

[54] **POCKET NOISE MAKING AND ALARM DEVICE**

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[52] U.S. Cl. .... **340/384, 340/388**

[51] Int. Cl. .... **G08b 3/10**

[58] Field of Search. .... **340/388, 384 E**

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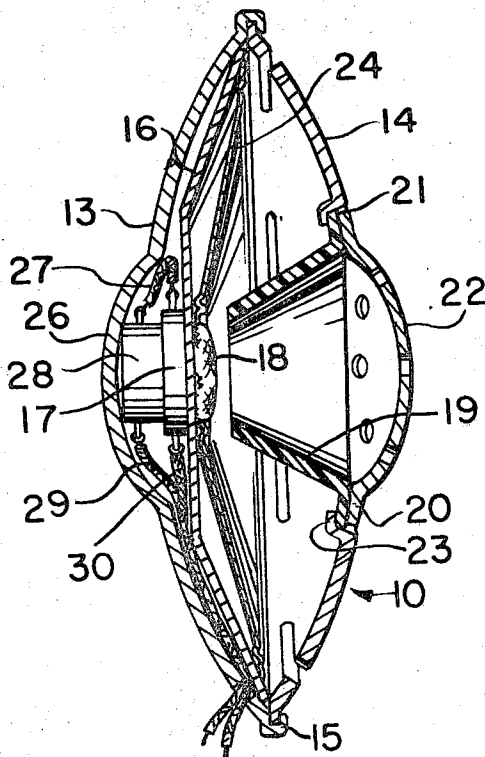
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[57] **ABSTRACT**

A personal noise making and alarm signal device which can be worn in the pocket of a garment, comprising two concave parts opposingly connected together at their peripheries. Within the enclosure is an electric sound producing device, including an electromagnetic speaker, sounding board means carried by the electromagnetic speaker and by one of the parts, a cone carried by one of the parts and having its small opening lying close to the loud speaker device and a combined battery and push button switch device connected in circuit relation with the sound producing and loud speaker devices, the combined battery and switch contact device including a switch button unit adapted to be alternately extended and retracted for engagement with the battery contacts or disengagement of the battery contacts. A combined battery and switch may be confined within the enclosure or may be a separate unit and wired to the sound producing and loud speaker device. When the combined battery and switch device is disposed in the enclosure an enlarged cover member engages the switch button and is spring biased from a partition wall toward a retaining ring secured in an enlarged opening in one of the parts. A plug outlet is provided on the enclosure parts to supply a separate combined battery and push button unit to effect operation of the unit separate and apart from the sound producing and loud speaking unit.

