

July 14, 1964

R. H. McCUTCHEON

3,140,908

TERMINAL CONNECTOR CAP

Filed Nov. 6, 1962

FIG. 1

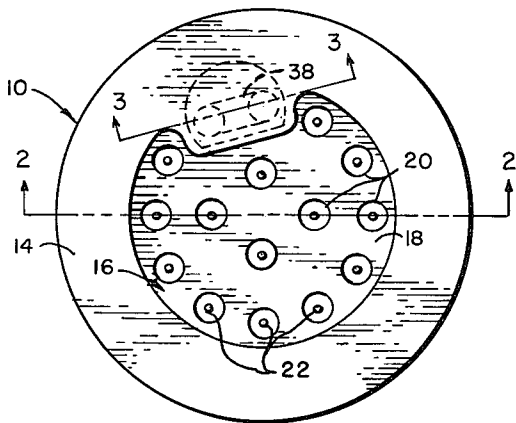


FIG. 3

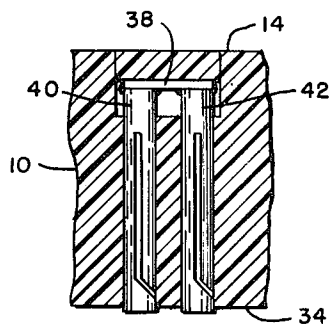
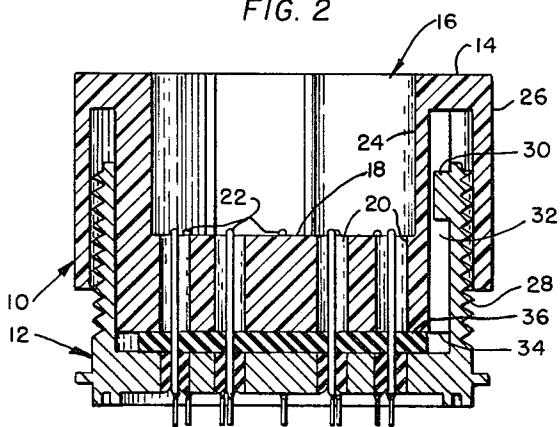


FIG. 2



INVENTOR,
ROBERT H. McCUTCHEON.

BY *Harry M. Saragovitz*

ATTORNEY

1

3,140,908

TERMINAL CONNECTOR CAP

Robert H. McCutcheon, Fair Haven, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Nov. 6, 1962, Ser. No. 235,898

3 Claims. (Cl. 339-19)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates to terminal connectors and more particularly to a terminal connector cap adapted for use with deferred action batteries.

Deferred action batteries for missile guidance systems, particularly zinc-silver oxide batteries, are activated by an electrical impulse to a gas generator which produces pressure to drive electrolyte into the cells of the battery. These batteries are contained in a sealed metal case with leads from various battery components, including the gas generator activation device, being connected to contact pins housed in a terminal connector welded to the metal case. General missile usage of these special purpose batteries requires periodic electrical checks of various battery components through these pins in the connector terminal.

In the past, to prevent activation of the battery by RF energy, the pins controlling the activation circuit were shorted out by a shorting bar incorporated in a cap which completely covered all of the pins in the terminal connector. However, this former type of cap had various shortcomings since it had to be removed from the terminal connector to make any checks of the battery components. With the cap removed, probing of the pins in the terminal connector frequently resulted in the accidental activation of these expensive batteries. Thus an urgent need existed for a practical terminal connector cap which would isolate the gas generator pins from the other pins in the terminal connector, such that the necessary checks could be made on all components other than the gas generator with no danger of activating the battery.

It is an object of this invention to overcome the above-mentioned and other insufficiencies by providing a protective cap, for a terminal connector having contact pins, comprising a body made of insulating material with a cavity therein. The base portion of the cavity is provided with a plurality of apertures in register with the contact pins of the connector. Included within the cap are means for electrically isolating and shorting out a discrete pair of contact pins, allowing for electrical checks to be made on the remaining contact pins without removing the cap from the terminal connector.

