Aug. 23, 1949. J. J. CZARNOTA 2,479,726

CLEANING ATTACHMENT FOR PHOTOGRAPHIC FLASH GUNS

Filed Feb. 14, 1946

Fig. 1

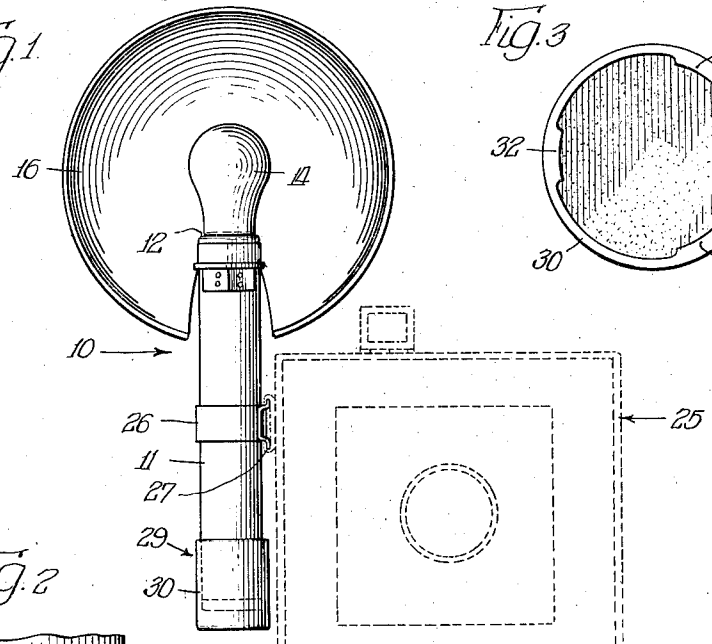


Fig. 3

Fig. 2

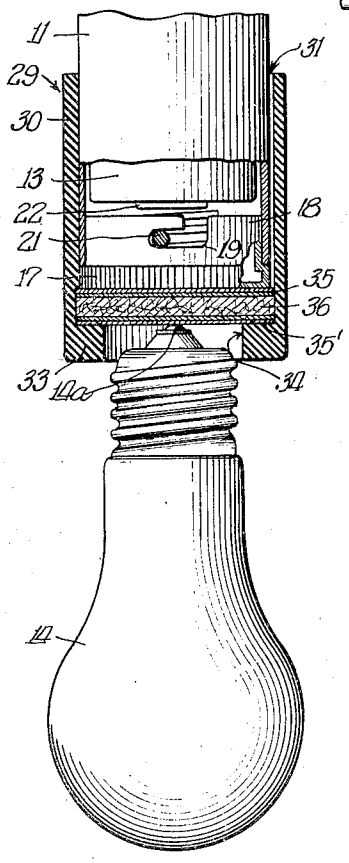


Fig. 4

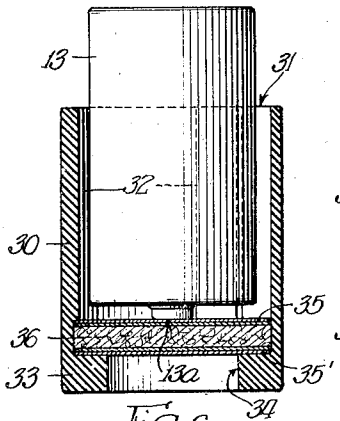


Fig. 5

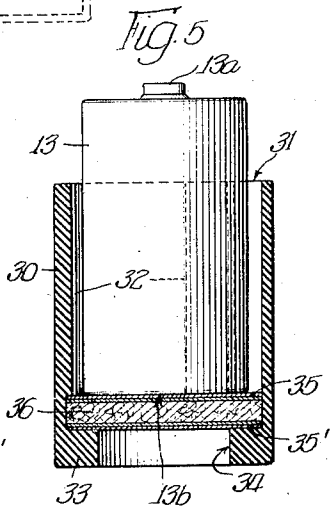
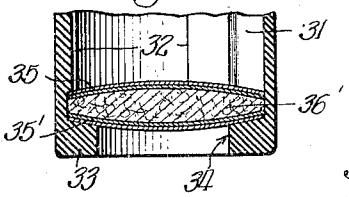


Fig. 6



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Patented Aug. 23, 1949

2,479,726

UNITED STATES PATENT OFFICE

2,479,726

CLEANING ATTACHMENT FOR PHOTOGRAPHIC FLASH GUNS

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Application February 14, 1946, Serial No. 647,501

4 Claims. (Cl. 51—187)

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The present invention relates to a cleaning attachment for a photographic flash gun, and aims generally to provide an improved cleaning device associated directly with a photographer's flash gun for cleaning the electrical contacts of photoflash bulbs and batteries used in the flash gun.

