Oct. 4, 1949. F. M. THOMAS 2,483,793

FIRE ALARM CABLE

Filed Sept. 21, 1946

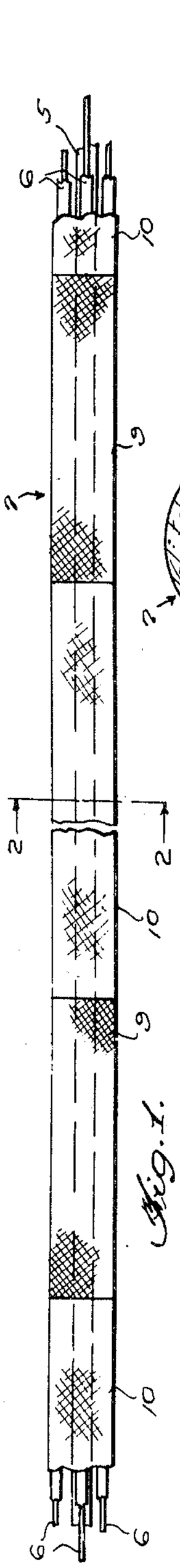

Fig. 1.

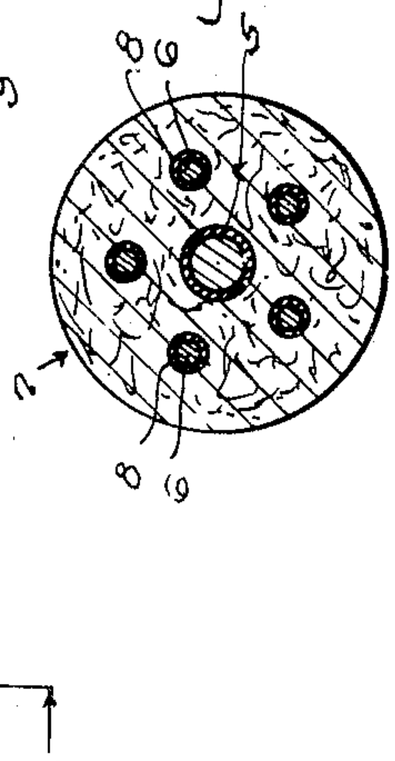

Fig. 2.

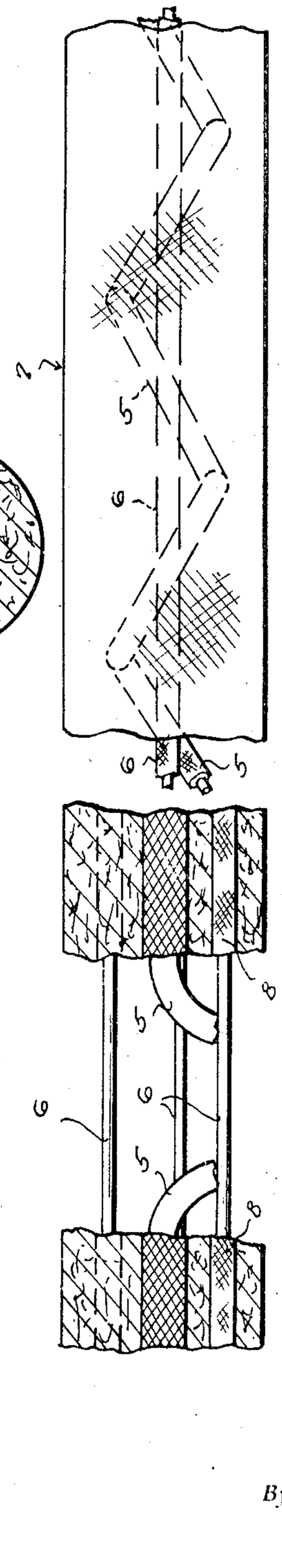

Fig. 3.

