No. 760,281. PATENTED MAY 17, 1904.

H. TRULL.

ELECTRIC ALARM.

APPLICATION FILED SEPT. 17, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

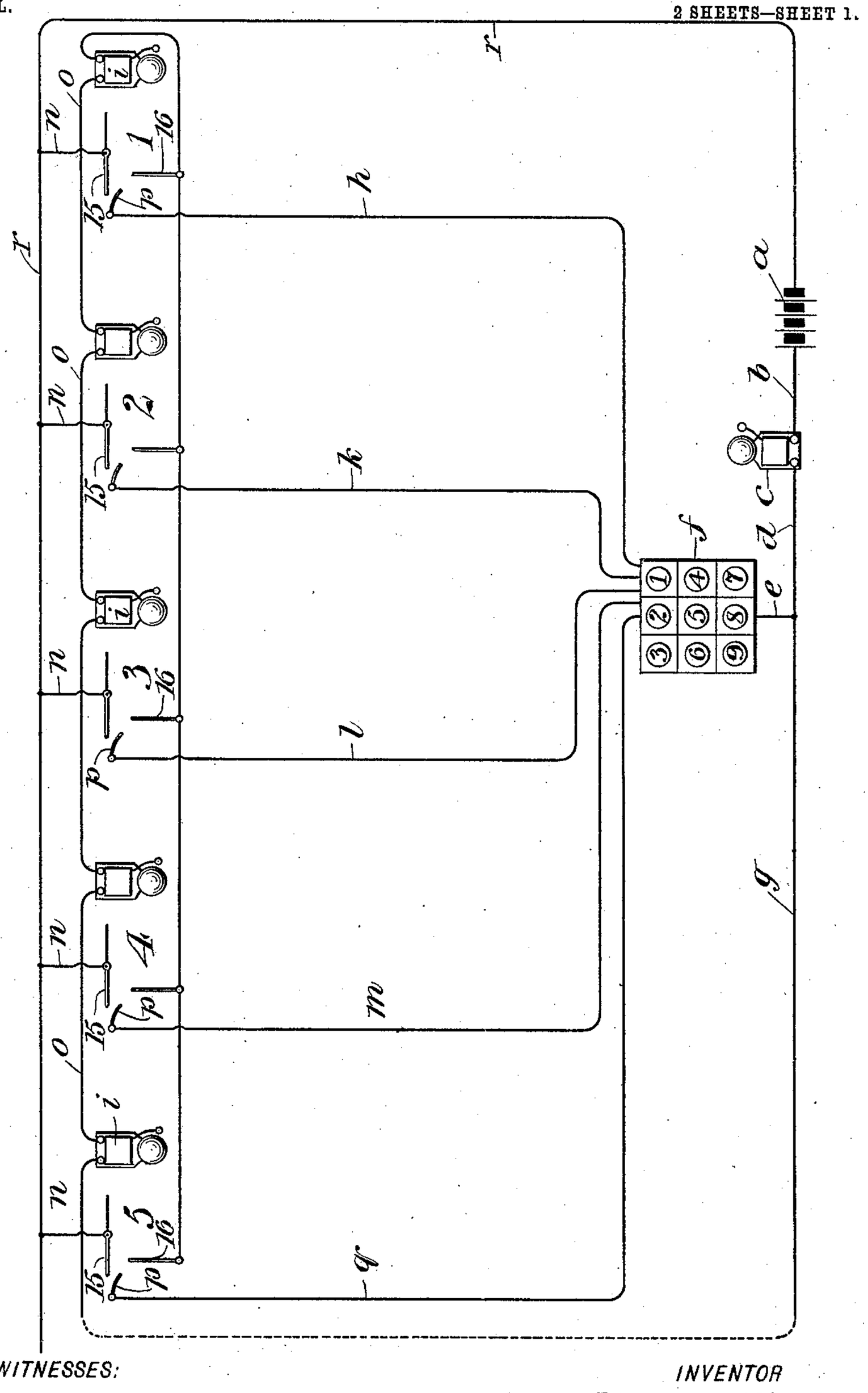

Fig. 1.

