

[54] **SELF-PROTECTIVE DEVICE**  
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[22] Filed: **Sept. 29, 1969**  
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[52] U.S. Cl. .... **222/3, 222/135, 239/304**  
[51] Int. Cl. .... **B67b 7/24**  
[58] Field of Search .... **222/3, 39, 402.13, 182, 6, 222/469, 470; 42/1; 116/137, 112; 239/304, 307**

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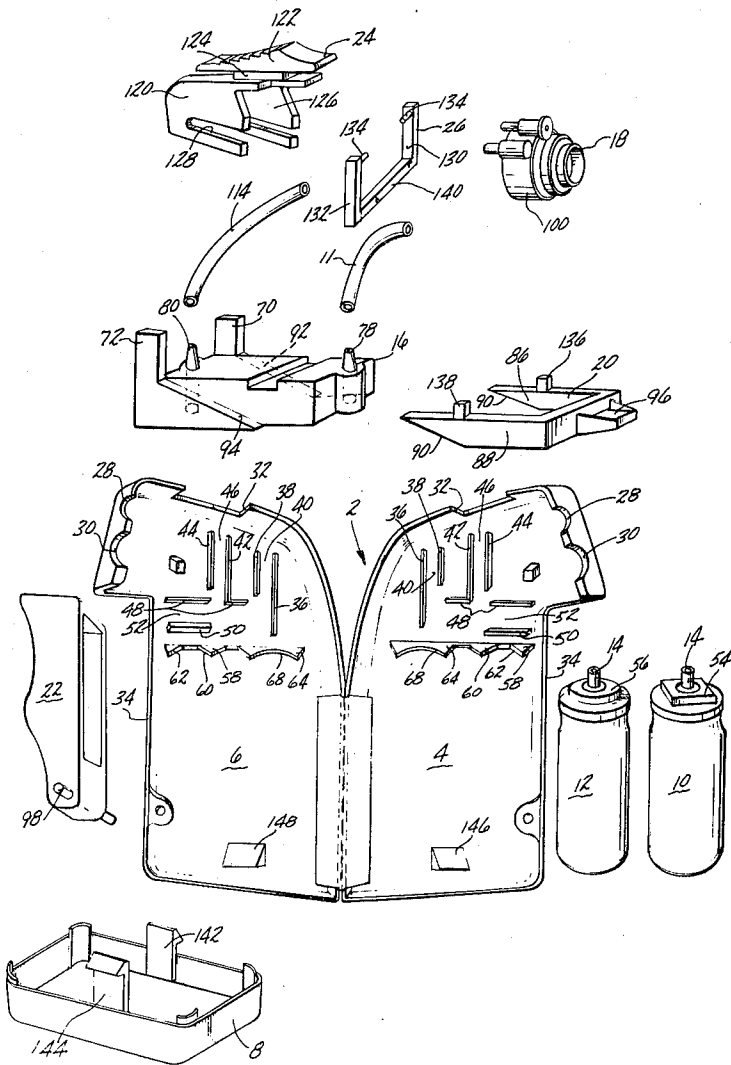
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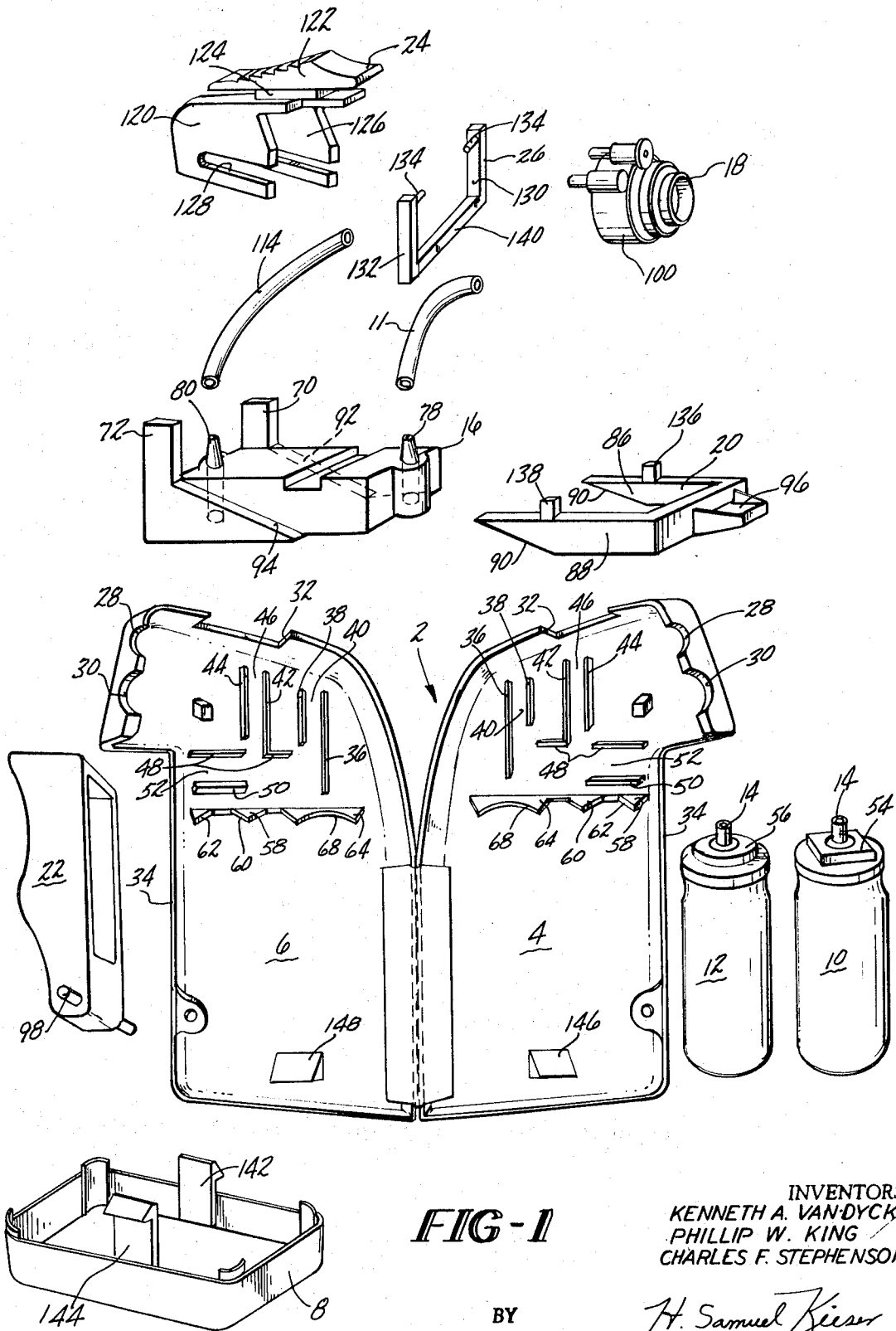
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[57] **ABSTRACT**  
A nonlethal self-protective device utilizing pressurized cans of an incapacitating fluid and a gaseous fluid. The device includes a nozzle for dispensing the incapacitating fluid and a whistle which is activated by the gaseous fluid. The contents of the cans are released by the actuation of a trigger which in turn actuates a camming member which moves a valve actuator to depress the valve stems of the cans.

