4** and small diameter socket cylinder **3** may be pressed toward and away from the bottom of the large base socket, as also latched and stopped. Appropriately on the outer wall of the small diameter socket cylinder **3** there is provided an operating piece **6** whose forward and rearward portions will move up and down with its approximately middle portion functioning as a fulcrum. The respective ends of said forward and rearward portions form appropriately curved engaging parts **7** and **8**. It is necessary that, in the normal poistion of the operating piece **6**, the forward curved engaging part **7** should be positioned upward (FIGURE 1) and the rearward curved engaging part **8** should contact and engage with the end face or shoulder **10** of the wall **9** of the guide bore within the large base socket and maintain this position and prevent pressing the small diameter socket **3** inwardly toward the bottom of socket **2**. This is accomplished by a laminated band **11** resiliently holding operating piece **6** in its deflected position a little forwardly of the position of the fulcrum of the operating piece **6**. However, needless to say, this can be accomplished also by any other technical means. **12** and **12'** are inclined side grooves made in the small diameter socket body to facilitate the deflection of the operating piece. **13** and **13'** are ordinary pin guides or grooves for fitting a large flash bulb **14**. **15** is a resilient clamp and electroconductive terminal member for the small diameter socket and has one end **16** affixed to the back of the small diameter socket. **17** is a resilient clamp and electro-conductive terminal member for the large diameter socket and has its forward end press and project the forward end of the clamp **15** of the small diameter socket downward. **18** is the other end region of the clamp **17**. A push button **19** engages with said end region **18** so that the flash bulb may be released and expelled from the socket by pushing said push button **19** after photographing. In this releasing device, the resilient clamp **17** for the large diameter socket is so properly pivoted at point X that, when the push button **19** is pushed, the forward end of the clamp **17** (FIG. 1) will rise, at the same time the resilient clamp **15** for the small diameter socket, normally pressed down, will thereby rise due to its own resiliency, the plug part of the small flash bulb will be disengaged and the bulb will be discharged by the spiral spring **5**. When a large flash bulb is to be removed, on pressure on button **19**, the bulb is released by clamp **17** and ejected by spring **5**.

Now, when a small flash bulb is to be used, it may be inserted and fitted with the socket structure in the normal condition illustrated in FIGURE 1, that is, in the normal state. Since the small diameter socket is stopped by the rearward curved engaging part **8** of the operating piece **6** so that it cannot move further into the large diameter socket, the small flash bulb can be readily inserted and fitted. When a large base flash bulb **14** is to be inserted and fitted, it may be fitted into the large diameter socket **2** when the socket assembly is likewise in the condition shown in FIGURE 1. As the large flash bulb is further pushed into the socket, the forward curve engaging part **7** of the operating piece **6** will be pushed down (in the figures, but actually outwardly relative to the longitudinal axis of the sockets) by the edge of the end of the base of the flash bulb, the operating piece will be pivoted about the fulcrum region as a center, the other and rearward curved engaging part **8** will be displaced upwardly (inwardly) and will be disengaged from the end face or shoulder **10** of the guide bore wall **9**. Hence the small diameter socket **3** will move axially toward the bottom of the large base socket and the large base flash bulb will be easily inserted and fitted, as shown in FIGURE 2.

Summarizing the above, the present invention is characterized in that a small diameter socket is inserted into a large diameter socket and is normally forwardly therein, and on insertion of a small base flash bulb is locked against rearward movement, while, when a large flash bulb is to be inserted and fitted, the stopping mechanism of the small diameter socket is released by the size of the large flash bulb so that the small diameter socket will automatically be released and pushed toward the bottom of the large base socket.

What I claim is:

1. A flash bulb socket for use with a photographic flash unit for selectively receiving a flash bulb having either a large or a small base, comprising an electrically non-conductive housing defining a large socket opening therein for receiving a flash bulb having a large base, an electrically non-conductive cup-shaped member movable axially within the housing and defining a small socket opening to receive a flash bulb having a small base, a conductive center post of predetermined length extending through, and movable relative to, the base end of the movable member and projecting into the movable mem-

ber, a coiled spring braced between the bottom of the center post and the housing, a longitudinal formed recess in the outer cylindrical wall region of the movable member, the recess sloping inwardly toward the longitudinal axis of the movable member from an intermediate high point to both ends of the movable member, an elongated lever pivoted adjacent to the intermediate high point of the recess, the lever being of such length that its forward, in the direction of bulb insertion, end extends beyond the forward end of the movable member and each end of the lever has a portion curved away from the movable member, an annular shoulder formed by the housing in the large socket opening, a resilient band biasing the lever to occupy the position in which the forward curved end of the lever is positioned in the path of insertion of a large base bulb and out of the path of insertion of a small base bulb and causing the rearward curved end of the lever to strike against the annular shoulder absent an inserted large base bulb, a first means carried by the movable member for conductively connecting to the base of a small base bulb in the movable member, a second means supported in the housing for conductively connecting to the first means when a small base bulb is in the movable member and to the base of a large base bulb when such a bulb is in the large socket opening, the first means resiliently engaging the second means when no bulb and when a small base bulb is in the movable member, and a push button of electrically non-conductive material operable to release the first means from the base of the bulb when a small base bulb is in the movable member and to release the second means from the base of the large base bulb when a large base bulb is in the large socket opening and to engage the second means to the first means on movement of the movable member under force of the coiled spring.

2. The socket according to claim 1 in which the first means includes an elongated aperture through the side wall of the movable member, and a formed conductive spring having an elongated intermediate portion is attached at one end to the bottom of the movable member, its forward end region normally being positioned so as to project through the aperture to engage the base of a small base bulb in the movable member, and its elongated intermediate portion is pretensioned so as to tend to remove its forward end from its projecting position through the aperture.

3. The socket according to claim 2 in which the second means includes a projection on the housing to its hollow interior, an elongated spring member pivoted on the projection biased to have its forward end bear against the intermediate portion of the formed spring of the first means when a small base bulb is in the movable member and against the base of the bulb when a large base bulb is in the large socket opening, and its rearward portion bears against the push button so that on depression of the push button the forward end of the elongated member is retracted, releasing the base of the large bulb, when present, and releasing the formed conductive spring of the first means and the base of the small base bulb, respectively, when present, and the coiled spring under its tension moves the center post, forcibly ejecting the bulb in the particular one of the sockets.

References Cited in the file of this patent

UNITED STATES PATENTS

2,189,251	Potter	Feb. 6, 1940
2,848,701	McKee et al.	Aug. 19, 1958
2,920,301	Kawate	Jan. 5, 1960

FOREIGN PATENTS

931,147	Germany	Aug. 1, 1955