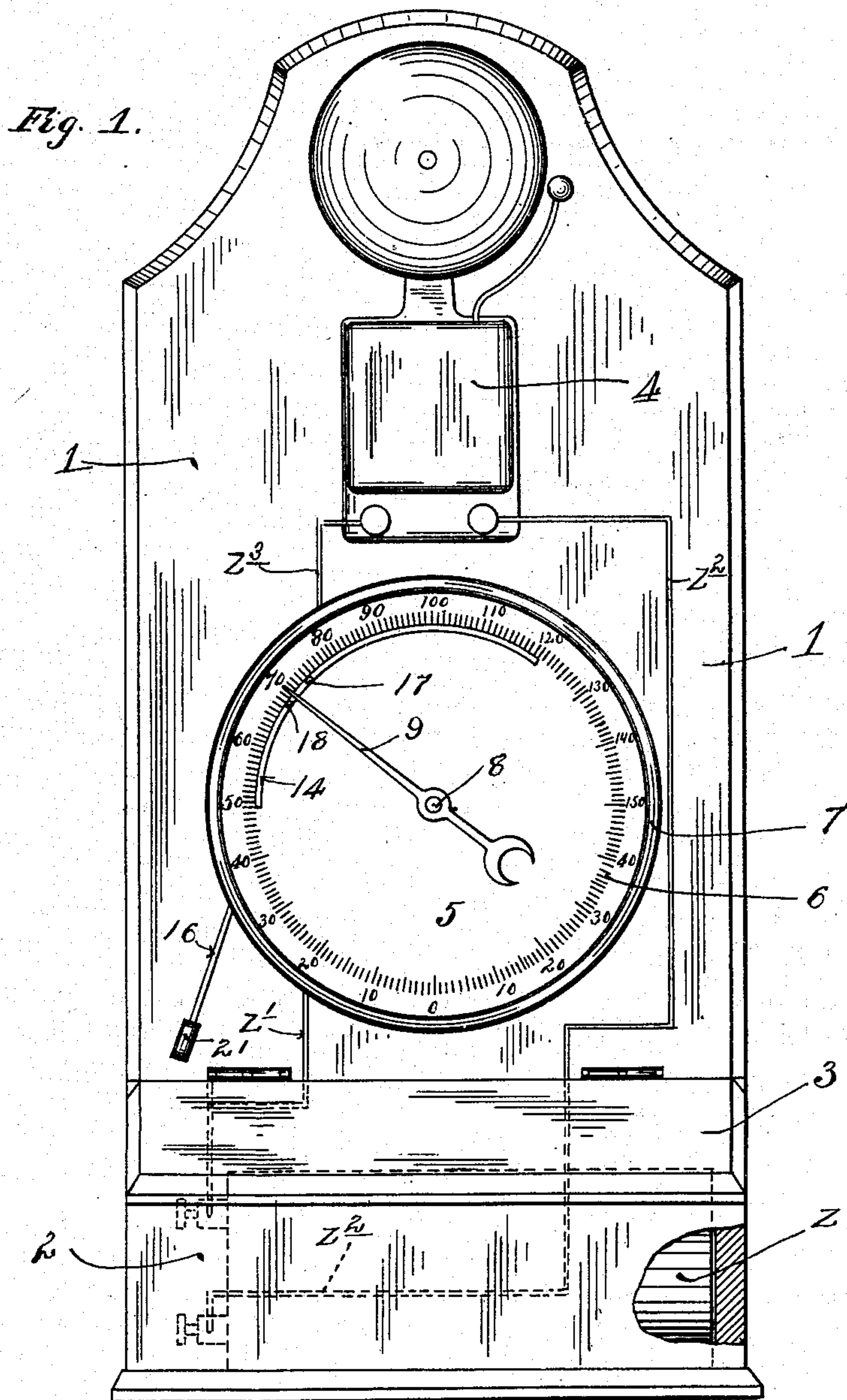


**N. MALLANDER.**  
**FIRE ALARM DEVICE.**  
 (Application filed May 21, 1900.)

(No Model.)

