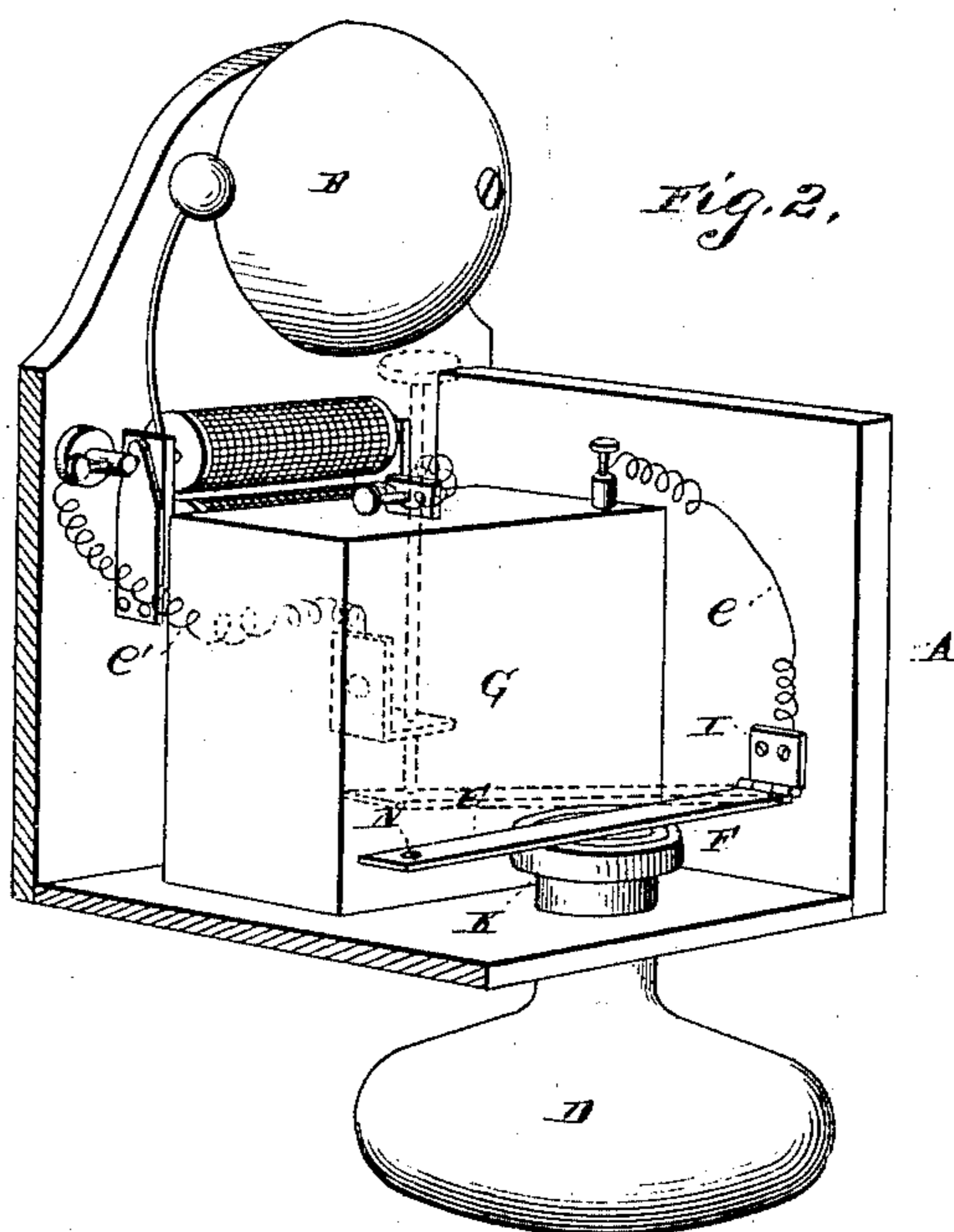