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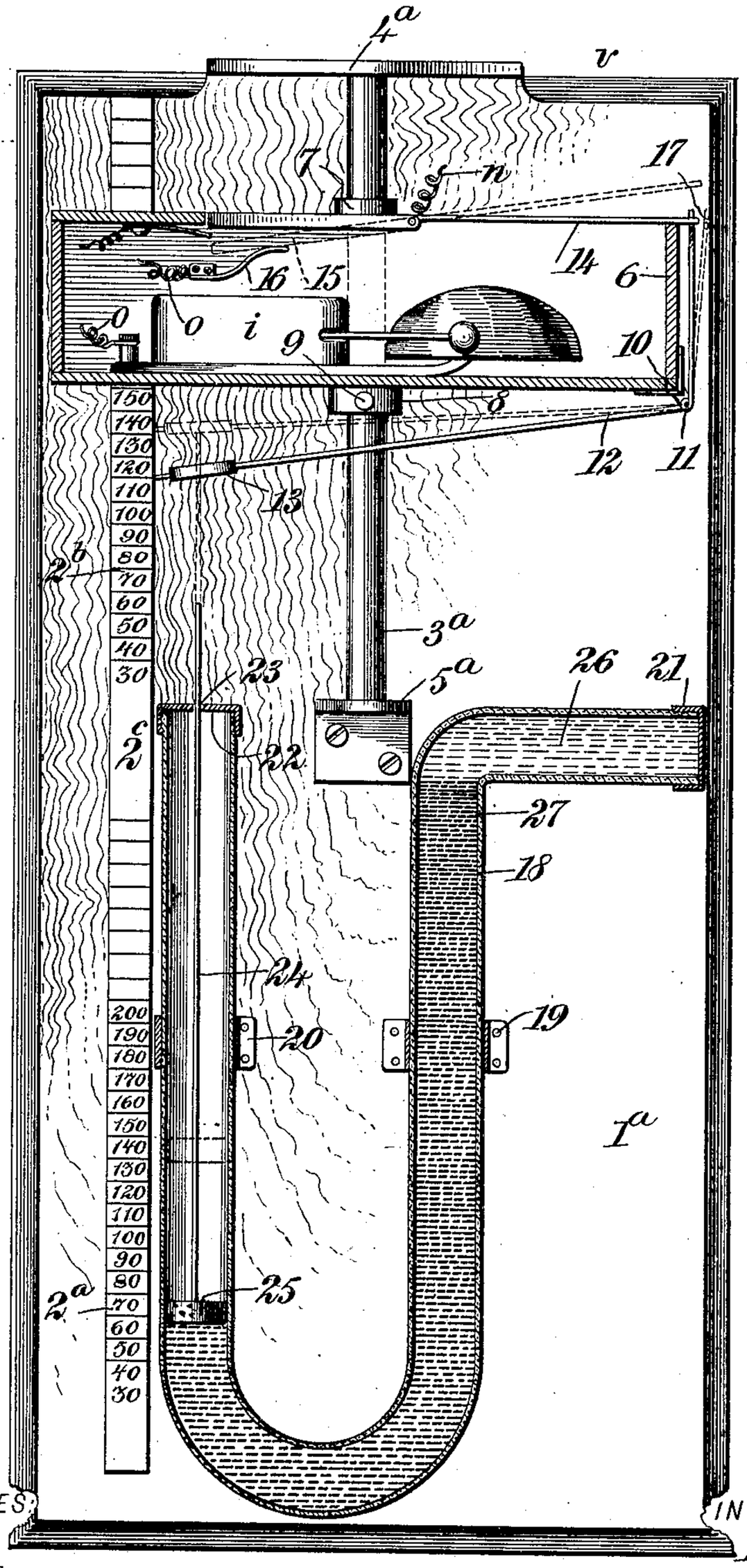
Fig. 2.



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No. 760,281. Patented May 17, 1904.

UNITED STATES PATENT OFFICE.

HERBERT TRULL, OF FERNIE, CANADA.

ELECTRIC ALARM.

SPECIFICATION forming part of Letters Patent No. 760,281, dated May 17, 1904.

Application filed September 17, 1903. Serial No. 173,552. (No model.)

To all whom it may concern:

Be it known that I, HERBERT TRULL, a subject of the King of Great Britain, and a resident of Fernie, in the Province of British Columbia and Dominion of Canada, have invented a new and Improved Electric Alarm, of which the following is a full, clear, and exact description.

My invention relates to electric alarms, my more particular object being to produce an automatic heat-controlled alarm by the use of which a fire in any part of a building may be made known to occupants in other parts of the building and also to a clerk or other person located in an office in a particular part of a building.

My invention further relates to certain details of mechanism for carrying out the purposes above mentioned.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both figures.