2 Sheets—Sheet 1.



*Witnesses.*  
*Robert Otto*  
*Harry Kilgore.*

*Inventor.*  
*Nels Mallander.*  
*By his Attorneys.*

*Williamson Merchant*

N. MALLANDER.  
FIRE ALARM DEVICE.

(Application filed May 21, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

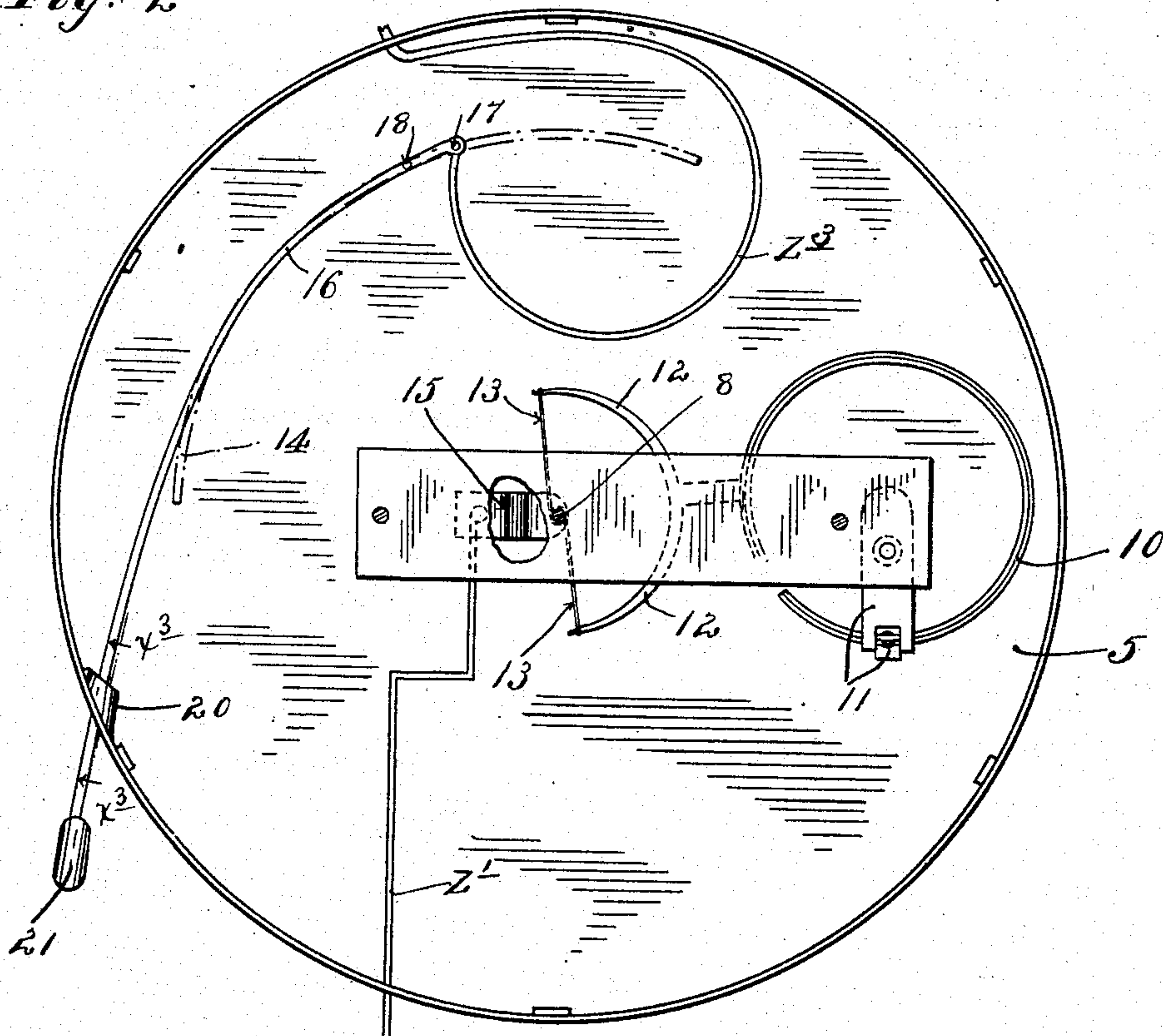
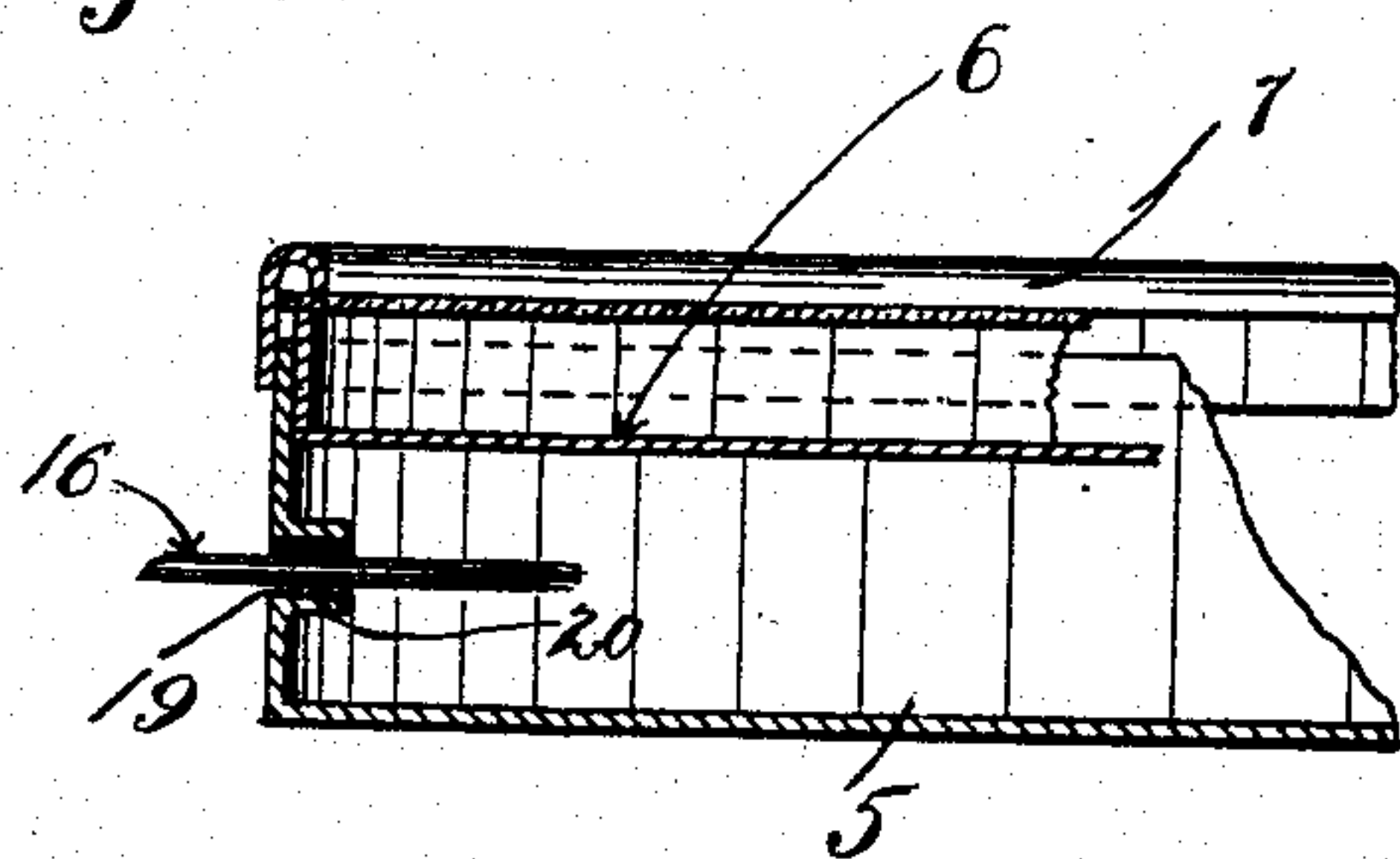