Occasions frequently arise in the field of photography when it is of the utmost importance that the flash gun operate successfully for the taking of a critical or curcial picture. For example, press photographers are frequently called upon to take the picture of some very prominent person who is reluctant to pose for a photograph, or to take the picture of some scene of a crime or a serious accident where there is only one opportunity to get a flash photograph. If the flash gun fails to operate at this critical time there may never be a second opportunity for the photographer to try for another picture. Most of the flash gun failures arise because of dirty electrical contacts at the ends of the flash bulbs, or dirty electrical contacts at the ends of the flash gun batteries.

My invention aims to eliminate flash gun failures of this type by providing a cleaning attachment for the flash gun which will enable the end contacts of the flash bulbs and of the batteries to be easily and quickly cleaned before being used in the flash gun.

My improved cleaning device is preferably embodied in the form of an attachment which can be readily slipped over the lower end of the battery case of the flash gun, such attachment embodying an abrasive cleaning material against which the contact end of the flash bulb can be pressed and then rotated or otherwise manipulated for removing all foreign material from this contact end for assuring electrical continuity of the circuit therethrough. The end contacts of the batteries can be similarly cleaned against such abrasive material. Such an attachment unit is very simple to manufacture and use, and can be sold at a low cost. My invention also contemplates as an additional feature the making of this attachment in the form of a resilient rubber sleeve which is capable of a substantial degree of stretch so as to enable the attachment to be slipped over different sizes and shapes of battery cases.

Another feature of the device is that the abrasive surfaces can be readily renewed after they have become worn.

While the attachment feature of my invention is particularly advantageous for enabling the device to be adapted to different flash guns, I wish

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to point out that the invention can also be built directly into the flash gun at the time of its manufacture, if desired.

Other features, objects and advantages of the invention will appear through the following detailed description of one preferred embodiment thereof. In the accompanying drawing illustrating such embodiment:

Figure 1 is the front elevational view of a typical flash gun mounted on the side of a camera, the camera being indicated in dotted lines, my improved cleaning device being mounted over the lower end of the battery case of the flash gun.

Figure 2 is fragmentary axial sectional view through the cleaning device and through the lower portion of the batery case, showing a flash bulb in the operation of having its end contact cleaned.

Figure 3 is a transverse sectional view through the upper portion of the cleaning device.

Figure 4 is a longitudinal section view through the cleaning device removed from the battery case, and showing one of the flash batteries in the operation of having its central contact (i. e. its positive or carbon terminal) being cleaned.

Figure 5 is a view similar to Figure 4 but showing the battery reversed for the purpose of cleaning its bottom contact at the other end of the battery cell (i. e. its negative or zinc terminal), and

Figure 6 shows a modified mounting of the abrasive disks in the end of the attachment unit.

In Figure 1, the flash gun is indicated in its entirety at 10, this unit also being frequently referred to as a photoflash lamp. The conventional flash gun comprises a battery case 11 and a socket 12, the battery case holding the batteries 13, and the socket receiving the flash bulbs 14 for successive flashing operations. A curved reflector 16 is usually secured to the upper end of the battery case 11 by any suitable mounting ferrule or attachment bracket. The lower end of the battery case 11 is usually closed by a removable end cap 17 which is removed from the lower end of the battery case whenever it is desired to remove or insert batteries into the case. This end cap 17 has a releasable connection with the end of the battery case through the medium of a threaded joint, or a bayonet slot connection, or any other releasable connection that may be desired. In the sectional view of Figure 2, I have shown the end cap 17 as having a reduced skirt portion 18 which is adapted to extend up into the inside of the battery case 11,

and which is provided with diametrically opposite bayonet joint slots 19 adapted to engage over bayonet joint pins 21 projecting inwardly from the battery case. As pointed out above, this is merely typical of one conventional construction. A compression spring 22 is usually confined within the end cap 17 for the purpose of holding the batteries 13 pressed together and pressed upwardly against the bottom terminal of the bulb socket 12, this spring also usually serving to establish electrical circuit contact with the base end of the lowermost cell 13.

