

[54] PNEUMATIC CUP ALARM DEVICE

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[58] Field of Search..... **340/240, 283, 280; 200/83 B, 83 R, 83 Z**

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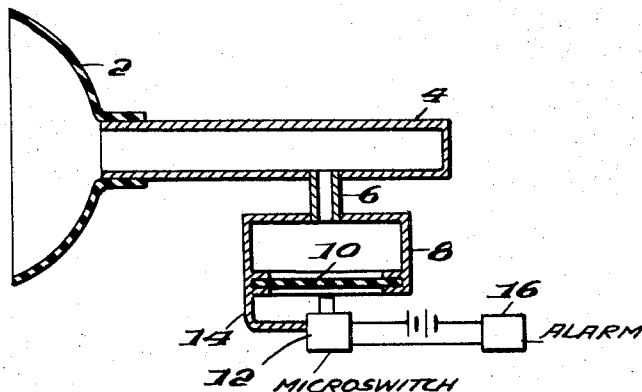
Primary Examiner—John W. Caldwell

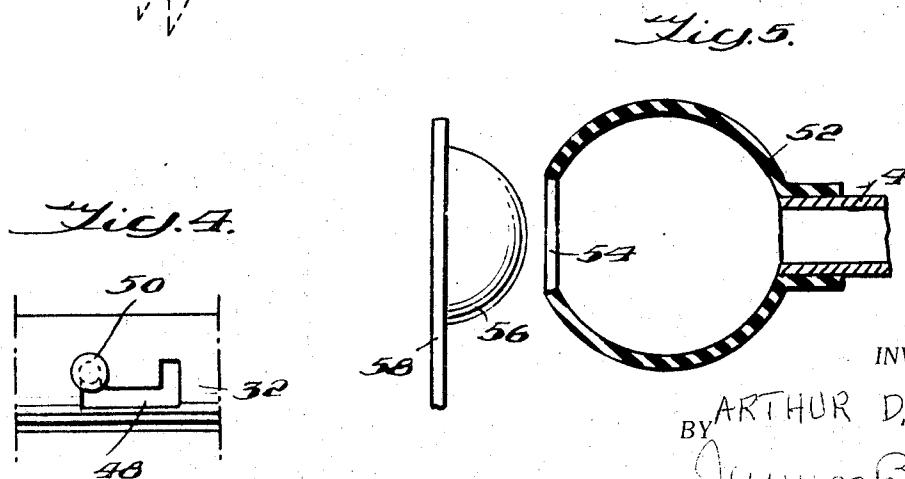
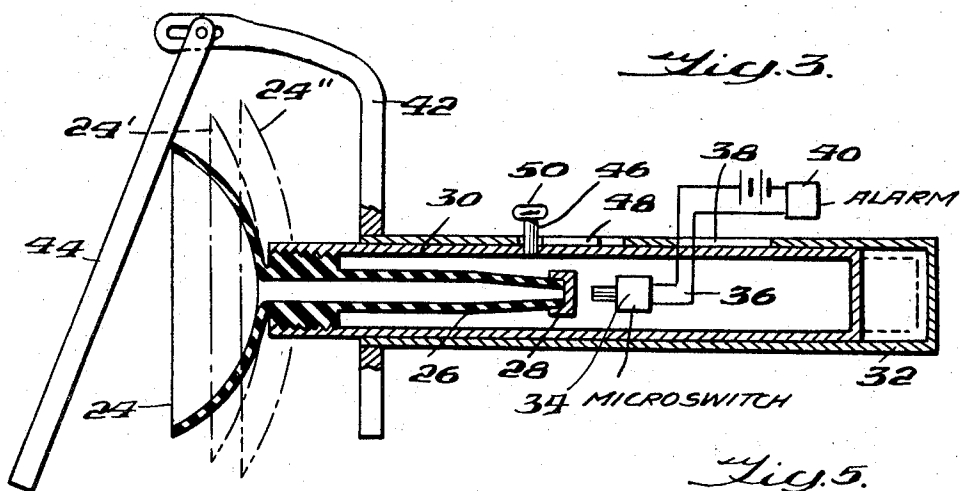
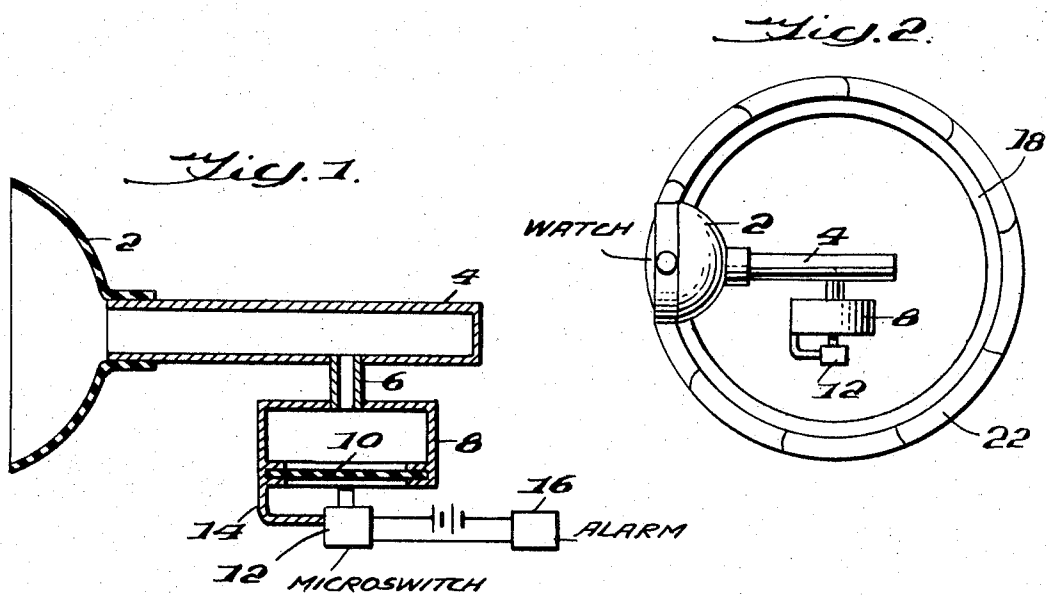
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[57] ABSTRACT