Fig. 3.



Witnesses  
Robert Otto.  
Harry Kilgore.

Inventor:  
Nels Mallander.  
By his Attorneys.  
Williamson Merchant



# UNITED STATES PATENT OFFICE

NELS MALLANDER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF THREE-FOURTHS TO WILLIAM H. KAERCHER, JOHN A. OLSON, AND WILLIAM JOHNSON, OF SAME PLACE.

## FIRE-ALARM DEVICE.

SPECIFICATION forming part of Letters Patent No. 675,066, dated May 28, 1901.

Application filed May 21, 1900. Serial No. 17,350. (No model.)

*To all whom it may concern:*

Be it known that I, NELS MALLANDER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Fire-Alarm Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its especial object to provide an improved automatic fire-alarm device, but is nevertheless capable of use either in a fire-alarm or automatic fire-extinguishing system.

To the ends above indicated, the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a front elevation showing the complete device in its preferred form. Fig. 2 is an enlarged view, in front elevation, showing the internal mechanism of the thermometer or thermoscope, the dial or face of the device being removed; and Fig. 3 is a horizontal section on the line  $x^3 x^3$  of Fig. 2, some parts being broken away.

One of the important though minor objects of this invention is the provision of an automatic fire-alarm device which is portable, so that it may be readily removed from one room to another or located at any desired point in a room. It is such a device that is illustrated in the accompanying drawings.

