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[54] **ELECTRONIC FLASH UNIT WITH FLASH TUBE IGNITION CIRCUIT MOUNTED ON BACK OF REFLECTOR**

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[58] **Field of Search** ..... 240/1.3, 81.11, 20, 240/2 C

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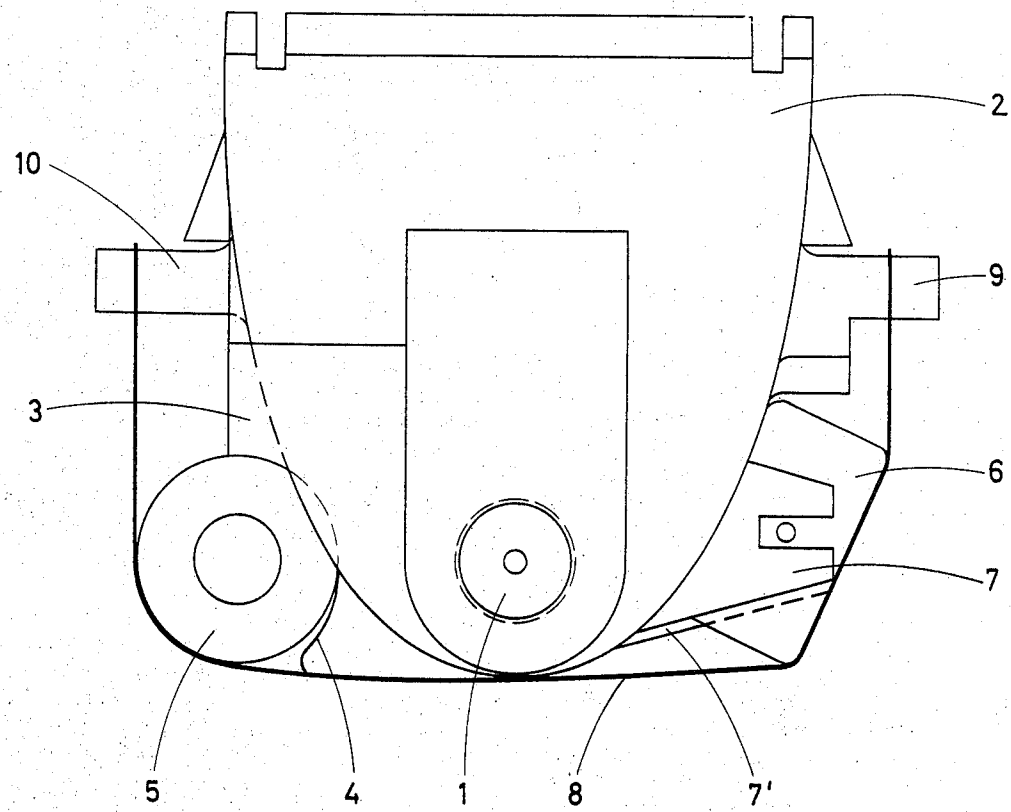
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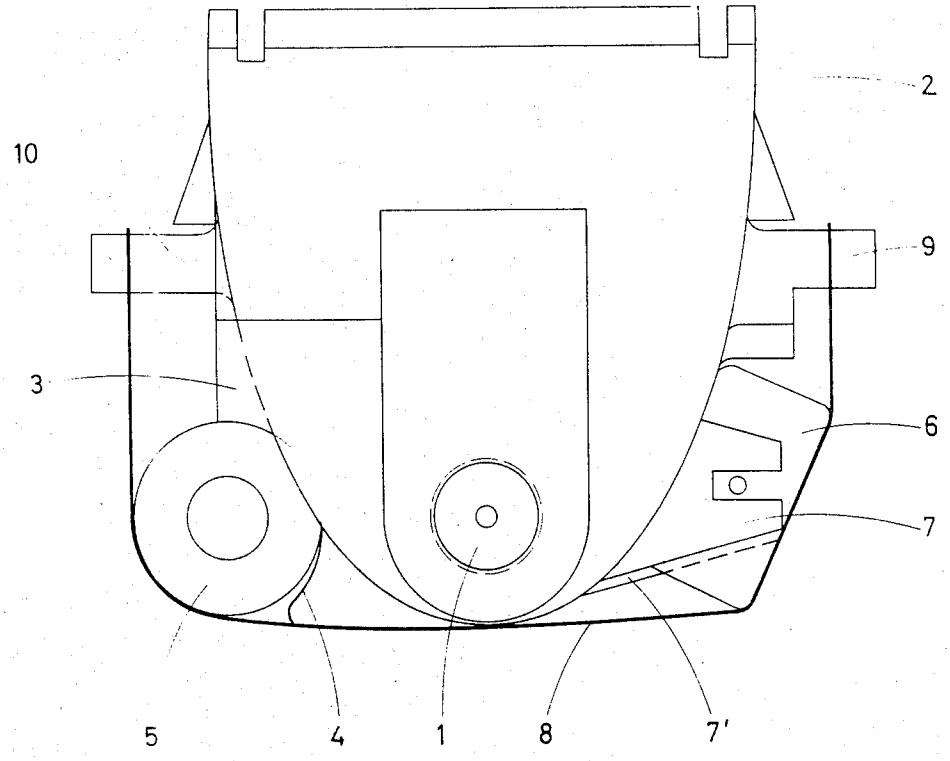
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[57] **ABSTRACT**

The outside surface of the reflector has a rib with a recess for holding the ignition coil and two projecting tongues for retaining the ignition capacitor. Further, two lugs extend from the outside surface of the reflector for receiving a rubber band which extends from one lug to the other and also encompasses the ignition coil and capacitor, thereby retaining same in a fixed position relative to the reflector.