Figure 1 is an elevation, partly diagrammatic, showing my general system in use; and Fig. 2 is a front elevation, partly in section, showing the thermometric and contact mechanisms.

A battery *a* is connected by a wire *b*, which is connected with a bell *c*, located, preferably, in the clerk's office. From the bell *c* a wire *d* is connected with wires *e g*. The wire *e* runs to the annunciator *f*, and the wire *g* leads to a series of bells *i*, a bell being located in each of the separate rooms 1 2 3 4 5. The several separate terminal connections of the annunciator *f* are engaged by wires *h k l m q*, &c., which lead to the respective rooms and are for the purpose of actuating the annunciator from either of the rooms independently of the others. Each of these wires terminates in a brush or contact-spring *p*.

The board *v* is shown in detail in Fig. 2. Upon the base 1^a is mounted a scale 2^a and a fixed rod 3^a, this rod being held rigidly in place by brackets 4^a 5^a. A box 6 is provided with collars 7 8, the collar 8 having a set-screw 9, whereby it may be clamped rigidly upon a fixed rod 3^a. Upon one corner of the box 6 is a bracket 10, provided with a pivot 11, upon which a lever 12 is mounted and is free to rock. Upon the lower or free end of this lever 12 is a plate 13. Mounted within the box 6 is another lever 14, this lever being provided with a contact-plate 15, made comparatively thick, so as to normally maintain the lever 14 in the position indicated by dotted lines in Fig. 2. This contact-plate 15 is normally free to brush or wipe the contact-spring *p* and to move into engagement with the spring-contact member 16, which forms one of the terminals of the wire *o*. In other words, the contact-plate momentarily touches the spring *p* and then rests upon the contact member 16. The upper end of the lever 12 is provided with a notch 17, into which one end of the lever 14 may be tentatively secured, as indicated by full lines in Fig. 2.

A substantially U-shaped tube 18 is mounted, by means of brackets 19 20, upon the base 1^a. The respective ends of this tube are closed by screw-caps 21 22, the screw-cap 22 being provided with an aperture 23, through which a rod 24 is free to play vertically. This rod 24 is mounted upon a float 25 and is guided by the aperture 23, being free to rise in a vertical line, as indicated by dotted lines in Fig. 2. The upper portion of the tube 18 is filled with a quantity of liquid ether 26 or any other volatile liquid, which floats upon a volume of mercury 27, occupying the bulk of the tube 18. When the apparatus shown in Fig. 2 is subjected to undue degree of heat, the ether 26 is volatilized, forcing the mercury 27 downward, and thereby elevating the float 25, together with the rod 24, connected therewith. The float 25 and the rod 24 are therefore elevated relatively to the scale 2. It will be observed that the scale 2 is made in two portions 2^a 2^b, each being graduated. If, now, the mercury 27 carries the float 25 upward relatively to the portion 2^a of the scale, the upper end of the rod 24 is similarly carried upward relatively to the portion 2^b of the scale.

The operation of my device is as follows: The lever 12 is moved to the position indicated by dotted lines in Fig. 2, the plate 13 being thereby raised. The lever 14 is now depressed, its extreme end to the right being made to engage the aperture 17 of the lever

12. This holds the lever 12 in the position indicated by dotted lines in Fig. 2. The apparatus is now ready for use. Should a fire break out in one of the rooms of a building in which the apparatus is installed, the excessive heating causes the liquid 26 to volatilize, thereby depressing the mercury 27 and causing the float 25 to be raised, say, into the position indicated by dotted lines in Fig. 2. The rod 24 thereupon engages the plate 13 and moves the lever 12, thereby tripping the lever 14 and causing the contact-plate 15 to drop into the position indicated by dotted lines in Fig. 2. Supposing the room in question to be the one in which the board *v* (shown in Fig. 2) is installed, the following circuits are completed: battery *a*, wire *b*, bell *c*, wires *d e*, annunciator *f*, wires *h*, *k*, *l*, *m*, or *q*, contact-spring *p*, movable plate 15, wire *n*, wire *r*, back to battery *a*. This circuit is complete only while the plate 15 is moving past and momentarily engaging the spring-brush *p*. Immediately afterward, when the plate 15 engages the contact 16, the following circuit is completed: battery *a*, bell *c*, wires *d g*, series of bells *i*, contact 16 in room No. 1, plate 15, wire *n*, wire *r*, back to battery *a*. This rings all of the bells *i* and also the bell *c*. It will thus be noted that when a fire occurs in any one of the rooms 1 2 3 4 5 all of the bells *i* are set to ringing, and the annunciator *f*, in a clerk's office, indicates the particular location of the room in which the fire breaks out.