**3 Claims, 18 Drawing Figures**



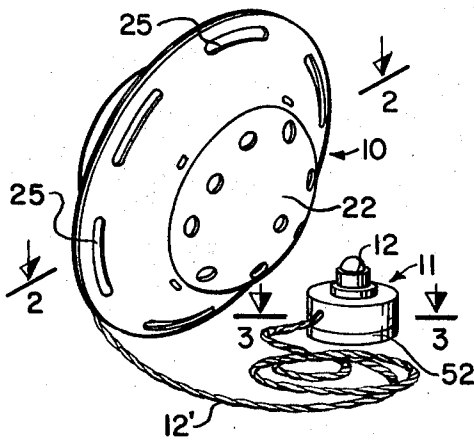


FIG. 1

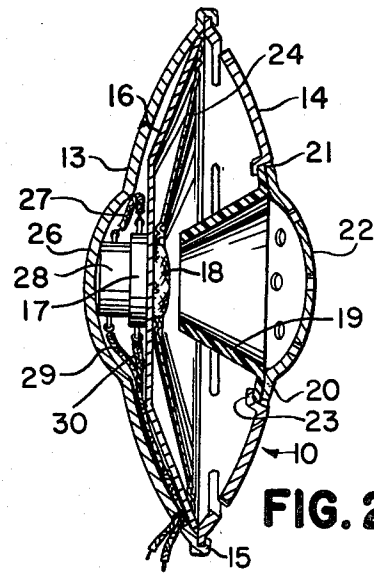


FIG. 2

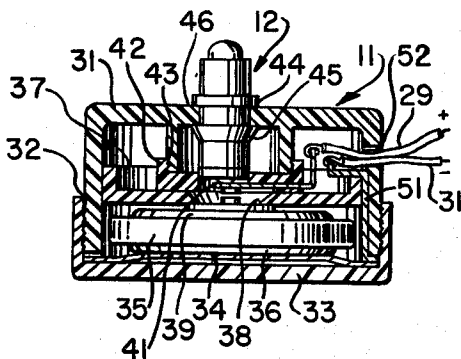


FIG. 3

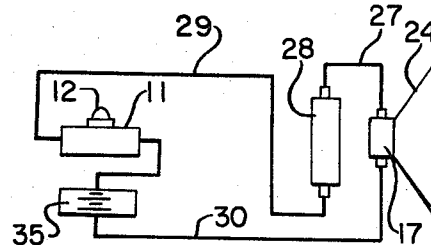


FIG. 5

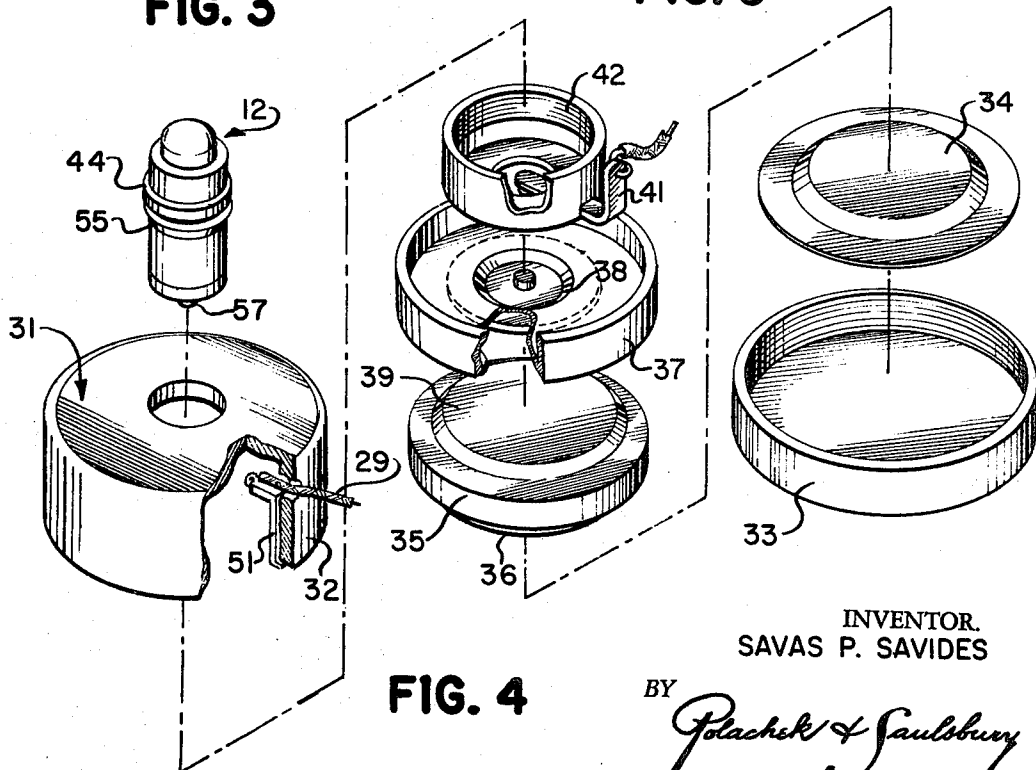


FIG. 4

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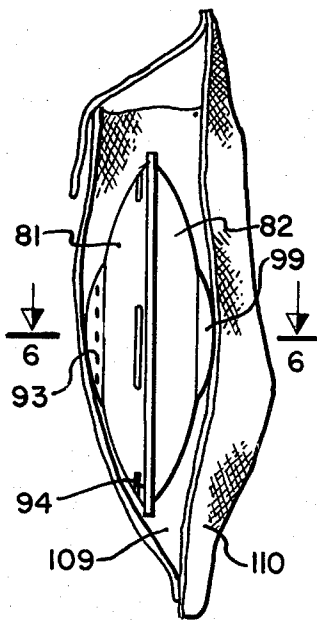