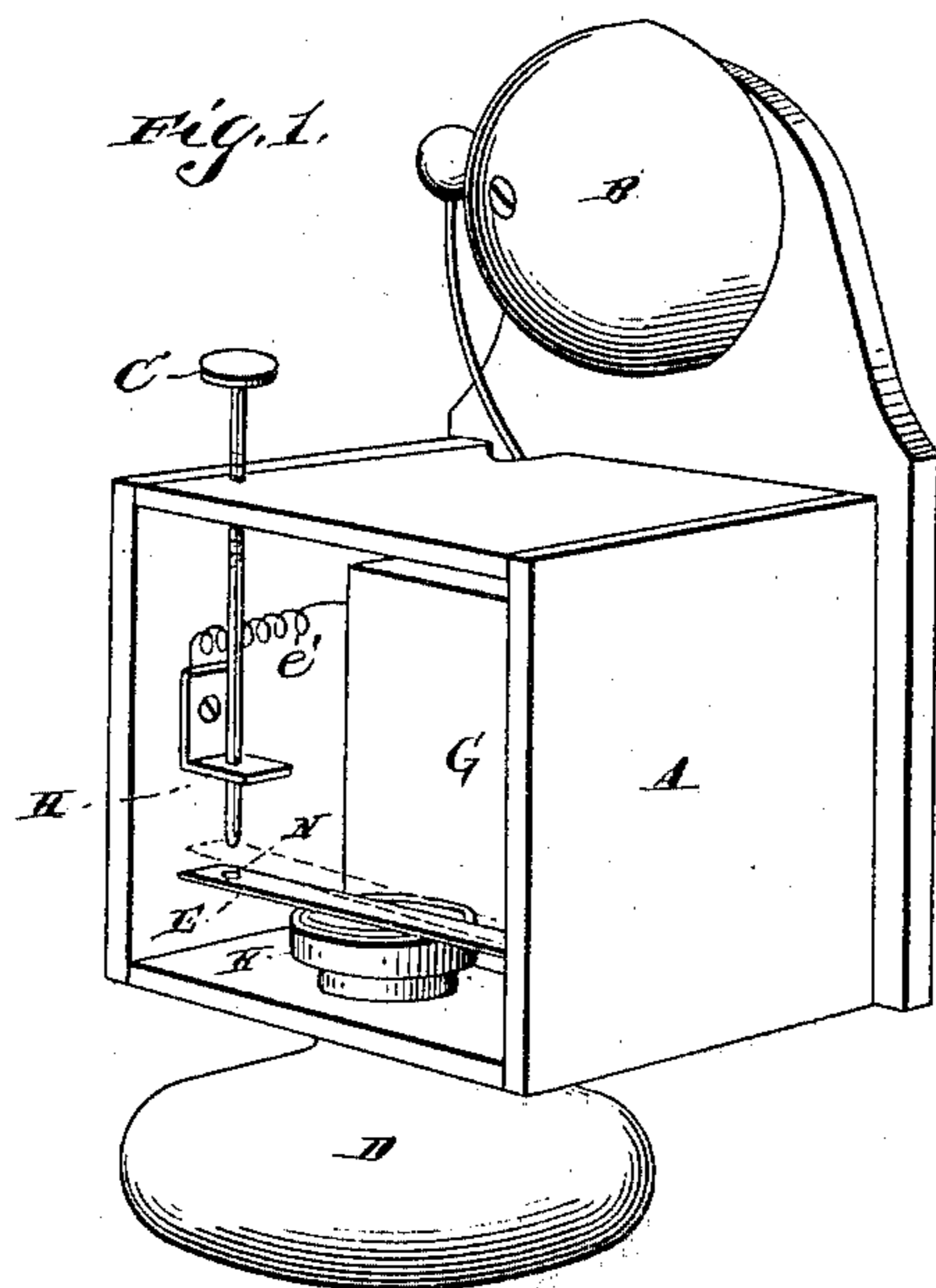