An alarm system includes a suction cup or pressure ball which is compressed, for example by closing a part of a door hinge against it or by application to it or an article to be held by it such as a watch. The interior of suction cup or pressure ball communicates with a resilient member which is stretched by the increased pressure of the air therewithin to open a switch in a alarm circuit. Opening of the door or removal of the watch or article will result in closing of this switch so as to sound an alarm.

6 Claims, 5 Drawing Figures





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PNEUMATIC CUP ALARM DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to an alarm system utilizing a suction cup or pressure ball arrangement.

SUMMARY OF THE INVENTION

According to the invention, a concave rubber member constituting a suction cup or pressure ball has a hole in its base which communicates with a space enclosed at least in part by a resilient member such as a diaphragm or rubber tube. The device is provided with a switch which is closed on the occurrence of pressure in the space behind the concave member to open an electrical circuit which includes an alarm. Thus as the concave member is compressed, as by application of a watch or other article on its outer face, thus closing the hole in the face of the concave member, or by the closing of a door which has a plate which engages the mouth of the concave member, the pressure in the concave member is increased and the resilient member actuates the switch to open the circuit. Opening of the door or removal of the watch or other article from the concave member releases the pressure so that the switch closes and sounds the alarm.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 shows in cross-section an arrangement embodying the invention;

FIG. 2 is a plan view thereof;

FIG. 3 is a cross-section through a modified form;

FIG. 4 is a top plan view of a portion of FIG. 3; and

FIG. 5 is a section through a modified form of a device.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, there is a suction cup 2 arranged on the front end of a tube 4 closed at its rear end and communicating by opening 6 with a chamber 8 closed by a rubber diaphragm 10. A switch 12 is held in position in front of the diaphragm by a frame 14. This switch is connected with a battery and an alarm bell 16. The whole arrangement is mounted on a ring 18 constituting a circular frame.

If now a watch is pushed in front of the cup 2, and is held there against by the suction of the cup and by an expandable and resilient watch bracelet 22, the pressure in the chamber 8 will be increased and the diaphragm 10 will be moved outward so as to open the switch 12. Removal of the watch and band from the holder will result in closing of the switch 12, which will then sound the alarm 16.

Of course if it is desired, a manual switch may be connected in some way with the alarm 16 so that the alarm will not sound except when such switch is closed.

Referring to FIG. 3, there is a cup 24 having a rearward pipe-like extension 26 closed by a member 28. The whole arrangement is mounted in a tube 30 which is slidable in outer tube 32 and which constitutes a frame member. The member 28 is engageable with the switch 34, which through a circuit 36 controls an alarm 40.

A U-shaped notch 48 in the tube 42 permits passage of a pin 46 with a head 50. This enables the tube 30 to be slid back and forth in the tube 32. Thus in the forward position member 32 is out of contact with the switch while in the rearward position it is engaged with the switch.

The whole device is mounted on a bracket 42 to which is hinged a member 44 carried by a door or the like hinged to the device which carries the member 42, such as the frame of an automobile.

If now the door is closed, it will engage the cup 24 and move it to the position 24'. In this position, the member 28 is pushed backwards by the pressure within the cup and will engage the switch to open the circuit of the alarm 40. On the other hand, when the device is moved to the rearward position, the switch is always engaged by the member 28 so that the alarm will not sound even if the door is open. This makes it possible to utilize the device only when the sounding of the alarm upon the opening of the door is desired.

In the form of the invention shown in FIG. 5, there is a tube 4 having connections similar to those shown in FIG. 1. On the open end of this tube is a rubber ball 52 having an opening 54 in its forward end. This opening can be engaged by a hemispherical protrusion 56 on a door 58 or the like, so that closing of the door brings the protrusion 56 into the hole 54 and compresses the ball 52 to increase the pressure in the tube 4.

A manual or key-operated switch may be connected in the alarm circuit if desired.

I claim:

1. In combination, an alarm device comprising a frame member, a hollow member of resilient material having a concavity therein and having a substantially planar opening thereinto into said concavity, the hollow member being carried by said frame member and said alarm device having resilient wall means forming a space connected to said concavity, a closure member movably connected on said frame member to close said planar opening and to press against said hollow member, whereby upon pressure exerted by the closure member on the hollow member and closure of said planar opening air pressure is built up on one side of said wall means, and switch means operatively positioned with respect to said wall means to be engaged thereby upon movement of said wall means under the influence of pressure exerted within the hollow member.

2. In a combination as claimed in claim 1, having an alarm circuit connected to said switch means, said alarm circuit being normally closed.

3. In a combination as claimed in claim 1, in which the hollow member is a suction cup, said alarm device having a circular frame supporting said suction cup adjacent the periphery of the circular frame for engagement of the circular frame by a watch band carrying a watch engageable over the face of the suction cup.

4. In a combination as claimed in claim 3, said closure member constituting a part of a hinge, said hinge including one part support said hollow member and another part carrying said closure member.

5. In a combination as claimed in claim 4, said wall means including an elongated resilient tube connected to said hollow member.

6. In a combination as claimed in claim 5, a first tubular member having a second tubular slidable in said first tubular member, said resilient tube being located within said second tubular member.

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