FIG. 7

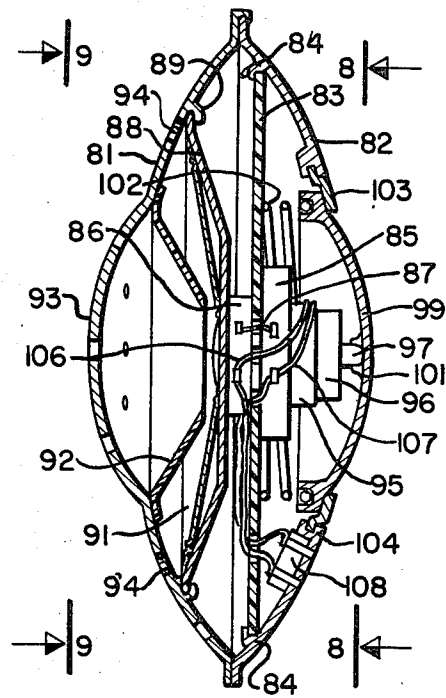


FIG. 6

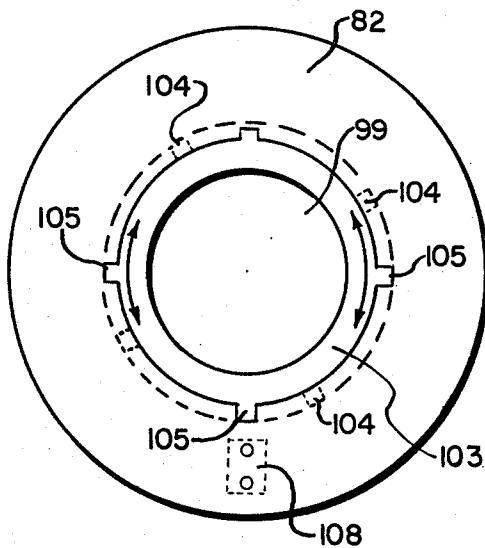


FIG. 8

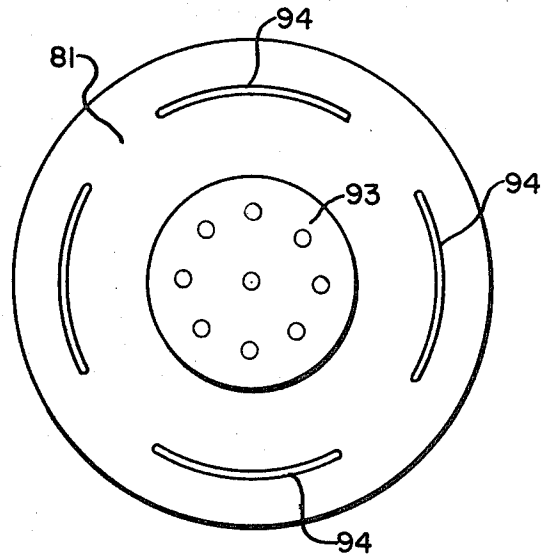


FIG. 9

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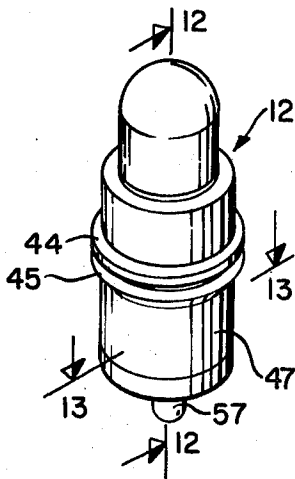


FIG. 10.

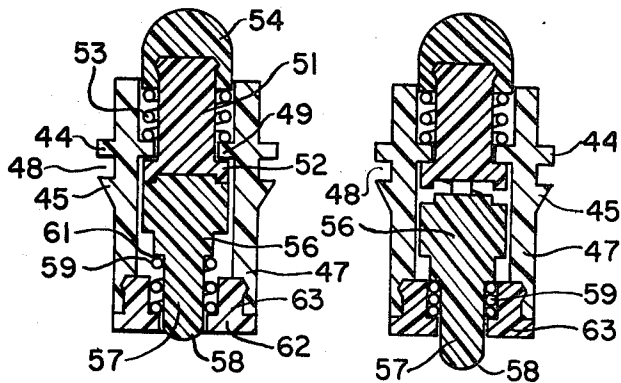


FIG. 11.