4 Claims, 1 Drawing Figure




10
2
9
3
6
7
5
4
1
8
7'

ELECTRONIC FLASH UNIT WITH FLASH TUBE IGNITION CIRCUIT MOUNTED ON BACK OF REFLECTOR

BACKGROUND OF THE INVENTION

This invention relates to electronic flash units having a reflector and an ignition circuit for the flash tube which is mounted in the reflector.

Battery operated electronic flash arrangements are known in which the flash tube, the reflector, and the ignition circuit elements are mounted together within a housing, for example a small box, which may be detachably connected to the main unit, which may be a camera or, if an automatic flash control circuit is used, said automatic flash control circuit. The ignition circuit elements, that is in particular the ignition capacitor and the ignition coil for the flash tube, are mounted on a special mounting plate which is rigidly mounted within the small box.

It is an object of the present invention to furnish an electronic flash unit of simpler construction which still maintains the same reliability.

In accordance with the present invention, the ignition circuit elements are arranged on the outside surface of the reflector. It should be noted that for purposes of this application, the outside surface of the reflector designates the surface which, after assembly, is contained within the housing of the flash unit and is invisible from the outside. By fastening the said ignition circuit elements to said outside, a special mounting plate is eliminated. Further, the space available within the flash unit is utilized within the best possible manner. A further advantage of the arrangement in accordance with the present invention is that the unit which comprises the reflector, the flash tube and the ignition circuit may be tested independently of the remainder of the flash apparatus and, in case of malfunction, may be readily replaced as a single unit.

The present invention is an electronic flash unit comprising a reflector having an inside and outside surface, a flash tube mounted in said reflector, and an ignition circuit for igniting said flash tube, said ignition circuit having at least one ignition circuit element mounted on said outside surface of said reflector.

Further in accordance with the present invention, various projections and a rib having a recess are on the outside surface of the reflector, in order to maintain the ignition circuit elements in a fixed position relative to said reflector.

Further, the reflector means may have lugs between which are connected elastic retaining means such as a rubber band, said retaining means also passing around the ignition circuit elements, thereby maintaining these circuit elements in said fixed position relative to the reflector.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional subjects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The single FIGURE is a top view of the unit comprising the reflector, flash tube and ignition circuit elements in accordance with the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the present invention will now be described with reference to the drawing.

A flash tube 1 is arranged within a reflector 2. Reflector 2 has an outside surface which comprises a rib 3 which has a recess 4. This recess serves to receive the cylindrical coil form of ignition coil 5, whose secondary winding is connected to the ignition electrode of flash tube 1. Further, the outside surface of reflector 2 has two tongue-like projections numbered 7 and 7', between which is arranged the ignition capacitor 6 which in turn is electrically connected to the primary winding of ignition coil 5.

In order to retain the ignition coil 5 and ignition capacitor 6 in a fixed position relative to the outside surface of reflector 2, elastic retaining means, here an endless rubber band 8, is attached to two projecting lugs numbered 9 and 10.

Assembling this unit only requires that the ignition circuit elements 5 and 6 are inserted respectively into the recess 4 and between the two projecting tongues 7 and 7'. The rubber band 11 is then attached to one of the lugs 9 or 10 and passed around ignition circuit elements 5 and 6 and then attached to the other lug of lugs 9 and 10. The rubber band is passed around ignition circuit elements 5 and 6 in such a manner as to press the same against the surface of reflector 2. Finally, the ignition electrode of flash tube 1 is connected to ignition coil 5, while the latter is connected to ignition capacitor 6.

It is seen that the present invention results in a very simple assembly which at the same time is space-saving and reliable.

Even though the invention has been shown as having particular projections and recesses associated with the outside surface of the reflector, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended

1. Electronic flash unit comprising, in combination, a reflector having an inside and an outside surface; a flash tube mounted in said reflector; and an ignition circuit for igniting said flash tube, said ignition circuit having a first and second ignition circuit element mounted on said outside surface of said reflector, said reflector having a rib integrally connected with said outside surface, said rib having at least one recess for retaining said first ignition circuit element in a fixed position rel-

ative to said reflector, said outside surface of said reflector further having at least one projection for retaining said second ignition circuit element in a fixed position relative to said reflector; further comprising a first and second lug rigidly connected with said outside surface of said reflector and elastic retaining means extending from said first to said second lug and encompassing said first and second ignition circuit elements.

2. An arrangement as set forth in claim 1, wherein said elastic retaining means is a rubber band.

3. Electronic flash unit comprising, in combination, a reflector having an inside and an outside surface; a flash tube mounted in said reflector; an ignition circuit for igniting said flash tube, said ignition circuit having

an ignition capacitor and an ignition coil; a rib integrally connected with said outside surface of said reflector for retaining said ignition coil in a fixed position relative to said reflector; a projection on said outside surface of said reflector for retaining said ignition capacitor in a fixed position relative to said reflector; two lugs rigidly connected with the outside surface of said reflector; and elastic retaining means extending between said lugs and encompassing said ignition capacitor and said ignition coil.

4. An arrangement as set forth in claim 3, wherein said elastic retaining means is a rubber band.

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