(No Model.)

H. M. BROWNE.  
FIRE OR OTHER ALARM.

No. 465,829.

Patented Dec. 29, 1891.



*Witnesses:*  
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# UNITED STATES PATENT OFFICE.

HUGH M. BROWNE, OF WASHINGTON, DISTRICT OF COLUMBIA.

## FIRE OR OTHER ALARM.

SPECIFICATION forming part of Letters Patent No. 465,829, dated December 29, 1891.

Application filed December 24, 1890. Serial No. 375,763. (No model.)

*To all whom it may concern:*

Be it known that I, HUGH M. BROWNE, of the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Fire or other Alarms, of which the following is a specification.

My invention has reference to fire or other alarms; and the object of the invention is to warn automatically by means of the expansive power of air in direct conjunction with the mechanism of an electric bell against fire and other excessive heat without using any intermediate clock-work or the like or the electric plant of the house.

In all the constructions heretofore in use, so far as I know, there is an intermediate mechanism which renders said constructions costly and their operations more liable to derangement. I overcome these difficulties by such a construction as will be cheap and will allow the mechanism of the bell to be operated directly by the expanding body of air.

Another objection to all the constructions heretofore in use, so far as I know, is that they depend on the domestic plant for their electricity. The constant drain on this supply and the use of the domestic system connected with it by persons possessing no knowledge of electricity render a derangement possible at any moment, by which the operation of said constructions may be entirely crippled. I overcome this objection by using a dry cell located within the apparatus itself.

Another objection to all the constructions heretofore in use, so far as I know, is the intensity of heat required to operate them. My invention overcomes this objection by using a body of air inclosed hermetically in a bulb made of glass or some other suitable material, and is hence sensitive to any change in the temperature of the room.

My invention consists in the use of an india-rubber diaphragm so situated and arranged in conjunction with a body of air, a bulb, a flat metallic bar having a disk and a hinge, a screw, a bracket, a dry cell, and the mechanism of an electric bell as to make the circuit through the bell when the said body of air expands and break the circuit when the said body of air contracts to its former volume.

In the accompanying drawings, forming a

part of this specification, Figure 1 is a perspective front view of my invention with the front of the casing removed. Fig. 2 is a perspective side view of the same with the top and two sides of the casing removed.

Similar letters refer to similar parts throughout the two several views.

A is the casing, containing all the several parts and mechanism of my device except the bell and a part of the screw and the bulb.

B is the electric bell.

C is the screw.

D is the bulb containing the body of air.

E is the flat metallic bar.

F is the disk.

G is the cell.

H is the bracket through which the screw works.

I is the hinge of the flat bar.

K is the metallic band cemented on the neck of the bulb.

K' is the metallic screw-ring, and  $\frac{1}{2}$  is the flange on said ring.

M is the india-rubber diaphragm.

N is the piece of platinum.

$e$  and  $e'$  are conducting-wires.

The metallic flat bar E is joined at one end to the inside of the casing A by the hinge I, working freely up and down, and rests upon the mouth of the bulb D in such a manner as to cause said flat bar to move up and down simultaneously with the up-and-down movement of the india-rubber diaphragm M. The flat bar E, when resting horizontally upon the mouth of the bulb D, does not touch the screw C, as shown in Fig. 3, but when raised it presses against the lower end of screw C, as shown by dotted lines, Fig. 3. The flat bar E has a piece of platinum N on the upper side and a disk F on the lower side, as seen in Fig. 4. This disk is so constructed and arranged as to fit easily within the flange  $\frac{1}{2}$  of the ring K' and rest upon the diaphragm M. The purpose of this disk is to prevent lateral expansion of the diaphragm M on either side of the flat bar E. The purpose of the piece of platinum is to make a good electrical connection with the screw C. The hinged end of the flat bar E is joined by means of the wire  $e$  to the negative pole of the dry cell G.