FIG. 12.

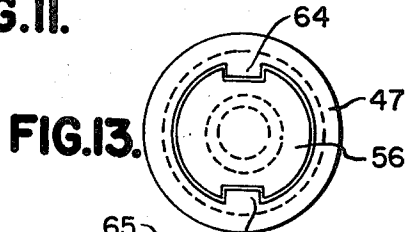


FIG. 13.

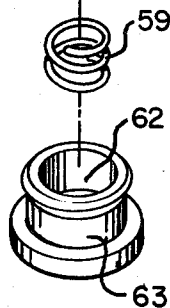


FIG. 14.

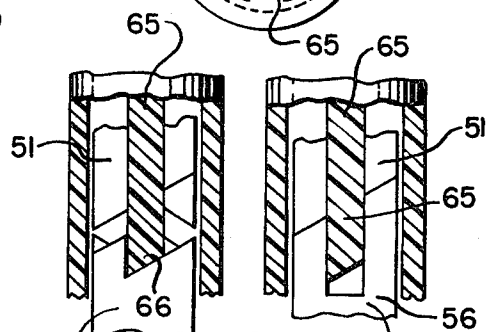


FIG. 15.

FIG. 16.

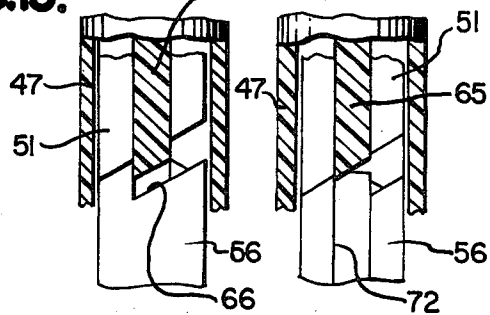


FIG. 17.

FIG. 18.

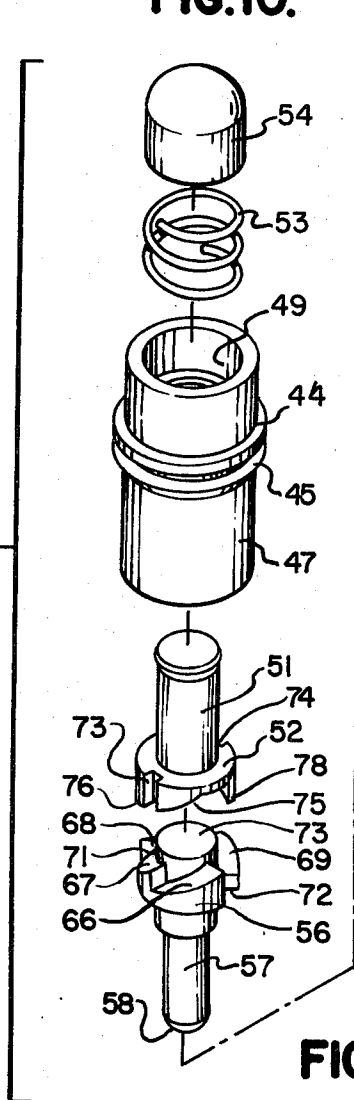


FIG. 14.

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## POCKET NOISE MAKING AND ALARM DEVICE

This invention relates to a noisemaking and alarm signal device.

It is an object of the present invention to provide a noise making or warning signal device, which a warning or noise can be self contained within a small unit adapted to be carried and which includes electric battery and electric sound producing and loud speaker units in the same enclosure.

It is another object of the invention to provide a noise making and loud speaker device that is self contained, including a combined battery and push button unit and with a push button assembly adapted to be operated to be pushed at one time to effect actuation of the loud speaker and when pushed at another time to effect the disengagement of the contacts of the battery to arrest the noise.

