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A. BLANC

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AUTOMATIC DETECTING AND ALARM APPARATUS FROM A DISTANCE OF FIRE

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Fig. 1.

Fig. 2.

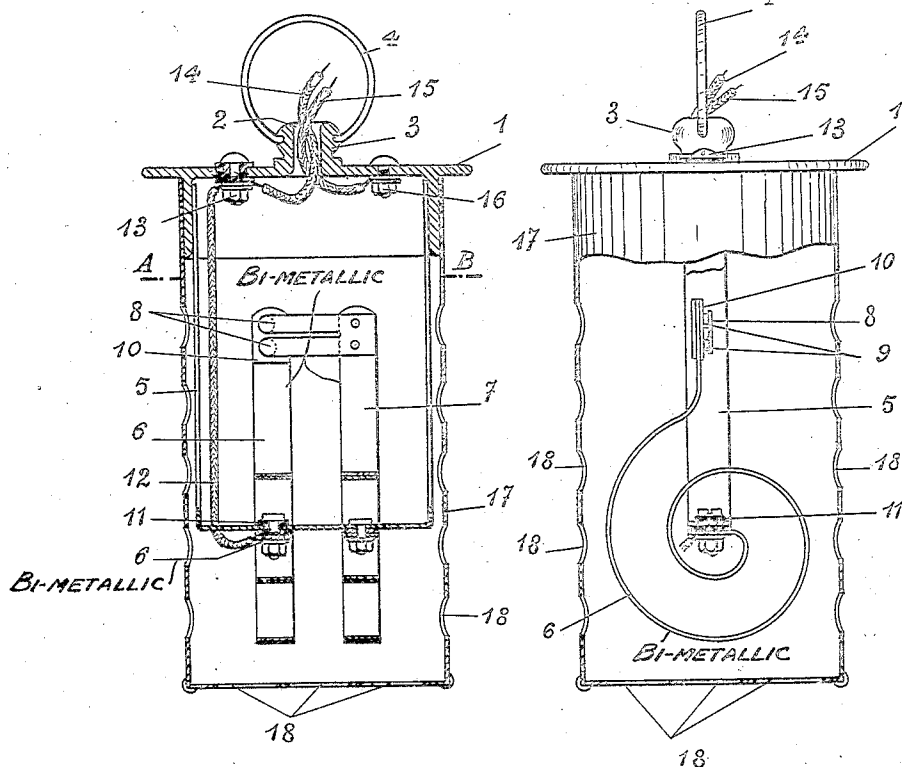
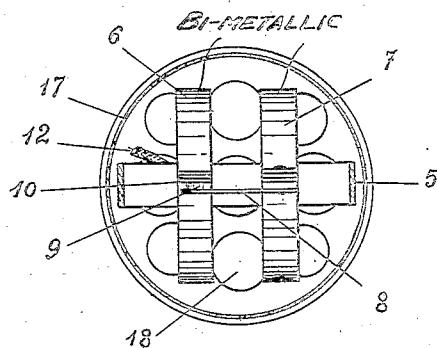


Fig. 3



INVENTOR
AIME BLANC

By, *Chatwin & Company, Atty.*

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AUTOMATIC DETECTING AND ALARM APPARATUS FROM A DISTANCE OF FIRE

Aimé Blanc, Aix-en-Provence, France

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1 Claim. (Cl. 200—138)

The invention has for its object an automatic detecting and alarm apparatus from a distance of fire which permits:

1. Of signalling automatically at a distance a rapid rise in temperature and, in particular, of signalling any commencement of fire.
2. Of having the characteristic of being able to function as desired either by intermittent current or by continuous current according to its application.
3. Of revealing automatically a rupture of the line, a derangement whatsoever in the source of current, accidental or due to malevolence.

In the accompanying drawing:

Fig. 1 shows a section in elevation according to the vertical axis of the apparatus.

Fig. 2 is a view in elevation corresponding to Fig. 1, projected to the right on a plane at 90°, and the protecting envelope with part cut away in order to allow the interior to be seen.

Fig. 3 shows in plan a section according to the line A—B of Fig. 1.

