United States Patent [19]

Prochnow et al.

[11] **3,884,380**

[45] **May 20, 1975**

[54] **CONTAINER FOR HIGH POWER GENERATORS OF ELECTRONIC PHOTOFLASH APPARATUS**

[75] Inventors: **Claus Prochnow**, Braunschweig; **Hans-Jürgen Berger**, Wolfenbuttel, both of Germany

[73] Assignee: **Rollei-Werke Franke & Heidecke**, Germany

[22] Filed: **Sept. 26, 1973**

[21] Appl. No.: **402,533**

[30] **Foreign Application Priority Data**

Sept. 28, 1972 Germany 7235606

[52] **U.S. Cl.** ..... **220/9 F**; 220/9 M; 220/73; 220/94 R; 220/88 R

[51] **Int. Cl.**.. **B65d 25/10**; B65d 25/18; B65d 25/32

[58] **Field of Search** ..... 220/9 F, 9 M, 12, 3.1, 220/73, 74, 71, 72, 91, 94 R, DIG. 9, 88 R, 95

[56] **References Cited**

UNITED STATES PATENTS

2,494,507	1/1950	Curtis	220/91
3,225,983	12/1965	Majka	220/9 F X
3,491,913	1/1970	Giraudet et al.	220/9 F X

Primary Examiner—Billy S. Taylor

Attorney, Agent, or Firm—Stonebraker, Shepard & Stephens

[57] **ABSTRACT**

A trough-like container for holding a high powered generator unit of electronic photoflash apparatus, useful especially in studio photography or in commercial or industrial photography, where it is desirable to have a power unit of considerably greater power capacity than those normally used in amateur photography. For holding a high power generator of this kind, it is important to have a carrying case which is light, sturdy with respect to external blows or knocks, readily transportable, shock proof and safe so far as electrical hazards are concerned, and as compact as possible with relation to the volume of the electrical generator equipment to be contained therein. The present container is formed of foamed plastic material having a metal bearing ring integrally molded within the trough-like container near the top thereof, the ring having bore-holes for attaching the electronic flash generator carried within the container, as well as for attaching a carrying strap.