It is another object of the invention to provide a noise making and warning signal device in which the switch unit is made a part of the device, but wherein an enlarged button will be provided over the device to render the actuation of the push button effective by mere depressing of the device against the inner wall of the pocket upon the device being carried in the pocket.

It is a further object of the invention to provide a device that can be carried on the collar or the lapel of a coat as well as in the pocket which is generally egg shaped, formed of externally convex hollow parts opposing one another and secured at the peripheries to each other.

It is still a further object of the invention to provide a noise making and warning signal device which can be worn by different people and that can be set to utter beep signals at intervals of varying lengths.

Other objects of the invention are to provide a noise making and warning signal device having the above objects in mind, which is of simple construction, easy to assemble, has a minimum number of parts, effective and efficient in use, durable and self contained.

For a better understanding of the invention, reference may be had to the following detailed description, taken in connection with the accompanying drawings in which:

FIG. 1 is a perspective view of the warning signal device adapted to be placed in the pocket and of a push down switch and battery device connected by wire to control and supply current delivered to the vibrating sound device.

FIG. 2 is an enlarged transverse sectional view of the sound signal device separate from the combined battery and push button device, as viewed on line 2—2 of FIG. 1.

FIG. 3 is a vertical sectional view of the combined battery and push button device as viewed on line 3—3 of FIG. 1.

FIG. 4 is an exploded perspective view of the several parts of the combined battery and push button device.

FIG. 5 is a wiring diagram including the switch, battery, vibrating device and loud speaker.

FIG. 6 is an enlarged vertical sectional view of a modified electric vibrating sound signal device in which the battery and the push button switch is assembled in the same casing with the sound vibrator and loud speaker, the view being taken on line 6—6 of FIG. 7.

FIG. 7 is a full elevational view of the sound signal device of FIG. 6 inserted in a pocket of a garment and with the press button side of the device lying against the inner side of the pocket.

FIG. 8 is a vertical elevational view of the combined sound signal and push button device of FIG. 6 and looking upon line 8—8 of FIG. 6 and from the push button side of the device.

FIG. 9 is an elevational view of the combined sound and switch member device as viewed on line 9—9 of FIG. 6 and looking upon the loud speaker or sound distributing side of the device.

FIG. 10 is a top perspective view of the double acting self contained push button actuator.

FIG. 11 is a vertical sectional view of the actuator with the bottom shank pin retracted, the view being taken generally on line 12—12 of FIG. 10.

FIG. 12 is a vertical sectional view in which the actuator shank pin has been extended as in FIG. 10 and as viewed on line 12—12 thereof.

FIG. 13 is a transverse sectional view taken on line 13—13 of FIG. 10.

FIG. 14 is a perspective and collective view of the several parts of this button switch actuator.

FIG. 15 is a diagrammatic view illustrating the position of the operating parts when the switch actuator shank is extended.

FIG. 16 is a diagrammatic view of the switch operating parts when the switch actuator shank is retracted.

FIG. 17 is a diagrammatic view illustrating the manner in which the bottom part is being depressed free of a vertically extending guide rib.

FIG. 18 is a diagrammatic view when the lower operating part has been made free of the vertically extending guide rib to enable it to be rotated for alignment with a slot so that it can be retracted.

Referring now particularly to FIGS. 1 to 4, there is shown one form of the invention comprising an electric sound producing device indicated generally at 10, a combined battery and push button switch device 11, separated from the sound device 10 and adapted to be carried in the pocket separate from the pocket or lapel by which the sound device is carried and an interconnecting double wire cable 12' by which current can be supplied to the sound device 10 when press button 12 of the combined battery and press button device 11 is depressed.