In the example illustrated the apparatus is composed of a frame formed of a disc 1 pierced with a central hole 2, surmounted by socket 3 which carries a ring 4 which serves to suspend the apparatus.

On the disc 1 is a stirrup 5 on which are fixed by the end of the smallest radius and in the same sense of development, two flat bi-metal spirals 6, 7 of which the free ends rise vertically to the same height and in a same plane.

These two spirals have as a special characteristic a different thickness, as one can notice on the section of Fig. 1, in which the spiral 6 is thinner than the spiral 7.

The free end of the spiral 7 carries one or several flexible tongues 8, of which the extremities are provided with contacts 9 (Figs. 2, 3), which, in the normal state, touch another contact 10 fixed on the free end of the spiral 6. The contacts 9 can be formed by simple silver bosses as is shown in Figs. 2, 3 or by regulatable screws without this detail interfering with the invention.

The spiral 6 is insulated from the stirrup 5 by appropriate insulating rings 11, whilst a wire 12, also insulated, connects this spiral with an insulating terminal 13 to which is connected a wire 14 of the electric circuit connected to the relay of the alarm, which can be optical sonorous or combined optical and sonorous. The other wire 15 coming from the relay also, or from the source of electricity, is connected by a terminal 16 to the body of the apparatus, in conducting circuit with the spiral 7 fixed directly on the stirrup.

Over the whole of the elements of the apparatus is provided a rigid protecting envelope 17, conveniently perforated by holes such as 18, shown solely on a generatrix and on the bottom so as to make the drawing more legible, or openings of any geometric form whatsoever.

On the other hand it is evident that the apparatus could be suspended, placed on a wall bracket with a stand for base, or fixed by any other means without this detail interfering with the invention, no more, besides, than the appearance of the whole which can be varied according to need.

The function is as follows:

1. The apparatus is disposed according to the annexed drawing, that is to say, the flexible tongue 8 behind the movement of development of the thin spiral 6. In this case the spirals 6 and 7 are regulated so that the contacts 9 and 10 touch when the temperature is normal. The current put into circuit keeps the alarm relay motionless, the alarm relay functioning solely when the current is interrupted. If the heat rises slowly in the compartment where the apparatus is disposed, for example under the effect of the change of temperature of the atmosphere or by reason of the bringing into action of the heating apparatus, the two spirals 6 and 7 develop simultaneously by equal quantities, there is compensation, the contacts 9 and 10 remain in constant connection and no release of the alarm relay is produced. If the temperature rises sharply in the compartment owing to the commencement of a fire which lights spontaneously, the spiral 6 thinner than the spiral 7 heats up more rapidly and its development becomes preponderant over that of the spiral 7 the contacts 9 and 10 then separate and the circuit is automatically interrupted, which has for effect to cause the alarm relay to operate;

2. The apparatus can also function in the other sense, that is to say close the circuit instead of interrupting it as in the first place. For this operation the flexible tongues 8 of the spiral 7 are placed in front of the movement of development of the spiral 6, the contacts 9 and 10 are, in the normal state, separated by an interval more or less great according to the result desired. The operation is similar to the preceding operation there is compensation of the displacements when the temperature rises slowly but when there is a sharp rise of temperature, the thin spiral 6 overtakes the spiral 7 which is slower in its sensibility and the contacts 9 and 10 close the circuit which actuates the alarm.

It is evident that the apparatus can be reversed in its function, that is to say that all that which has been described by development of the spirals can be obtained by winding according to the arrangement of the bi-metal bands.

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I claim:—

Automatic detecting and alarm apparatus from a distance of fire comprising in combination a frame, a disc carried by said frame, means for suspending said apparatus, a stirrup carried by said disc, two flat vertically disposed bi-metal spiral members supported by said stirrup at the bottom thereof, means insulating one spiral mem-

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ber from the stirrup, an electric conductor at one end connected to the insulated spiral member, an insulated terminal carried by the disc, the other end of said conductor being connected to said terminal, an electric lead from an alarm relay connected to said terminal, a second terminal carried by the disc and in electrical connection with the body of the apparatus, a lead from a source of electricity connected to said terminal, contact studs carried by the insulated spiral and a flexible tongue carried by the other spiral member normally contacting with said contacts.

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AIMÉ BLANC.