8 Claims, 3 Drawing Figures

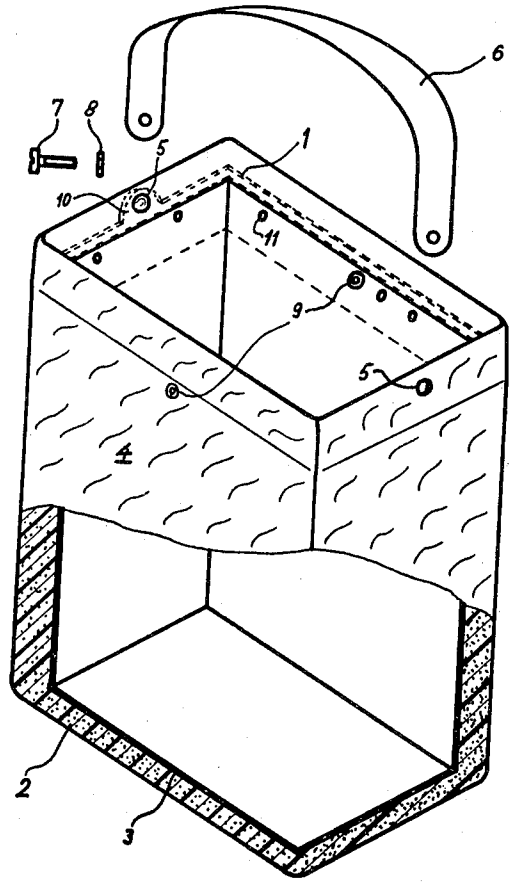


Fig. I

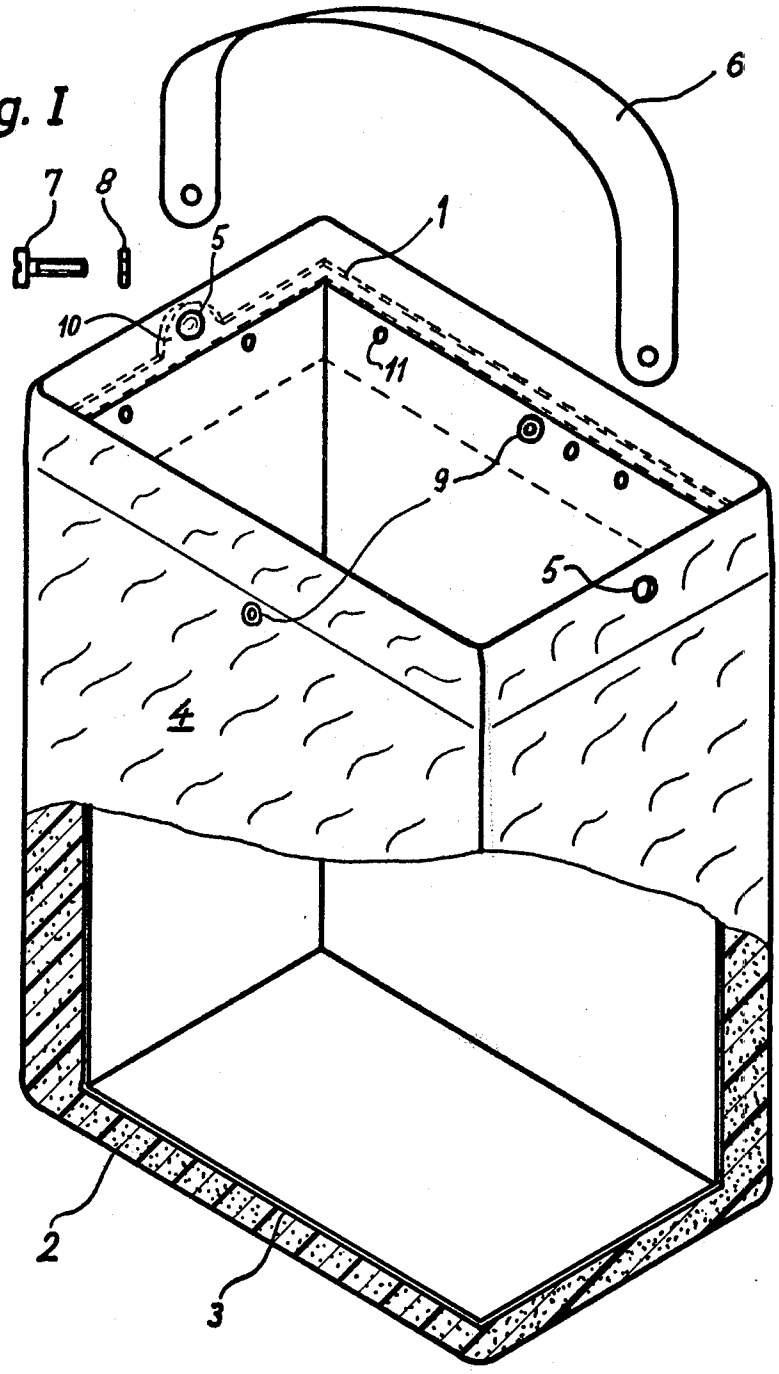


Fig. II

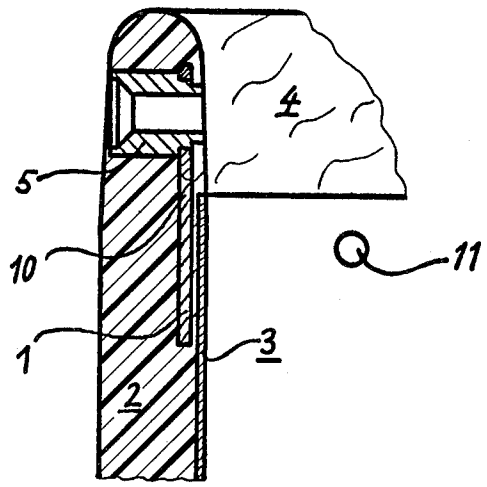
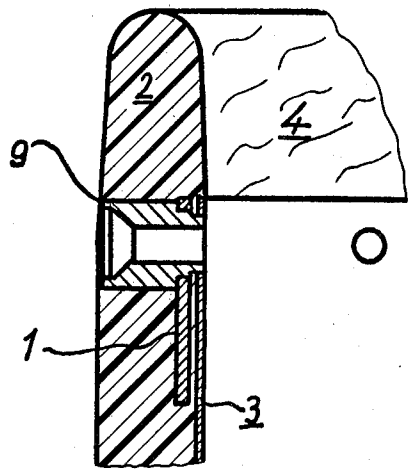


