United States Patent [19]

McDonald

[11] **3,753,256**

[45] **Aug. 14, 1973**

[54] **FIRE ALARM SYSTEM**

[75] Inventor: **Grover C. McDonald,** Knoxville, Tenn.

[73] Assignee: **The Raymond Lee Organization, Inc.,** New York, N.Y.

[22] Filed: **Aug. 31, 1971**

[21] Appl. No.: **176,726**

Related U.S. Application Data

[63] Continuation of Ser. No. 831,537, June 9, 1969, abandoned.

[52] **U.S. Cl.** ..... **340/227.1,** 200/83 R, 337/117

[51] **Int. Cl.** **G08b 21/00,** H01h 25/32

[58] **Field of Search** ..... 337/117; 200/83 C, 200/52, 83 N; 340/227.1, 227, 421

[56] **References Cited**

UNITED STATES PATENTS

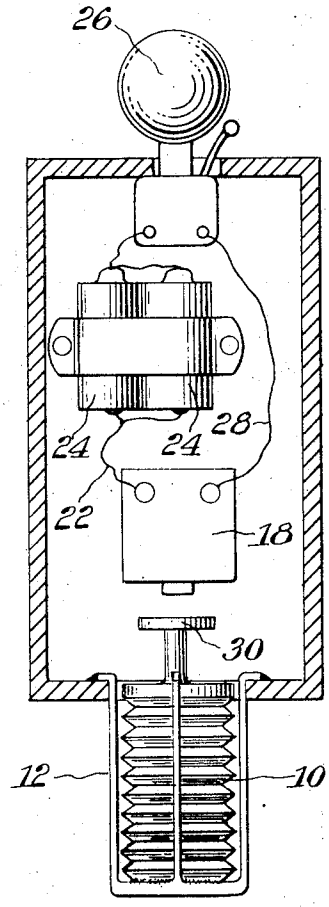
1,187,334	6/1916	Keppler	340/227.1
3,470,341	9/1969	Beddoe	200/83.31 X
2,471,838	5/1949	Ross	200/83 C
2,757,361	7/1956	Cameron	200/83 C
2,697,766	12/1954	Goldmuntz	337/117 X

Primary Examiner—John W. Caldwell
Assistant Examiner—William M. Wannisky
Attorney—Theodore Jay, Esq.

[57] **ABSTRACT**

A portable battery powered fire alarm device employing a bellows charged with a substance which causes expansion of the bellows. This expansion actuates a battery powered alarm.

1 Claim, 5 Drawing Figures



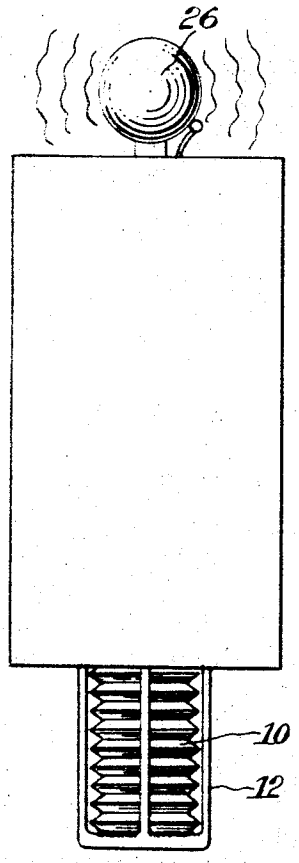


FIG. 1

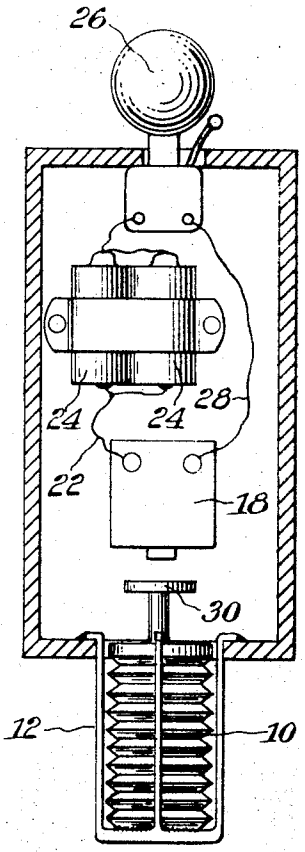
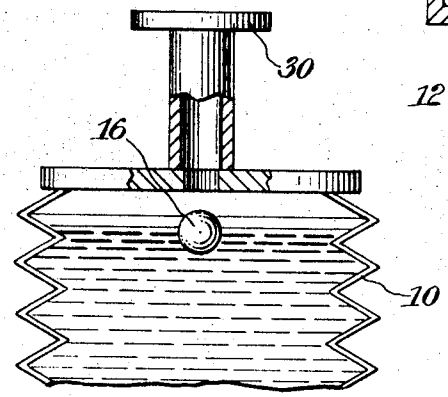