For a more detailed description of the invention, together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawing wherein:

FIG. 1 is a plan view of a terminal connector cap embodying the present invention;

FIG. 2 is a sectional view taken along line 2-2 of FIG. 1; and

FIG. 3 is a sectional view taken along line 3-3 of FIG. 1.

In a preferred embodiment of the invention shown in the drawing, a cylindrical cap 10 is positioned upon a conventional terminal connector 12 which is attached at its

2

bottom end to a deferred action battery (not shown). Cap 10 may have any other convenient conformation sufficient to fit over connector 12, and may be made of any suitable resilient insulating material.

Cap 10 is provided with a cavity 16 having a base portion 18 provided with a plurality of apertures 20. As shown, apertures 20 are in register with, and through which extend, the exposed ends of contact pins 22 of connector 12. The other ends of pins 22 are confined within the battery and are connected to various battery components (not shown). Cap 10 also includes dual side walls 24 and 26, respectively, downwardly depending from the common annular top surface 14, wherein the outer wall 26 is spaced from the inner wall 24 to provide a circular channel having a U-shaped cross-section. The inner surface of wall 24 peripherally bounds cavity 16, and the circular channel intermediate walls 24 and 26 is adapted to receive the threaded tubular part 28 of connector 12. When cap 10 is in position on connector 12, contact pins 22 extend through apertures 20 and the bottom face 34 of the cap comes to rest against surface 36 of the connector. Key 30 on the inner surface of tubular part 28 is in sliding engagement with a keyway 32 in the outer surface of wall 24 and assures alignment of pins 22 of connector 12 with their respective apertures 20 in cap 10.

FIGS. 1 and 3 show a shorting bar 38 connected across metal tubes 40 and 42, respectively, coextensive with two of the apertures 20 of cap 10. Shorting bar 38 and tubes 40 and 42 are electrically isolated with respect to the remaining apertures 20 of cap 10, and tubes 40 and 42 are adapted to electrically contact two similarly disposed contact pins 22 on the connector 12. Actually, when cap 10 is in position on connector 12, tubes 40 and 42, respectively, engage the designated gas generator pins in connector 12 leading to the battery activating circuit.

Thus, with protective cap 10 on connector 12, the gas generator pins in connector 12 are electrically isolated from the other contact pins so that the necessary electrical checks can be made through the exposed ends of pins 22, with no chance of activating the battery. The battery activating circuit can be checked when necessary by removal of cap 10.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is therefore aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A protective cap for a terminal connector having contact pins comprising a body of insulating material including a cavity having a base provided with a plurality of apertures in register with said contact pins, said contact pins extending through said apertures, and means within said cap for electrically isolating at least one pair of contact pins, and means for shorting out said isolated pins.

2. The protective cap claimed in claim 1 wherein said means for shorting out a discrete pair of contact pins comprises discrete electrical conductors coextensive with said apertures and in intimate contact with said discrete pair of contact pins, and a shorting bar connecting said conductors.

3

3. In a deferred action type missile battery having a terminal connector with contact pins therein, a protective cap for said terminal connector comprising a body made of insulating material including a cavity having a base provided with a plurality of apertures, means for maintaining said apertures in register with said contact pins of the terminal connectors, said contact pins extending through said apertures, and means within said cap for electrically isolating at least one pair of contact pins, and means for shorting out said isolated pins.

5

10

4

References Cited in the file of this patent

UNITED STATES PATENTS

1,230,826	Campbell	June 19, 1917
1,652,708	De Loeuw	Dec. 13, 1927
1,778,062	Butzke	Oct. 14, 1930
2,338,316	Buzzell	Jan. 4, 1944
2,428,323	Winer	Sept. 30, 1947
2,594,069	Poehlmann	Apr. 22, 1952
2,916,994	O'Neill	Dec. 15, 1959
3,059,576	Haefner	Oct. 23, 1962