Fig. III



CONTAINER FOR HIGH POWER GENERATORS OF ELECTRONIC PHOTOFLASH APPARATUS

BACKGROUND OF THE INVENTION

Electronic flash apparatus as used in commercial photographic studios or in industrial photography frequently requires power generator units having much greater power capacity than the power normally used in ordinary amateur photography. For greatest usefulness, the power unit as well as other parts of the complete flash apparatus must be readily transportable from place to place within the studio itself, and also from one location to another location outside of the studio. This means that the power generator, frequently a rather delicate piece of equipment, must be mounted in a carrier or container which gives the equipment sufficient protection from external knocks or blows by accidental contact with other articles when moving it from place to place, and the container must also be safe in an electrical sense, giving adequate protection or shielding to nearby persons from electrical shocks as well as from bright or intense light discharges which might occur during certain kinds of operation of the electric power unit. The container must also give the contained electrical power unit sufficient protection against extremes of temperature, both hot and cold, and against conditions of extreme humidity or even complete wetness, protecting the contained electrical equipment against damage even if the container happens to be set down on a wet floor or on a floor covered with a few inches of water. While still fulfilling all of these requirements, the container should nevertheless be as light and compact as possible, for ease of carrying the equipment from one place to another.

An object of the present invention is the provision of an improved and more satisfactory container fulfilling all of the requirements above mentioned.

A further object is the provision of such a container which is simple and easy to construct, and of relatively low cost.

A further object is the provision of such a container suitable for holding a high voltage electronic flash power unit with a power value up to, for example, 1,250 WS (watt-seconds). In the past, portable versions of studio lighting equipment have been available only with a power value up to about 250 WS, but in some cases considerably higher flash power is required for certain types of portrait photography, fashion photography, or special commercial or industrial photography, and higher power has not been possible in the past, in readily portable or transportable equipment. However, with the present invention, such higher flash power, up to about 1,250 WS, can be made available with reasonable transportability.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a container in accordance with a preferred embodiment of the present invention, with parts broken away to show the interior construction, and with parts arranged in exploded position with respect to other parts;

FIG. 2 is a fragmentary vertical section taken centrally through the upper edge of a narrow side of the container; and

FIG. 3 is a similar vertical section taken centrally through the upper edge of a wide side of the container.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The container of the present invention is molded from foamed plastic material, with four side walls and a bottom wall integral with each other, the top being open, as illustrated in FIG. 1. In horizontal cross section, the shape is rectangular, the two end walls being of lesser width than the other two side walls.

The foamed plastic material, of a composition known per se, is indicated at **2**. A bearing ring or reinforcing ring **1**, of suitable metal such as steel, copper, or brass, extends continuously around all four sides in a location near the top edge, as illustrated in the drawings, and is embedded in the thickness of the foamed plastic walls. The upper edges of the walls are rounded over, as seen in FIGS. **2** and **3**. The inner surface of the container, both on the bottom wall and on the four side walls, is lined with fireproof insulating plates **3** which extend up to a location close to the top edge of the side walls. The outer surface is formed with a waterproof leather grain type of coating as shown at **4**, known per se, which extends up over the rounded upper edge of the walls and a slight distance down the inner surface, as illustrated.

Located centrally near the upper edge of the narrower sides or ends of the container, there are hollow bushings **5** which are riveted or otherwise fixed in upward enlargement flanges **10** of the metal ring **1** at these points. A carrying strap **6** has its ends fixed to the container by bolts **7** and nuts **8**, the bolts passing through suitable holes near the ends of the carrying strap and through the central bores of the bushings **5**. The outer ends of these bores are chamfered or countersunk, as seen in FIG. **2**, to receive the heads of the strap bolts **7**, if desired. It will be noted from FIG. **2** that the metal ring **1** and its enlargement **10**, and the bushing **5**, are completely surrounded by the foamed plastic material, except at the ends of the bushing, which extend to and are flush with the exposed surfaces of the plastic material.

Along the wider sides of the container, at central points on such sides or at any other desired points, there are other metal bushings **9**, similar to the bushings **5** above mentioned, riveted into or otherwise firmly attached to the metal ring **1**, but at elevations somewhat below the elevations of the bushes **5**, since the latter were attached to upward extensions **10** on the metal ring **1**, while the bushes **9** are engaged directly with a part of the metal ring which is of normal width and which does not have the upward extension or ear **10**. These bushes **9** extend not only through the thickness of the foamed plastic material **2**, but also through the thickness of the fireproof insulating plates **3**, as illustrated in FIG. **3**. These bushes **9** accommodate bolts or screws (not shown) which are used to fasten the high voltage electronic flash generator (of known form, and not illustrated) in fixed position within the casing or container.