FIG. 2

FIG. 3



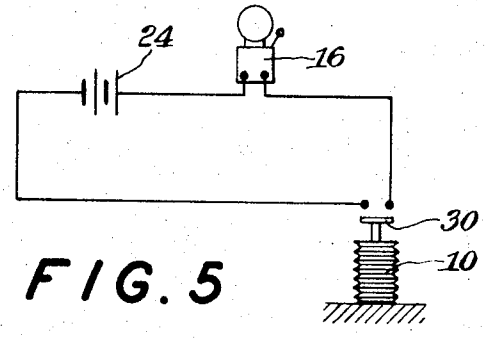


FIG. 5

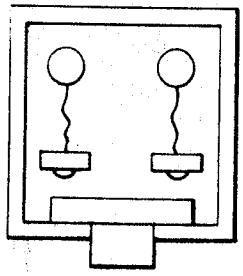


FIG. 4

INVENTOR.
GROVER C. McDONALD

FIRE ALARM SYSTEM

CROSS REFERENCES TO RELATED APPLICATIONS

This is a continuation of application Ser. No. 831,537 filed 06/09/69 now abandoned.

SUMMARY OF THE INVENTION

My bellows is hollow and is filled with a mixture of alcohol and water which will cause the bellows to expand at a selected temperature, the temperature depending upon the relative proportions of the two fluids. A normally open switch connected in circuit with batteries and an alarm such as a bell is closed by this expansion and actuates the alarm.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:
FIG. 1 is a side view of my invention;
FIG. 2 is a cross sectional view thereof;
FIG. 3 is an enlarged detail view of the bellows;
FIG. 4 is a detail view of parts of the invention; and
FIG. 5 is a circuit diagram of my invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to FIGS. 1–5, a hollow bellows **10** arranged vertically in a guide **12** has its bottom end welded or otherwise secured to the guide and its upper end free to move extends through an opening into the bottom end of a vertical hollow chamber **14.** A removable side mounted plug **16** in the bellows permits the bellows to be filled with any mixture of alcohol and water whereby the bellows will expand at any selected temperature from 178° F to 210° F depending upon the relative proportions of alcohol and water. The bellows has a plunger **30** at its top end adjacent a plunger actuated switch **20.** Normally the plunger is spaced from the switch which is then open. When the bellows expands, plunger **30** moves into contact with the switch and closes same.

Switch **18** has one lead **22** connected in series with batteries **24** to one side of a buzzer or bell **26.** Switch **18** has another lead **28** connected to the other side of the bell. When the switch is closed, the leads **22** and **28** are connected together to complete the circuit and actuate the bell to sound the alarm. The switch, batteries,

lead and armature of the bell are disposed within the container with the remainder of the bell extending outside.

Flash light or transistor batteries can be used.

While I have described my invention with particular reference to the drawings, such is not to be considered as limiting its actual scope.

I claim:

1. A portable, battery powered fire alarm device comprising:
   a. a hollow chamber defining a casement for the alarm device;
   b. a guide extending through one wall of the chamber and into communication with the interior of the chamber;
   c. a hollow bellows mounted within the guide, said bellows having:
      1. a stationary end secured to the guide,
      2. another end free to move within the guide and into communication with the interior of the chamber;
      3. a liquid within the bellows which liquid being capable of extending the free end of the ballows along the guide and into communication with the interior of the chamber as a result of the volumetric expansion of the liquid itself at a predetermined temperature, said liquid being a mixture of alcohol and water; and
      4. a side mounted plug which permits the addition of any mixture of alcohol and water to the system;
   d. a plunger mounted integrally with the free end of the bellows;
   e. a normally open pressure sensitive switch disposed within the interior of the chamber and in a normally spaced alignment with the plunger; and
   f. an electrically actuated alarm connected in circuit with the switch, said alarm being actuated when the switch is closed;

Whereby upon the volumetric expansion of the liquid at the predetermined temperature, the free end of the bellows is expanded and carries the plunger into direct contact with the switch, said contact resulting in the closing of the switch and the consequent actuation of the alarm.

* * * * *