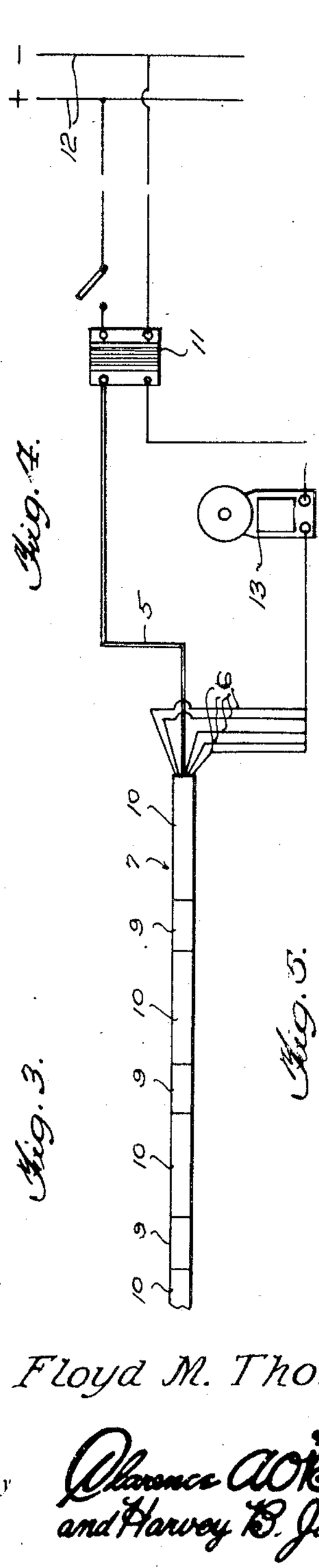

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE

2,483,793

FIRE ALARM CABLE

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1 Claim. (Cl. 200—143)

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This invention relates to electric cables for use in fire alarm systems, and adapted to close the alarm circuit of such a system upon occurrence of a fire in the vicinity of the cable.

More particularly, the invention relates to cables of the type having two or more conductors which are normally insulated from each other, but which are intended to contact one with another in response to excessive heat such as that provided by a fire in the vicinity of the cable.

Heretofore, cables of the above kind have employed insulation which is readily inflammable throughout the length of the cable thus promoting spreading of the fire. I propose to overcome this objection by providing a cable employing insulation comprising short alternating readily combustible and non-combustible lengths. In this way, the readily combustible lengths are sufficiently close together so as not to materially impair the efficiency of the cable as a circuit closer, but consumption of the insulation by fire is restricted so that the cable does not cause spreading of the fire. Preferably, the non-combustible lengths of the insulation are considerably longer than the readily combustible lengths thereof.

The exact nature of the present invention will become apparent from the following description when considered in connection with the accompanying drawing, in which:

Figure 1 is a fragmentary elevational view of a cable constructed in accordance with the present invention;

Figure 2 is an enlarged transverse section taken on line 2—2 of Figure 1;

Figure 3 is an enlarged fragmentary longitudinal sectional view of the cable shown in Figure 1, illustrating the action of the cable in closing an alarm circuit;

Figure 4 is an enlarged fragmentary elevational view showing a modified form of the cable;

Figure 5 is a diagrammatic view illustrating a manner of employing the present cable in an alarm system.

Referring in detail to the drawing, the present cable includes an easily fusible soft metal wire 5, at least one hard metal wire 6 which is not easily fusible, and an insulation 7 covering and normally separating the wires 5 and 6. The wire 5 may consist of the well known acid core soldering wire, while the wire or wires 6 may each con-

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sist of an ordinary copper conductor wire covered by readily inflammable insulation 8. In the embodiment of Figures 1 to 3 inclusive, a plurality of the insulated wires 6 are grouped about and spaced from the wire 5, as well as being spaced from each other.

In the embodiment of Figure 4, the wire 5 is employed with a single wire 6, the latter being straight and disposed centrally of the insulation 7, and the wire 5 being of spiral form and disposed in spaced concentric relation to and surrounding the wire 6.

In accordance with the present invention, the insulation 7 is composed of short alternating readily combustible lengths or sections 9 and non-combustible lengths or sections 10, the non-combustible lengths or sections 10 preferably being considerably longer than the readily combustible lengths or sections 9. However, as all of the lengths or sections are relatively short, the readily combustible lengths or sections 9 are sufficiently close together so as to not materially impair the efficiency of the cable as a circuit closer.

In using the present cable, low voltage current may be derived from a step-down transformer having high voltage terminals connected with power lines 12 and low voltage terminals respectively connected to wire 5 and wires 6, a suitable audible alarm or bell 13 being interposed in the electrical connection between the wires 6 and one low voltage terminal of the transformer 11. Upon the occurrence of a fire in the vicinity of the cable, at least one of the lengths or sections 9 of the insulation 7 will be consumed by the flames and the heat of the flames will melt the adjacent portion of the wire 5 so as to sever the latter and provide softened end portions which will droop into contact with an adjacent one of the wires 6. When this occurs, the circuit of the alarm 13 is closed for sounding the alarm. As each readily combustible length or section of the insulation 7 is disposed between adjacent non-combustible lengths or sections thereof, spreading of the fire caused by ignition of such readily combustible section 9 will be restricted to the length of the latter, thereby preventing spreading of the fire throughout the length of the cable. This is of great importance when it is considered that cables of the present kind are

intended to be strung throughout a building in which the alarm system is installed.

From the foregoing description, it is believed that the construction, operation and advantages of the present invention will be readily understood and appreciated by those skilled in the art.

What I claim is:

A fire alarm cable of the character described, comprising an easily fusible soft metal wire, a plurality of hard metal wires grouped about and spaced from said soft metal wire and from each other, said wires all being straight and the soft metal wire being disposed axially of the insulation, said insulation comprising short alternating readily combustible and non-combustible lengths.

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