The sound producing device 10, as best seen in FIG. 2, comprises generally two dish-shaped parts 13 and 14 joined in opposing relationship to one another by a folded over flange 15 of the part 13 extended over and locked with the outer periphery of the part 14. Joined in the connection of the two parts 13 and 14 at the periphery of the parts is the periphery of a concave sounding board 16. The sounding board carries in its center an electromagnetic sounding device 17 having a perforated central sound face 18 extending forwardly from the sound board 16 to blast a signal or a note such as a beep note of any desired frequency into the small end of a plastic funnel or horn 19 which is flanged at its outer end as indicated at 20 and secured in an opening 21 by a perforated convex cover plate 22 held in tight fitting engagement against a rearwardly and inwardly struck lip 23 surrounding the opening 21. Treble or high sounds will be blasted from the speaker device 17 and through the funnel shaped cone 19. Carried on the speaker device 17 about the perforated front face 18 is a paper or plastic large diameter cone 24 overlying the main mounting sound board 16. From the annular space surrounding the funnel shaped cone 19 and the paper or plastic cone 24 base or low deep sounds will be broadcast along with the high tone sounds that pass through the central cone 19. The front part 14 is perforated as by elongated openings 25 adjacent to the outer periphery of the part 14 and through which the sound may be imparted.

The rear part 13 is bulged at its center as indicated at 26 to accommodate an electric sound producer or vibrator 28 for electrically feeding audio frequency signals to the loud speaker 17 through an interconnecting wire 27. This sound producer is connected in series with the electromagnetic speaker 17 and they may be in turn connected by outgoing wires 29 and 31 forming a part of the cable 12' to the combined switch and battery device 11. As sound is delivered to the loud speaker device 17 as by pressing the button 12 a noise will result. This sound can be in the nature of beeps of different frequency depending upon the nature of the sound producing device 28. A top inverted cup shaped part 31 having a threaded side wall 32 to which there is threaded a supporting cap 33 having a metal plate conductor 34 on its inner face supporting a flat mercury type battery 35 with its negative terminal face 36 resting upon the metal plate 34. Within the inverted cup shaped member 31 is a shallow receptacle or partition 37 having a central opening 38 upwardly through which

a positive terminal 39 extends for engagement by a movable contact 41 carried by a smaller receptacle 42 that is internally threaded with a depending cylindrical wall portion 43 that depends from the top of the inverted cup shaped member 31 and contains the push button device 12 that is held by its flanges 44 and 45 in central opening 46 in the inverted cup shaped member 31.

This switch device 12 is a self contained unit, the details of which are best shown in FIGS. 10 to 18. This push button switch unit or actuator will operate alternatively "off" and "on." This unit 12 comprises a sleeve 47 to contain the inner operating parts of the actuator 12 and from which the mounting flanges 44 and 45 radially extend, the flange 45 being tapered about its outer periphery and sufficiently weakened so that upon axially applying downward pressure the flange 45 will be compressed circumferentially to force the actuator 12 downwardly over the edge of the opening 46 in the inverted cup shaped member and home in the opening, the space between the two flanges 44 and 45 as indicated at 48 accommodating the opening periphery and maintain the push button actuator 12 in a rigidly mounted position in the inverted cup shaped member 31.

Within the sleeve 47 and at the same level of the flange 44 is an internal flange 49 against the underface of which, a cam operating member 51 has its widened lower end 52 shouldered when forced upwardly thereagainst by a compression spring 53 lying above the internal flange 49 and acting upon a rounded button 54 tightly gripping the upper end of the member 51. To operate the actuator the button 54 is depressed against the action of the spring 53 to move downwardly a cooperating operating member 56 that has cam projections on its upper face adapted for engagement by cam projections on the downward face of the operating member 51 that are worked with one another in much the same manner that a retractable ball point pen mechanism works and in a manner as will be described more in detail. This operating member 56 has a depending shank 57 that has a rounded bottom end face 58 that engages the contact 41 to make engagement with the battery contact 39 and to hold the same when the operating parts 51 and 52 are oriented about the vertical axis in a position to maintain the shank 57 in its extended position as shown in FIG. 12 against the action of a bottom compression spring 59 surrounding the operating member shank 57 and reacting between a shoulder 61 thereon and an internal flange portion 62 of a bottom retaining ring snapped gripped into the lower end of the sleeve 47.