**3 Claims, 4 Drawing Figures**





**FIG-1**

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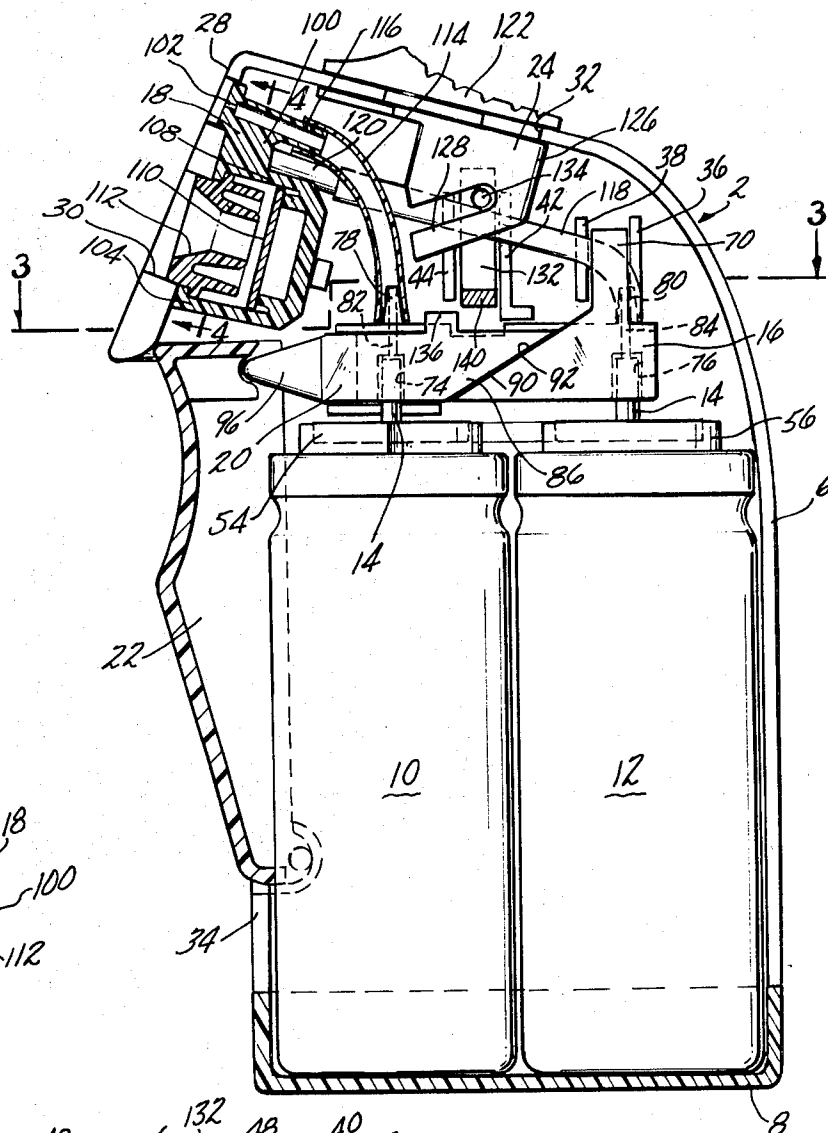


