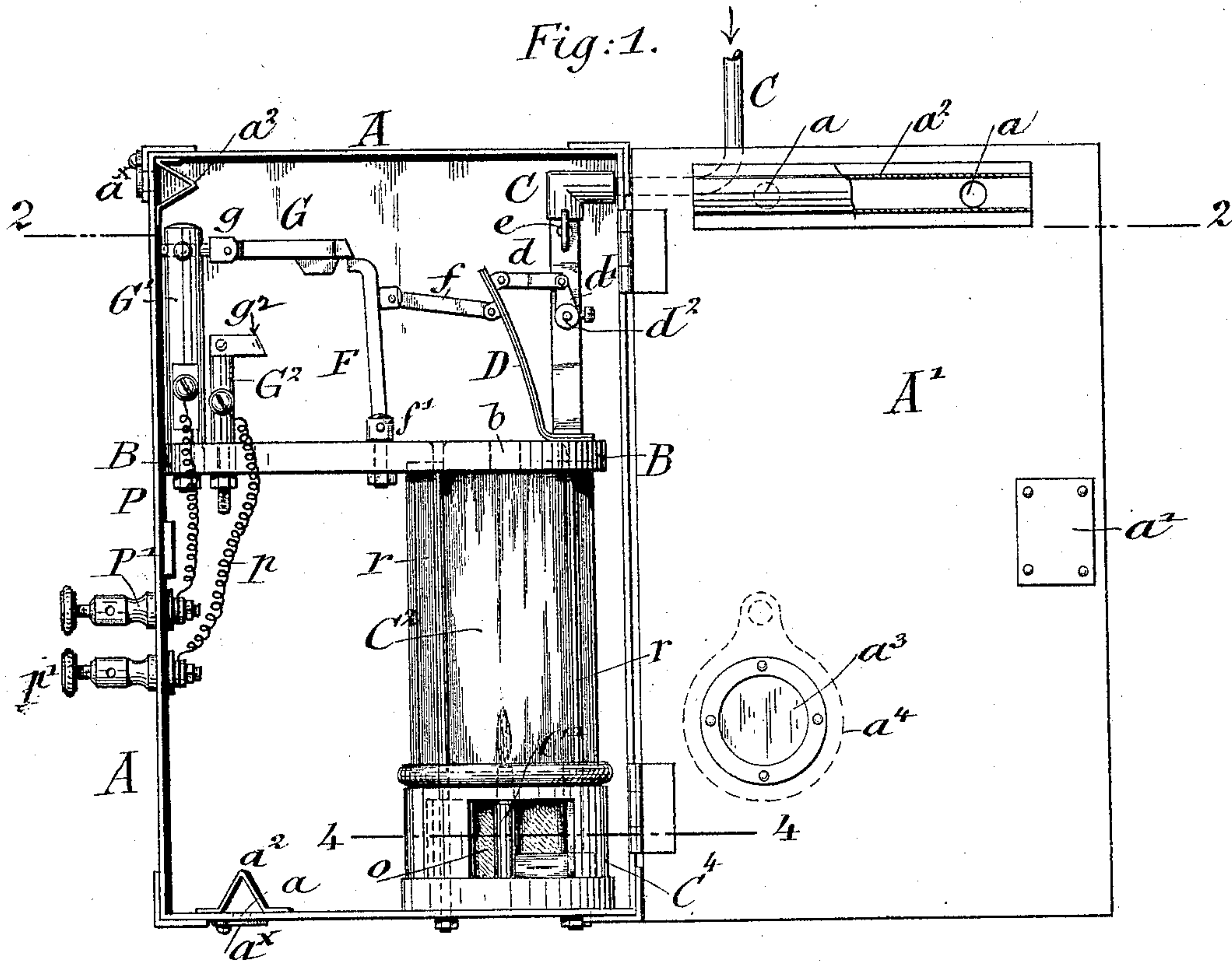


(No Model.)

H. BAER.
THERMOSTATIC FIRE ALARM.

No. 569,851.

Patented Oct. 20, 1896.



UNITED STATES PATENT OFFICE.

HENRY BAER, OF NEW YORK, N. Y.