The flash gun which I have just described may be of the hand type adapted to be held in the hand, or it may be mounted on the camera, and used principally for the taking of "open flash" pictures, or it may be of the synchronized type having a synchronized connection with the shutter of the camera so that it is adapted to the taking of "synchronized flash" pictures. This is all well known to those skilled in the art. In Figure 1 I have shown the flash gun 10 as being mounted on the side of a conventional camera indicated in dotted lines at 25. Such mounting may be accomplished in any one of numerous ways, such as by providing a clamping ring 26 around the battery case of the flash gun adapted to engage with a mounting bracket 27 on the side of the camera. The details of this mounting are of no importance in the present invention. Such mounting leaves the lower end of the battery case readily accessible for removing the end cap 17 and also for receiving my improved cleaning attachment. When the flash gun is thus mounted directly on the camera, it is frequently provided with a synchronizing attachment for synchronizing the flash of the gun with the operation of the shutter, this being well known.

Referring now to the details of my improved cleaning attachment, indicated in its entirety 29, this is preferably in the form of a molded rubber sleeve 30 formed with a socket 31 in its upper end adapted to have a snug push fit over the lower end of the battery case and over the removable end cap or head 17. As shown in the transverse section of Figure 3, I contemplate forming the socket 31 with a plurality of angularly spaced longitudinally extending ribs 32 extending substantially from top to bottom of the socket. These ribs 32 will increase the resiliency of the sleeve 30 and thereby facilitate getting it on and off of different sizes of battery cases, and said ribs may also be utilized to clear any locking buttons, contact buttons or the like projecting from the battery case. However, it will be understood that these ribs 32 are not essential in my improved construction. The lower end of the rubber sleeve 30 is formed with an inwardly extending flange portion 33 which defines a lower opening 34 of somewhat smaller diameter than the diameter of the socket 31.

Extending across the bottom of the socket, above the flange 33, is the cleaning material for cleaning the end contacts of the flash bulbs and batteries. This cleaning material comprises an assembly of upper and lower abrasive disks 35 and 35' respectively and an intervening felt washer 36. The abrasive disks are preferably cut out of emery cloth of relatively fine grit, although it will be evident that sandpaper or other abrasive materials may be employed. Two or more of such emery cloth disks 35 face upwardly above the washer 36, and two or more of such emery cloth disks 35' face downwardly below the felt washer 36. The plurality of abrasive disks affords a reserve disk when the outermost disk becomes substantially worn. The assembly of disks and felt washer has a snug press fit at the bottom of the socket 31, against the flange 33, but this assembly can be readily removed out through the top of the socket when it is desired to replace worn abrasive disks. If desired, an internal groove may be formed in the socket wall, below the ends of the ribs 32, for firmly receiving the assembly of abrasive disks and felt washer.

Figure 2 shows the operation of cleaning the end contact 14*a* of a typical flash bulb 14. The cleaning attachment remains on the end of the battery case 11 except during operations of changing batteries or cleaning batteries, and in this normal position of this cleaning attachment the bottom abrasive disks 35' are always accessible for cleaning the end contacts 14*a* of flash bulbs 14. Before any new bulb is inserted into the socket 12 its end contact 14*a* is first pressed up against the bottom abrasive disk 35' and the bulb is then rotated, shifted or otherwise manipulated to scratch the end contact across the surface of the abrasive disk. Thus, a clean bright contact surface is assured.