FIG-4

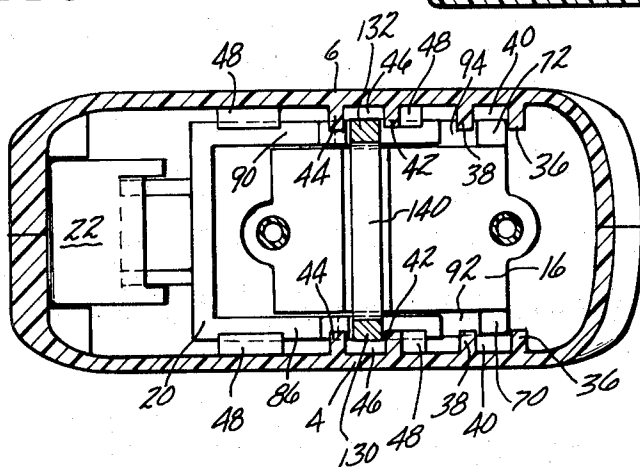


FIG-3

FIG-2

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## SELF-PROTECTIVE DEVICE

This invention relates generally to a self-protective device. More particularly, this invention relates to a device which can be used by a person for protecting himself against an attacker but which will not permanently harm the attacker.

With the upward trend of crime rates, especially of those crimes which are committed against the person, the public is becoming more afraid to travel alone, at night, and in areas lacking proper police protection where the chances of criminal attack is greater. However, a mobile society such as exists today, requires that individuals move about. Thus, many people are desirous of equipping themselves with some type of device which will protect them against a possible attacker.

One device that has been suggested utilizes tear gas. Such a device is usually in the form of a pistol or an elongated penlike object small enough so that it can be carried in the pocket or handbag. However, a device of this type may permanently harm an attacker and also, may not be approved by some authorities.

The present invention has for one of its objects the provision of an improved self-protective device.

Another object of the present invention is the provision of a self-protective device which upon actuation will emit a spray of nonlethal fluid to temporarily incapacitate an attacker as well as an audible signal to summon aid.

Yet another object of the present invention is the provision of a nonlethal, self-protective device which is compact in size, readily concealable, and easy to actuate.

These and other objects of the present invention will become more apparent by reference to the following description of a preferred embodiment and to the accompanying drawings in which:

FIG. 1 is an exploded view showing the various components of the device;

FIG. 2 is a side view, partially in section, of the device with one-half of the housing removed;

FIG. 3 is a view taken in the direction indicated by line 3—3 of FIG. 2; and

FIG. 4 is a cross-sectional view taken along the lines 4—4 of FIG. 2.

In general, the self-protective device of the present invention consists of a housing 2 comprising right-hand and left-hand housing members 4 and 6 and a bottom cover 8. Mounted within the housing are two aerosol cans 10 and 12, one of which 10 contains an incapacitating fluid under pressure and the other of which 12 contains a pressurized gaseous fluid. Each of the aerosol cans 10 and 12 are of the type commonly available on the market and include stems 14 extending from the top of the can and adapted to be depressed to cause release of the contents of the can. A valve actuator 16 is attached to the valve stems 14 of cans 10 and 12. A whistle and nozzle unit 18 is provided with connection being provided between the unit 18 and the aerosol cans 10 and 12. A camming member 20 is provided in association with the valve actuator 16 and mates with a trigger 22 so that when the trigger is depressed, the camming member 20 serves to move the valve actuator 16 in a direction which will depress the valve stems 14 causing the contents thereof to be released and pass through the whistle and nozzle unit 18 to provide a spray of incapacitating fluid and an audible signal. A safety 24 is provided in conjunction with a safety latch 26 to prevent movement of the camming member 20 when the safety is in the "on" position to prevent the accidental operation of the device.