The screw C is held directly over the platinum strip N on the flat bar E by means of the

bracket H, as shown in Fig. 3, in such a manner as to allow said screw to be raised or lowered. The purpose of this adjustment is to allow the alarm to be operated at different  
 5 temperatures. The screw C is joined by means of the bracket H and wire *e'* to the positive pole of the dry cell G, said wire *e'* having first passed through the mechanism operating the electric bell B. The screw C has a platinum  
 10 tip at its lower end, and marks of graduation on so much of its other end as extends above casing A, Fig. 1. The purpose of the platinum tip is to make a good electric connection with the flat bar E at N. The bracket H is secured  
 15 to the inside of casing A opposite to hinge I, as shown in Fig. 3.

The india-rubber diaphragm M, Fig. 2, covers the mouth of the bulb D and is so constructed and arranged in conjunction with the  
 20 screw-band K, the screw-ring K', and the flange *k* as to hermetically seal said bulb D, and permit the diaphragm M to expand vertically.

The band K is cemented to the neck of the bulb D and has a screw cut on its outer sur-  
 25 face.

The ring K' has a screw cut on its inner surface of the same pitch as the screw on K, and is screwed down on K, as shown in Fig. 2, in  
 30 such a manner as to secure by flange *k* the india-rubber diaphragm M to the rim of the bulb D air-tight, as shown in Fig. 2.

The mechanism which operates the electric bell B is situated and arranged conveniently behind the cell G.

35 While I have described my flat metallic bar with a disk and hinge, my india-rubber diaphragm, my bulb filled with air, my bracket, my screw, and the mechanism connecting them with an electric bell as adapted to a fire-  
 40 alarm, they may be applied in other ways, and I do not desire to limit myself to any particular use.

My invention operates substantially as follows: Whenever the temperature of a room  
 45 reaches the degree at which the alarm has been adjusted to ring, the air in the bulb D expands, causing the india-rubber diaphragm M to expand upward. This raises the flat bar E sufficiently to cause the platinum strip N  
 50 to bear against the platinum tip of screw C. This completes the electric circuit through the bell B, causing it to ring.

Having described my invention and its operation, what I claim, and desire to secure by Letters Patent, is—

1. A fire or other alarm consisting of a casing containing an india-rubber diaphragm covering hermetically the mouth of a bulb filled with air, a flat bar with a disk and hinge resting upon said diaphragm, a screw held by  
 60 a bracket over the end of said flat bar opposite to the hinge, and a bulb filled with air arranged on the bottom of said casing, and mechanism, substantially as described, for connecting the expansion of the body of air  
 65 in said bulb with the mechanism of an electric bell.

2. A fire-alarm comprising a casing, a flat bar with a disk and hinge for making an electric connection with a screw and bracket, said  
 70 screw and bracket, an india-rubber diaphragm for operating said flat bar, and a bulb filled with air arranged at the bottom of said casing and adapted by means of the mechanism, substantially as described, to operate the flat  
 75 bar automatically to operate the mechanism of an electric bell.

3. In a fire-alarm, the flat bar E, having the disk F and a hinge I, all combined with the diaphragm M, carrying a contact, and the  
 80 bulb D, so as to make and break an electric circuit with the screw C, as described, and operated in the manner substantially as set forth.

4. The diaphragm M, carrying a contact secured to the mouth of the bulb D by the metallic band K, ring K', and flange *k*, so as to  
 85 permit the vertical expansion of said diaphragm, and a co-operating contact, substantially as described and shown.

5. In a fire-alarm or similar device, the combination of the following elements, to wit: a bulb containing a body of air, band K, ring  
 90 K', with flange *k*, india-rubber diaphragm M, flat bar E, having disk F and hinge I, screw C, bracket H, dry cell G, electric bell B and mechanism, and casing A, inclosing all of these several elements, except bell B and a part of screw C and bulb D, all operating sub-  
 95 stantially in the manner set forth.

HUGH M. BROWNE.

Witnesses:

B. P. WATROUS,

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