Referring to the drawings, the numeral 1 indicates an upright back-board or support, which at its lower end is provided with a box-like base 2, having, preferably, a hinged lid 3. Within the box 2 is located a battery  $z$ , which may be of any suitable form, but is advisably a dry battery. Secured to the back-board 1 is an ordinary electrically-actuated bell or gong 4 and the case 5 of the thermometer, which case, as shown, is of cylindrical form and is provided with a graduated

dial 6, held in place by a telescoping retaining-ring or annular keeper 7. This thermometer or thermoscope, except as hereinafter specified, is of standard construction, such as is found on the market, and the vital parts thereof will therefore be briefly noted. To an oscillating spindle or shaft 8, suitably mounted within the case 5, is a pointer or dial-finger 9, which works over the graduations on the outer face of the dial 6 to indicate the temperature. The numeral 10 indicates the controller, which is in the form of a split ring made up of two strips of different metals, such as brass and steel, which have different rates of expansion under varying temperatures. This ring 10 is anchored to a post of bracket 11, secured to the case 5, and one end thereof is connected by a pronged head 12 and a pair of wires or cords 13 to the oscillating shaft 8. Thus it will be understood that the movements of the ring 10 and parts carried thereby under varying temperatures will move the pointer 9 over the graduations of the dial 6 to indicate the temperature of the air in the vicinity of the instrument. In applying my invention to this thermometer or thermoscope I cut a segmental slot in the dial 6, as indicated at 14. This slot 14 may be of any desired extent; but for ordinary purposes it need be extended only from about the fifty-degree mark to the one-hundred-and-twenty-degree mark. One wire  $z'$  extends from the battery  $z$  to a metallic bearing 15, which has electrical contact with the oscillating shaft 8, so that the finger 9 becomes an electrode. The other wire  $z^2$  from the battery  $z$  extends directly to the bell 4, and from the bell 4 a section  $z^3$  of the wire  $z'$  extends into the case 5, being insulated therefrom, and is attached to one end of an adjustable contact-piece or electrode 16. The contact-piece 16 is shown as in the form of a curved rod provided at its inner end with a pair of contact-points 17 and 18, spaced apart preferably about four or five degrees, as indicated by the graduations on the dial. The contact-points 17 and 18 work through the segmental slot 14 and embrace the point of the pointer or finger 9. The outer end of the rod 16 works through an insulating-bushing



19, preferably of soft rubber, which is suitably secured in a sleeve 20 of the case 5 and serves to frictionally hold the said rod or electrode 16 wherever set. At its outer end said rod 16 is preferably provided with a finger-piece 21, by means of which it may be readily adjusted.

The action of the above-described device will be substantially as follows: Suppose, for instance, that the maximum temperature to be permitted in a room without sounding the alarm be 100°. In this case the contact-point 17 of the electrode 16 would be set at "100," in which case when the temperature of 100° is reached the circuit between the battery and the bell will be closed by the contact of the finger 9 with the said point 17, so that the bell will be sounded and the alarm given.

Of course if this device is to be placed in a cold building—in the winter-time, for instance—it could be set for action at a very much lower temperature, so that a fire, if started, would cause the alarm to be sounded as soon as the temperature was raised but very slightly above the normal. Hence it is obvious that this device may be set for action as soon as the temperature of any room is raised slightly above the temperature which it is assumed or determined will be maintained therein under normal conditions.

When used simply for a fire alarm or signal, the contact-point 18 might be dispensed with. However, it is often desirable to use such a device in places where it is important to know when the temperature falls below or rises above a certain point, in which case the pair of contact-points are necessary or desirable in one form or the other. Such an action is desirable, for instance, in cold-storage buildings. It might also be used in connection with incubators, where it is necessary to keep the temperature within the limits of a few degrees of variation. Furthermore, the automatic closing of the circuit between the finger 9 and the cooperating electrode or contact instead of actuating a bell might actuate a trip-magnet, and hence it

will be understood that this device is capable of use for various purposes—such, for instance, as in automatic fire-extinguishing systems. It will also be understood that the bell or alarm device may be located at any point and at any distance from the controlling mechanism. Again, it should be understood that my invention is not limited to application to any particular form of thermometer or thermoscope.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a thermometer comprising a case, a graduated dial, and a movable finger or pointer, of an adjustable electrode mounted for movement within said case for cooperation with said pointer and provided with a part projecting through a slot of said dial to indicate its position, a stem projecting from said electrode and working outward through said case, a friction device applied to hold said electrode where set, and circuit connections comprising an alarm or bell and a battery or source of energy, and including said finger or pointer and said adjustable electrode, said parts operating substantially as described.

2. The combination with a thermometer comprising a case, a graduated dial and a movable finger or pointer, of an adjustable electrode mounted for adjustments within said case, said electrode cooperating with said pointer and having a part projecting through a slot of said dial, to indicate its position, a stem projecting from said movable electrode and mounted to slide endwise outward through the seat or perforation in the margin of said case, and circuit connections comprising an alarm or bell and a battery or source of energy, and including said finger or pointer and said adjustable electrode, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

NELS MALLANDER.

Witnesses:

JOHN SWANSON,  
F. D. MERCHANT.