More specifically, as can be seen in FIG. 1, the right-hand and left-hand housing members 4 and 6 are mirror images of each other. Each of the housing members 4 and 6 contain two semicircular openings 28 and 30 in their forward edge portion to provide an outlet for the whistle and spray from the nozzle of unit 18. A cutout 32 is provided on the top edge of each of the housing members 4 and 6 for reception of the safety 24. In addition, a cutout 34 is provided in the front edge of the members for reception of the trigger 22.

The internal surface of each of the housing members includes raised guide surfaces which are preferably molded integral with the members. The guide surfaces include a first pair of spaced, elongated projections 36 and 38 which form a channel or groove 40 extending in the direction of the axes of the cans 10 and 12. A second set of spaced, elongated projections 42 and 44 form a channel 46 which is positioned forwardly of the first set and extends parallel to the axes of the cans 10 and 12. A third set of spaced, elongated projections 48 and 50 are provided which form an elongated channel or groove 52 extending in a direction perpendicular to the axes of the cans 10 and 12.

The can 10 which contains the incapacitating spray is provided with a square collar 54 adjacent its upper end. The can 12 containing the gaseous fluid is provided with a circular collar 56 in a similar location. Each of the housing members 4 and 6 are provided with an inwardly extending can-mounting projection 58 which includes two planar portions 60 and 62 extending at right angles to each other. The aerosol can 10 is placed in the housing so that the adjacent sides of the square collar 54 are in engagement with the two planar portions 60 and 62 of projection 58. For mounting the can 12 which contains the gaseous fluid, each of the housing members 4 and 6 are provided with an inwardly extending projection 64 having an arcuate inner face 68 which is adapted to engage the edge of the circular collar 56.

The valve actuator 16 includes two spaced upright posts 70 and 72 at its rearward end. The posts 70 and 72 ride in the channel 40 in each of the housing members 4 and 6. The valve actuator 16 also includes two cylindrical apertures 74 and 76 into which the valve stem 14 of each of the cans 10 and 12 extend. Two tapered outlets 78 and 80 are provided immediately above the cylindrical apertures 74 and 76, respectively, and communication is provided therebetween by bores 82 and 84.

The camming member 20 comprises a generally U-shaped member and is mounted in the housing with the spaced legs 86 and 88 thereof riding in the oppositely disposed channels 52 in the housing members 4 and 6. The rearward ends of the legs 86 and 88 are tapered as indicated at 90 and mate with cam surfaces 92 and 94 on the valve actuator 16. The camming member 20 also includes a reduced forwardly extending portion 96 which is adapted to mate with the trigger 22. The trigger 22 is pivotally attached to the housing members 4 and 6 by means of a pin member 98 extending through suitable apertures.

The nozzle and whistle unit 18 comprises a one-piece body member 100. The body member 100 includes a nozzle portion 102 positioned adjacent the opening 28 in the housing members 4 and 6 and a whistle portion 104 positioned adjacent the opening 30. The whistle portion 104 includes a counterbore 106 forming a shoulder 108 therein. A disc member 110 which forms a diaphragm, is fixedly attached to the shoulder 108. A funnel-shaped member 112 is inserted within the counterbore 106 to provide a megaphone effect to the whistle.

Suitable tubing 114 extends from the inlet 116 of the nozzle portion of the whistle and nozzle unit 18 to the tapered outlet 78 of the valve actuator 16. Similarly, suitable tubing 118 connects the inlet 120 of the whistle portion 104 to the tapered outlet 80 of the valve actuator 16.

The safety 24 includes a button 122, a reduced neck portion 124 and two spaced planar portions 126. The safety 24 is mounted in the housing such that the neck portion 124 is disposed within the cutout 32 with the safety button 122 riding along the outer surface of the housing members 4 and 6. The planar portions 126 include a cutout track 128 which extends at an angle with respect to the axes of the can members 10 and 12.

The safety latch 26 comprises a generally U-shaped member having two oppositely disposed leg portions 130 and 132 provided with pin members 134 at their free end. The leg portions 130 and 132 are guided for movement within the housing by the projections 42 and 44 which form channels 46 in which the leg portions are mounted. The pin members 134 extend

into the tracks 128 in the safety 24. The camming member 20 is provided with upstanding projections 136 and 138 which are adapted to abut the transverse portion 140 of the safety latch 26 when the safety is in the "on" position.