The inner cylindrical surface of the sleeve 47 has opposing guide ribs projecting inwardly and extending vertically upon the wall as best shown in FIG. 13 at 64 and 65 and in FIGS. 15 to 18. These ribs are elongated and have oppositely inclined work ends for receiving upper cam surfaces 66, 67, 68 and 69 all inclined downwardly from right to left with the inclined surfaces 67 and 69 ending in opposing vertically extending slots 71 and 72 which are adapted to receive for sliding engagement therewith the respective opposing ribs 64 and 65 when the cam member 56 is so oriented circumferentially therewith. The cam surfaces 66, 67, 68 and 69 are arranged about a cylindrically shaped central portion 73.

The upper operating member 51 is attached or tight fitted to the push button 54 is axially adjustable and its shoulder portion 52 has opposing slots 73 and 74 which receives the respective ribs 64 and 65 and holding member 51 against rotation while permitting the member 51 to be depressed axially. Work faces 75, 76 and 78 confront the respective incline faces 66, 67, 68 and 69 and being inclined will work against these faces on the bottom member 56 to cause the rotation of the member 56 after the member 51 has depressed the member 56. The opposite slots 71 and 72 on the member 56 will then be out of engagement with the lower ends of the vertically extending guide ribs 64 and will cause the operating member 56 at this time to be worked about one step at a time with each depressing of the operating member 51. Thus at one time the inclined curved surface 66 will come into engagement with the

lower inclined end of the rib 65 as shown in FIG. 15 so that the rotatable member 56 will be held down and its shank 57 will be depressed through the opening in the retainer ring 63 as shown in FIG. 12 so as to effect, by engagement with the contact 41, the closing of the contacts 41 upon the battery contact 39. In this manner the contacts are so held closed until the next depressing of the upper operating member 51. When upon depressing the operating member 51 the lower operating member 56 is again worked for the next rotational step the slots 71 and 72 will receive the ribs 64 and 65 so that the operating member 56 can be elevated under the action of its compression spring 59 and the spring contact 41 permitted to move away from the battery contact 49, and as shown in FIG. 16. Thus it will be seen that with each depression of the member 51, the rotatable operating member 56 will be released from the ribs 64 and 65 and rotated due to the joining of opposing inclined cam surfaces of the respective operating members 51 and 56 and with each alternate depression the shank 57 of the operating member 56 will be depressed and the switch connection with the battery closed at which time the vibrator 28 of the sound device will be operated to energize the speaker assembly 17. The noise from the speaker can be in the form of a beep made at any desired intervals.

In FIG. 17 there is shown the beginning of a downward movement of the upper operating member 71 which will permit the lower operating member 56 to be released from the notch 56 and the member 56 rotated so that the slot 72 of the member 56 can next become vertically aligned with the vertically extending rib 65 and the member 56 elevated over the ribs 64 and 65 to place the operating member 56 in the up position and the battery contacts broken. Thus there has been provided a push button actuator which is self contained in which the button can be first depressed to actuate the contacts and then again depressed to permit the contacts to be opened. It will also be apparent that this push button actuator is easily assembled into the battery and switch device 11.

Referring now to the FIGS. 6 to 9 in which it will be noted that the battery and the switch has been combined into the sound producing and speaking device of the first form of the invention. Instead of having a separate switch and battery unit 11 the same is incorporated into one casing with the vibrator and sound producing speaker. This combined sound producing device comprises two parts 81 and 82 joined together at their peripheries by bending about one of the parts the external flange of the other. The rear part 82 has a partition or mounting wall 83 that is held in place by inwardly struck projections 84 of the part 82. This partition 83 carries at a central location a sound producer or vibrator 85 and on the opposite side of the partition 83 it carries an electromagnetic speaker 86 that are electrically wired together by an interconnecting wire 87 and corresponding to the wire 27 in the wiring diagram of FIG. 5. The speaker 86 carries a sounding board cone 88 that has its periphery secured in place upon the part 81 by inwardly struck projections 89 thereof and supporting a paper cone 91. A funnel shaped member 92 is secured to the inner face of the part 81 to receive the treble or high sounds so as to impart the same through a perforated forwardly bulged portion 93 of the front part 81. The base sounds will be imparted through arcuate projections 94 circumferentially spaced about the part 81 as best seen in FIG. 9.