THERMOSTATIC FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 569,851, dated October 20, 1896.

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To all whom it may concern:

Be it known that I, HENRY BAER, a citizen of the United States, residing at the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Thermostatic Fire-Alarms, of which the following is a specification.

This invention relates to certain improvements in thermostatic fire-alarms, in which, in place of the expansion of a suitable thermostatic bar under the influence of the direct heat of the fire, the bar is constantly subjected to the influence of the heat of a suitable flame and the heating effect on the thermostatic bar interrupted in case of fire, when the smoke caused by the same extinguishes the heating medium and produces thereby the closing of an electric alarm-circuit, so that attention is drawn to the starting fire.

My invention consists of a thermostatic fire-alarm, which comprises a thermostatic bar that is attached at one end to a non-conducting shelf heated by a gas-flame or other heat agency, and which is connected at its upper free end with a regulating device, by which the supply of gas to the flame is regulated, and is also connected with a detent, on which a movable contact is supported, which contact is released when the action of the heat agency on the thermostatic bar is interrupted by the contraction of said bar, so that it forms an electric connection with a stationary contact and closes an electric circuit, by which the alarm of fire is given.

In the accompanying drawings, Figure 1 represents a front elevation of my improved thermostatic fire-alarm, showing the front door of the same in open position, so that the interior parts are in view, said parts being shown in normal position. Fig. 2 is a plan view, partly in horizontal section, on line 2 2, Fig. 1. Fig. 3 is a side elevation of the operative parts of my improved fire-alarm, showing the same in their second position, so as to indicate a fire; and Fig. 4 is a detail horizontal section on line 4 4, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the exterior casing of my improved thermo-

static fire-alarm, which is provided with a hinged door A', that is fastened by a suitable lock a', so that no one except the party in possession of the key has access to the interior of the fire-alarm. The casing is provided with bottom and top openings a a, which can be opened or closed by means of small pivoted covers a^x, so that an updraft of air from the lower toward the upper end of the casing can take place. At the inside bottom walls of the casing and of the cover A' are arranged V-shaped plates a², that extend over the air-openings a a, so as to prevent a direct draft of air through the casing, the air being compelled to pass first into the channel formed by the V-shaped plates a², and then to the interior of the casing.

At the interior of the casing A is arranged a non-conducting plate or shelf B, which is preferably made of slate, porcelain, or other refractory material, and provided with an opening b, that is located vertically above a small gas-burner C', which is arranged at the lower part of the casing A and to which the gas is supplied by a supply-pipe C, which enters at the upper part of the casing and extends in downward direction to the burner C'. The gas-burner is surrounded by a chimney C², which is protected against breakage by suitable rods r, that pass through the bottom of the casing and through the shelf or plate B, so as to support the latter in position in the casing. Below the chimney is arranged a sheet-metal gallery C³, which is provided with an opening o, and a ring-shaped slide C⁴, also provided with an opening C⁵, so that the access of air to the flame can be regulated to keep up the proper combustion of the gas, as shown in Fig. 4. To the shelf B is applied above the heat-opening b a thermostatic bar D, which is formed in the usual manner of two thin layers of sheet metal of different coefficients of expansion, such as brass and steel, which thin layers are riveted together. The lower end of the thermostatic bar D is applied to the shelf B, while the upper free end is connected at one side by a pivot-link d with a crank d' of a gas-cock d², by which the supply of gas to the burner C', and thereby the flame, is regulated automatically. The

gas-supply pipe C is further provided above the gas-regulating cock d^2 with a main gas-cock e , so that the supply of gas can be shut off entirely when the thermostat is not up for use or when the same has to be interrupted for some reason or other. The gas-regulating cock d^2 is necessary, so as to provide for the varying pressure of the gas in the supply-pipe and for keeping thereby the heating-flame at a uniform size. The heated air generated by the flame passes through the opening b and acts on the thermostatic bar D, so as to cause the greater or less expansion of the same, according to the size of the gas-flame. The upper end of the thermostatic bar D is further connected by a pivot-link f with an oscillating detent F, pivoted at its lower end to ears f' , attached to the shelf B, and which is provided with a curved upper end, on which rests a weighted and pivoted contact or latch G, pivoted to suitable ears g , applied to a post G' , which is attached to the shelf B and connected by a conducting-wire P with a suitable binding-post P' , applied to and insulated from the side wall of the casing. A second shorter post G^2 , provided with a horizontal fixed contact g^2 , is arranged on the shelf B in front of the post G' vertically below the movable contact G and also connected by a conducting-wire p with a second binding-post p' , which is electrically connected with a suitable fire-alarm circuit arranged in the office of the building or in the office of the watchman or at some distance from the building in the office of a district messenger company. The cover A' of the casing is provided with a glass-covered opening a^3 , which is normally closed by means of a pivoted slide-plate a^4 , that can be readily opened from time to time, so as to observe if the heating-flame is properly burning at the interior of the casing.