To assemble the device, all that is necessary is that the various components, excluding the cans 10 and 12, be positioned in their respective opening, cutout or channel in one of the housing members 4 and 6. The other housing member may then be brought into mating engagement with the first housing member and clamped together by any suitable means such as a resilient clip or suitable adhesive tape. When the two housing members 4 and 6 are assembled together, the cans 10 and 12 may be inserted through the bottom opening and the bottom cover 8 attached thereto. The bottom cover 8 includes detents 142 and 144 extending upwardly from the sidewall thereof and adapted to mate with indentations 146 and 148 in the wall of the housing members 4 and 6 to secure the bottom cover 8 thereto.

In operation, with the safety in the "off" position as shown in FIG. 2, when the trigger 22 is depressed, the camming member 20 moves in channel 52 in a direction perpendicular to the axes of the cans 10 and 12. The rearward ends of the legs 86 and 88 of the camming member 20 act on the cam surfaces 92 and 94 on the valve actuator 16. As the valve actuator is constrained from movement in a direction perpendicular to the axes of the cans 10 and 12 by projections 36 and 38, the taper of the cam surfaces will cause the valve actuator 16 to move in a downward direction parallel to the axes of the cans 10 and 12 depressing the valve stems 14 thereof and causing release of their contents. When the trigger 22 is released, the components will move to their original position by virtue of the biasing effect provided by the springs used in connection with the valve stems 14 of the aerosol cans 10 and 12.

When the safety 24 is moved rearwardly to the "on" position, the track 128 will act on the pin members 134 of the safety latch 26 causing it to move downwardly within channels 46. When the safety latch 26 is in its downward position, the transverse portion 140 thereof will be positioned immediately behind the upstanding projections 136 and 138. Thus, as pressure is applied to the trigger movement of the trigger and camming member 20 will be prevented by the safety latch 26, thereby preventing accidental discharge of the contents of the cans 10 and 12.

It will thus be seen that by virtue of the above-described invention a nonlethal, self-protective device is provided which is compact, easy to manufacture and assemble, and easy to use. Also, as the can containing the pressurized fluid has a differently shaped collar than the can containing the pressurized

incapacitating spray, and since the housing has differently shaped projections for the reception of the cans, one projection is adapted to mate with one collar and the other adapted to mate with the other collar, it will be assured that the proper can is inserted into the proper place in the valve actuator.

What is claimed is;

1. A protection device comprising a housing, means in said housing for mounting a container of a pressurized protective fluid, means in said housing for mounting a container of pressurized gaseous fluid, a first member having ports for the reception of the nozzles of said containers, means mounting said first member in said housing for movement in a direction parallel to the axes of the containers and preventing movement in a direction perpendicular thereto, a second member having a cam surface, means mounting said second member in said housing for movement in a direction perpendicular to the axes of the containers and preventing movement in a direction parallel to the axes of the containers, means on said first member for engagement by said cam surface for moving said first member in a direction toward said containers when said second member is moved in a direction perpendicular to said containers, a trigger mechanism pivotably attached to said housing and in engagement with said second member to move said second member, a gas operated whistle mounted in said housing, said whistle including a gas inlet, a nozzle unit in said housing having an outlet communicating with the exterior of said housing and an inlet, first duct means connecting the port receiving the nozzle of the container of protective fluid to the inlet of said nozzle for providing a fluid passageway therebetween, and second duct means for connecting the other port to the whistle inlet for providing a fluid passageway therebetween.

2. The protective device of claim 1, further including safety means movable between an "on" position and an "off" position for preventing movement of said members when the safety is in the "off" position and said trigger is pressed.

3. The protective device of claim 2, wherein said safety means includes a safety button mounted for movement in said housing, a safety latch, means mounting said safety latch in said housing for movement in a direction parallel to the axes of said containers and constraining it from movement in a direction perpendicular thereto, means interconnecting said latch and button so that upon movement of said button to the "on" position said safety latch is moved toward said containers in a direction parallel to the axes thereof, and means on said latch for abutting said safety latch when said safety button is in the "on" position.

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UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 3635372 Dated 1-18-72

Inventor(s) Kenneth A. Van Dyck et al

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In column I, line 47, "10" should read --(10)--

In column I, line 48, "12" should read --(12)--

In column I, line 50, insert --valve-- between "include stems"

In column 3, line 47, delete "he" and insert --the--

Signed and sealed this 30th day of May 1972.

(SEAL)

Attest:

EDWARD M. FLETCHER, JR.  
Attesting Officer

ROBERT GOTTSCHALK  
Commissioner of Patents