The waterproof leather type coating **4** on the outside of the foamed plastic material **2** is stretched over the rounded upper edge of the plastic material and extends down inside the container as far as the upper edge of the fireproof insulating plates **3**. The waterproof leather type coating has the advantage that the container can, if necessary, stand in water up to its upper edge, without water getting into the interior of the container and short circuiting the electronic flash genera-

tor or otherwise impairing its operation. Adequate ventilation for dissipating the heat generated during operation of the electrical equipment, is provided by the open top of the container, allowing adequate intake and out flow of cooling air through the ducts which form part of the cooling system of the electrical apparatus.

By using the fireproof insulating plates 3 in connection with the foamed plastic material 2, it is possible to place the aerial or antenna for remote control of the electronic flash generator, in the casing itself, safe from damage from outside. The metal bearing ring running around the wall of the container near the upper edge only negligibly impairs the reception of signals by the aerial or antenna, because of the minimal size of this metal bearing ring. Yet the metal bearing ring is adequate for giving a sufficiently firm and sturdy connection between the carrying strap and the container, so that the carrying strap will not accidentally pull loose from the container on account of the weight of the electrical equipment therein, as might be the case if it were attempted to secure a carrying strap merely to a molded plastic wall without the metal bearing or reinforcing ring therein. It may be noted also in this connection that the weight of the electrical equipment is carried directly by the bushes 9 which are, like the carrying strap, attached to the metal bearing ring, and thus the weight of the electrical parts is transferred from them directly to the metal bearing ring and from the bearing ring directly to the carrying strap, so that the weight of the electrical parts within the container does not put stress or strain on the foamed plastic material itself.

The fireproof insulation plates 3 are attached, near their upper edges, to the metal bearing ring 1 by means of rivets 11 spaced at suitable intervals. When the container is made, they are already fitted in the mold when the process of foaming is effected.

The foamed plastic material is preferably colored black, but in any event, whatever the color of the foamed plastic, the outer surface coating 4 is colored black, and the insulating plates 3 constituting the inner lining are also colored black. Thereby any light flashes caused by technical reasons during operation of the high voltage electronic flash circuit, are prevented from escaping into the surrounding space, except through the top of the container, and the electrical equipment is usually so designed, with top closure plates or the like, that flashes cannot escape appreciably through the top opening of the container.

In order to protect the carrying strap and to enable better stackability, the carrying strap is folded into the generator container when not in use. This has the advantage that there are no protruding edges or bushes. To accomplish this infolding, the ends of the carrying strap come down against the inner surfaces of the end walls, rather than the outer surfaces, and the strap can be swung sideways around the bolts 7.

What is claimed is:

1. A container for a portable high voltage electronic flash power unit comprising a hollow body having side walls of foamed plastic material, a metallic bearing ring extending along said side walls embedded in the thickness thereof near the top edges thereof, means for attaching a carrying strap to said metallic bearing ring, and means for attaching a flash power unit within the container to said metallic bearing ring so that the weight of said power unit is transferred to the carrying strap mainly through said metallic bearing ring rather than through said foamed plastic material.

2. A container as defined in claim 1, wherein said means for attaching a strap and a power unit to said bearing ring includes a plurality of metal bushes firmly secured to said bearing ring, each of said bushes having a length corresponding substantially to the thickness of the wall where the bush is located and having a bore extending through the bush in the direction of the thickness of the wall, through which bore a fastening element may extend, for attachment to the carrying strap or the power unit, respectively.

3. A container as defined in claim 2, wherein said bearing ring is completely encircled and covered by said foamed plastic material and only the inner and outer ends of said bushes are exposed at the inner and outer surfaces of said walls.

4. A container as defined in claim 2, wherein said bushes are riveted into openings in said bearing ring.

5. A container as defined in claim 1, wherein said container includes a bottom wall integral with said side walls and also formed of foamed plastic material.

6. A container as defined in claim 5, further comprising fireproof insulation plates lining the inner faces of said side walls and bottom wall.

7. A container as defined in claim 1, wherein said foamed plastic material is colored black and has a waterproof leather grain type coating on the exterior surfaces of the container walls.

8. A container as defined in claim 1, wherein said carrying strap is attached to the container at the inner faces of the walls of the container so that the strap may be folded into the container when not in use.

* * * * *