Mounted upon the sound producing unit 85 and extending rearwardly therefrom is a combined battery and contact switch unit 95 having the elements except being differently shaped as shown in FIG. 3, including a battery with its contacts and a spring contact adapted to be actuated by a push button actuating device 96 that is self contained and operated from a button 97 in a manner such as described in connection with FIGS. 10 and 18. In other words the switch can be first operated to the "on" position and with the next depression the switch can be turned "off."

In order to prevent easy operation of the push button and to provide contour conforming generally in shape to the rearwardly concave part 82, an enlarged internally concave and

externally convex operating button 99 is attached at its center by an inner projection 101 to the switch actuator button 97 and this member 99 extends over a large area and its outer periphery receives on its inner face a compression spring 102 that abuts the partition wall 83 and pushes the member 99 outwardly against a releasable retaining ring 103 that is held in place by the interlocking of radially outwardly extending lugs 104 which can be passed through slots 105 circumferentially spaced about the central opening in the part 82 so that upon locating the projection 104 in the slots 105 and depressing the member 99 and at the same time turning the same the projections 104 will be oriented under the inner periphery of the opening of the part 82 and held in place against the action of the spring 102 working upon the member 99. By merely depressing the member 99 the switch actuator button 97 is depressed so that the contacts within the combined battery and contact device 95 will be closed and current will be permitted to flow. Wires 106 corresponding to wires 29 and 30 are located internally of the devices, but in order to permit a connection to an external push button switch so that the combined device of FIG. 6 can be used in the same manner as the separated sound producer 10 and the combined battery and switch unit 11, wires 106 and 107 are extended from the battery and switch unit 95 to a jack receptacle 108 carried on the part 82.

It should be apparent that the device shown in FIGS. 6 to 9 is self contained and it is a complete assembled unit that can be dropped into a person's pocket 109 on a garment 110 as shown in FIG. 7. The user of the device merely has to press the device against his body while it remains in his pocket in order to get the externally convex push button extension 99 to be operated to start the sound signals. Another push of the device while in the pocket can stop the noise or signals from being imparted. It will be apparent that with these devices that there has been provided a means to keep the signal flowing and without having to keep the finger upon the push button to hold the devices in operation.

This device can be used as a toy and can be used as a warning signal by one being attacked and with the form shown in FIGS. 6 to 9, the device once it is depressed can be removed from the person to a location where it may continue to make noise and where the attacker will not have ready access to the same.

While various changes may be made in detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the ap-

ended claims.

What is claimed is:

1. A personal noise making and alarm signal device adapted for disposition in a pocket of a garment, comprising a casing having opposing outwardly bulged apertured front and rear parts peripherally joined together; a partition in the casing extending diametrically across the casing; an electromagnetic loud speaker mounted on the partition facing the front part of the casing; a conical horn in front of the speaker with the smaller end of said horn adjacent the loud speaker for directing treble tones outwardly of the apertured front part of the casing; a conical sounding board around the loud speaker; a conical diaphragm in front of the sounding board and behind the horn for directing bass tones outwardly of the front part of the casing; an audio frequency signal generator mounted on the partition; a battery in the casing behind the partition for energizing the signal generator and loud speaker; push button operated switch means on the partition in the casing connected in a circuit with the generator and battery for applying power to the generator and loud speaker when the switch means is closed; and a push button member disposed behind the switch means to operate the switch means, said push button member projecting rearwardly out of the apertured rear part of the casing so that the switch means, generator and loud speaker are actuated when the casing is pressed against the body of a person wearing the garment to close said circuit.

2. A personal noise making and alarm signal device as defined in claim 1, wherein said switch means includes means for holding the switch in closed condition after the switch means is pressed and released; and for opening the switch means when the switch means is again pressed and released.

3. A personal noise making and alarm signal device as defined in claim 1, wherein said switch means comprises another casing, a switch in the other casing; two operating members overlying one another and having inclined confronting faces and interengaging locking grooves, one of said two members being movable axially by the push button member, the other one of said two members being rotatable and axially movable, and having a shank for closing and opening the switch, and longitudinally extending camming formations on the two members adapted to engage with one another to prevent retraction of said shank from the switch when the push button member is pressed, and further adapted to disengage the camming formations and permit retraction of said shank when the push button member is pressed again.

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