Figures 4 and 5 illustrate operations of cleaning the end contacts 13*a* and 13*b* of the flash batteries 13. In the cleaning of battery contacts, the cleaning attachment 29 and the end cap 17 have necessarily been removed to afford access to the battery case, and accordingly the batteries are advantageously cleaned by inserting them down into the upper socket end 31 of the cleaning attachment for contact with the upper abrasive disks 35. The socket 31 affords a guide for holding the batteries substantially at right angles to the abrasive disks 35, and a sufficient length of the battery projects above the upper end of this socket to enable the batteries to be readily rotated within the socket. However, battery cleaning operations can also be preformed against the lower disks 35'. Figure 4 shows the positive or carbon terminal 13*a* of the battery being cleaned against the upper abrasive disks, and Figure 5 shows the bottom end surface 13*b*, corresponding to the negative or zinc terminal, being cleaned against these abrasive disks. As a result of these cleaning operations, these end contacts or terminals of the batteries are given bright shiny surfaces for assuring good electrical contact therethrough.

In Figure 6 I have illustrated a modified form of felt washer, designated 36', which is formed with convex upper and lower surfaces. Such convex curvature gives a convex curvature to the upper and lower abrasive disks, which may be desirable for concentrating the cleaning action in the central area of the bottom contact surface 13*b* of the battery.

It will be seen from the foregoing that my improved cleaning device can be manufactured and sold at a relatively low price; that it can be easily and quickly applied to the flash gun, and is adaptable to a considerable range of sizes of flash guns; that it is always present when needed; and that the abrasive material can be easily replaced when worn out. Furthermore, in its assembled position on the base end of the flash gun it functions as a shock absorber for the gun.

While I have illustrated and described what I regard to be the preferred embodiment of my invention, nevertheless it will be understood that such is merely exemplary and that numerous

modifications and rearrangements may be made therein without departing from the essence of the invention.

I claim:

1. In a cleaning attachment of the class described for a photographic flash lamp, the combination of a rubber sleeve having a circular opening at its upper end adapted to engage with a snug elastic fit over the end of the flash lamp and having a circular opening at its lower end substantially in alignment with the circular opening at its upper end, and a disk of abrasive material carried in the lower end of said sleeve and externally accessible through said lower opening, and against which abrasive material the contacts of flash bulbs or batteries are adapted to be rubbed for cleaning said contacts preparatory to use in the flash lamp.

2. A cleaning device for cleaning the contacts of flash bulbs and batteries used in a photographic flash lamp comprising a rubber mounting sleeve of substantially cylindrical form constructed with a cylindrical socket in its upper end and a circular opening in its lower end substantially in alignment with said cylindrical socket and including an inwardly extending marginal flange around said lower opening, said cylindrical socket in the upper end of said sleeve being adapted to engage over the base end of the flash lamp, and an abrasive disk mounted in said lower opening against said inwardly extending marginal flange, said abrasive disk being adapted to have the contacts of flash bulbs or batteries rubbed against it for cleaning said contacts preparatory to use in the flash lamp.

3. A cleaning device for cleaning the contacts of flash bulbs and batteries used in a photographic flash lamp comprising a rubber mounting sleeve of substantially cylindrical form defining a substantially cylindrical socket extending entirely through said sleeve from end to end thereof and constructed with an inwardly extending marginal flange around the lower end of said socket, the upper end of said cylindrical socket adapted to engage with a snug elastic fit over the base end of the flash lamp, and a removable assembly of a yieldable washer and abrasive disks disposed on upper and lower sides of said washer, said removable assembly being disposed in the bottom of said socket against said inwardly extending flange and being removable through the top of said socket, the lower abrasive disk being accessible through the open bottom end of said socket for cleaning contacts while the sleeve is in place on the flash lamp, and the upper abrasive disk being accessible for cleaning contacts through the upper end of said socket when the sleeve is removed from the flash lamp.

4. A cleaning device for a photographic flash lamp comprising a rubber sleeve adapted to engage with a snug push fit over the lower end of the flash lamp, longitudinally extending ribs within said sleeve adapted to engage the flash lamp, a closure member in the lower portion of said sleeve having a convex surface, and an abrasive disk of emery cloth or the like extending over said convex surface to form a convex cleaning surface against which the end contacts of flash bulbs or batteries can be rubbed for cleaning purposes preparatory to being used in said flash lamp.

JOHN J. CZARNOTA.

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