I do not limit myself to any particular arrangement of the rooms. They may all be upon the same floor or upon different floors. Neither do I limit myself to the use of a single system in a building, for obviously the system may be duplicated or multiplied to any desired extent.

It will be noted that while a fire starts all the bells to ring, the annunciator, which shall be in a part of the building accessible to the guests, reports the exact room in which the fire is located.

It will be noted that by means of the set-screw 9 the collar 8 may be adjusted so as to raise or lower the box 6. The purpose of this arrangement is to enable the bottom of the box to be placed upon any desired graduation of the scale 2^b. In this way the sensitiveness of the apparatus can be controlled at will—that is to say, the box 6 can be so disposed relatively to the slide-rod 3 that the contact-lever 14 will be caused to make engagement with the contact-spring 16 at the moment when the temperature reaches, say, 110°, 140°, or 150° Fahrenheit, as may be desired. When the float 25 is opposite a particular graduation upon the scale 2^a, the top of the rod 24 will raise the plate 13 to the corresponding graduation upon the scale 2^b.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an electric alarm, the combination of a stationary guide-rod, a hollow member connected therewith, means for adjusting the position of said hollow member relatively to said guide-rod, trip mechanism connected with said hollow member, contact mechanism connected with said trip mechanism, and a heat-controlled device stationary relatively to said guide-rod and provided with a movable member for engaging said trip mechanism.

2. In an electric alarm, the combination of a guide-rod, a hollow member mounted thereon and adjustable relatively thereto, contact mechanism connected with said hollow member, trip mechanism connected with said contact mechanism and free to actuate the same, and heat-controlled mechanism disposed adjacent to said guide-rod, and stationary relatively to said guide-rod, said heat-controlled mechanism being provided with a movable member free to engage said trip mechanism.

3. In an electric alarm the combination of a scale provided with different groups of graduations, thermometric mechanism disposed adjacent to said scale and provided with a member movable relatively to one of said groups, contact mechanism for closing an electric circuit, and a lever for controlling said contact mechanism, said lever being disposed adjacent to the other of said groups and connected with said member so as to be actuated by movements thereof.

4. In an electric alarm, the combination of a graduated scale, a heat-controlled mechanism mounted adjacent thereto and provided with a movable member, a trip member mounted within the path of said movable member, contact mechanism connected with said trip member and movable thereby, and electric-alarm mechanism connected with said contact mechanism.

5. In an electric alarm, the combination of a stationary contact member, a movable contact member normally engaging the same, a box containing said stationary contact member and said movable contact member, a lever for temporarily restraining said movable contact member, heat-controlled mechanism for causing said lever to disengage said movable contact member, and means for adjusting the position of said box relatively to said heat-controlled mechanism.

6. In an electric alarm, the combination of a plurality of scales, a thermostatic mechanism disposed adjacent thereto and provided with a longitudinal member free to move relatively to said scales, said longitudinal member being provided with a plurality of distinct portions serving as indexes for said scales respectively, and electric-alarm mechanism provided with a movable trip member disposed within the path of said longitudinal member, the arrangement being such that the relative position of said index of either scale may be determined by noting the position of the index of the other scale.

7. In an electric alarm, the combination of heat-controlled mechanism provided with a movable member, and with stationary and movable contacts to be actuated thereby, a member for supporting the said movable member, and means for adjusting said member relatively to said heat-controlled mechanism.

8. In an electric-alarm mechanism, the combination of a stationary contact member, a movable contact member tending normally to engage the same, another contact member disposed within the path of said movable contact member and adapted to be momentarily wiped thereby while the same is in motion, electrical connections for said contacts, and heat-controlled mechanism for releasing said movable contact.

9. In an electric alarm, the combination of a heat-controlled mechanism provided with a movable member, a scale disposed adjacent to said movable member, contact mechanism mounted upon a movable member and disposed adjacent to said scale, means for adjusting said last-mentioned member relatively to said scale, and a trip member connected with said contact mechanism and adapted to be actuated by said movable member of said heat-controlled mechanism.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT TRULL.

Witnesses:
JOHN COWLEY,
JAMES HARVEY GREENWOOD.