My improved thermostatic fire-alarm operates as follows: When all the parts are in their normal position, as shown in Fig. 1, and the thermostatic bar D is heated by the small gas-flame or other heating agency below the same, it is sufficiently expanded under the influence of the heat so as not only to regulate the supply of gas by means of the regulating gas-cock d^2 , but also to keep it expanded or bent to such an extent that the oscillating detent F is moved sidewise, so as to support the pivoted contact G in horizontal position on its bent upper end and prevent the contact from dropping. As soon, however, as the smoke caused by a fire enters into the casing and into the lower part of the chimney C^2 the heating gas-flame is extinguished, because the smoke shuts out the supply of air to the flame. Consequently the thermostatic bar commences to cool off and to contract, so that the supply of gas is interrupted by the automatically-regulated gas-cock d^2 , and simultaneously the oscillating detent F is moved into the position shown in Fig. 3, thus releasing the contact G and producing thereby the

dropping of the same by gravity in contact with the contact-piece g^2 of the post G^2 , whereby the alarm-circuit is closed and the alarm of fire given at the office or other place where the fire-alarm box is located. It appears, therefore, that my improved thermostatic fire-alarm, instead of being based on the direct action of the heat of the fire on a thermostatic bar and the closing of a circuit by said bar, is operated by the exclusion of air from the fire-alarm box and the consequent extinguishment of the heating-flame and the cooling off of the thermostatic bar, whereby the further supply of gas to the flame is interrupted and the circuit-closing contact automatically operated. It is obvious, therefore, that my improved fire-alarm is much more sensitive than the thermostatic fire-alarms heretofore in use, for the reason that the smoke usually fills up a room before the fire can exert a sufficient degree of heat on the thermostatic bar so as to cause the proper action of the same.

My improved thermostatic fire-alarm is comparatively inexpensive, can be located at any desired point of a building, and forms a very effective and reliable protection against fire for residences, hotels, warehouses, factories, and buildings of all kinds.

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

1. In a thermostatic fire-alarm, the combination of a thermostatic bar, means for heating said bar, a detent connected with the thermostatic bar, a movable contact supported by said detent, and another contact adapted to be engaged by said movable contact whenever the heat action on the thermostatic bar is interrupted, so that an electric circuit is closed and the alarm of fire given, substantially as set forth.

2. In a thermostatic fire-alarm, the combination with a thermostatic bar, of means for constantly applying a heat action on said bar, a regulating device connected with the thermostatic bar for regulating the supply of gas to the heating agency, a detent also connected with said thermostatic bar, a pivoted contact supported by said detent and another contact adapted to be engaged by the pivoted contact when the same is released by the supporting-rod so as to close an electric alarm-circuit, substantially as set forth.

3. The combination with a casing, provided with suitable draft-openings, of a gas-burner at the interior of said casing, means for supplying air to said burner, a shelf above the gas-burner, provided with an opening vertically above the flame, a thermostatic bar applied to the shelf and arranged above said opening, means connected with the free end of the thermostatic bar for regulating the supply of gas to the flame, a detent also connected with the free end of the thermostatic bar, a pivoted contact resting normally on

the detent, and another contact which is engaged by the movable contact when the same is released by the extinction of the flame and the contraction of the thermostatic bar, so as
5 to produce the closing of the electric circuit and the sounding of an alarm, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HENRY BAER.

Witnesses:

PAUL GOEPEL,
GEO. W. JAEKEL.