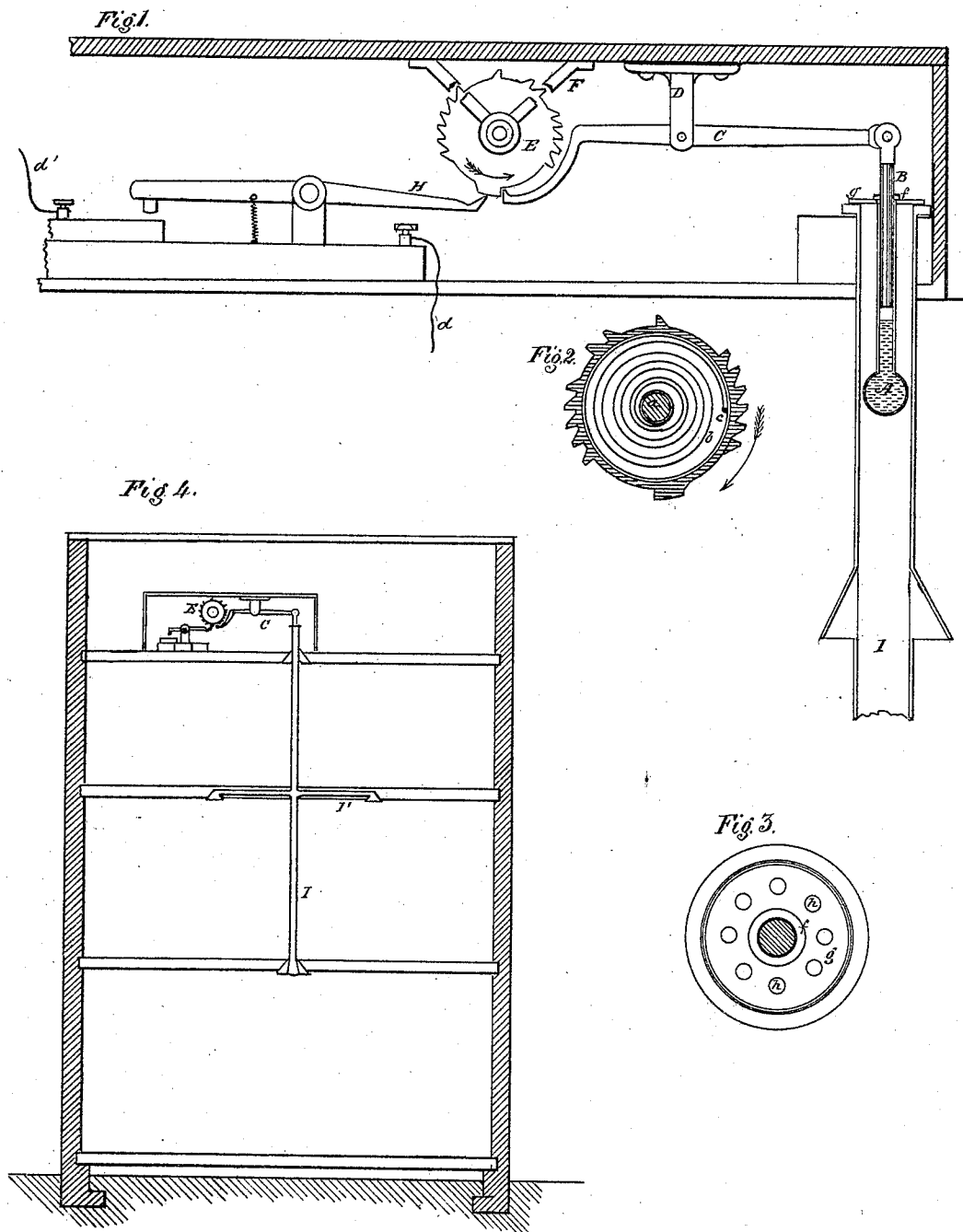


A. F. & F. B. JOHNSON.

Telegraphic and Thermostatic Fire-Alarms.

No. 148,215.

Patented March 3, 1874.



Witnesses.

Charles E. Stewart
Harry C. Clarke.

Inventors.

Albert F. Johnson.
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By their attorney
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UNITED STATES PATENT OFFICE.

ALBERT F. JOHNSON AND FRANK B. JOHNSON, OF PARKVILLE, NEW YORK.

IMPROVEMENT IN TELEGRAPHIC AND THERMOSTATIC FIRE-ALARMS.

Specification forming part of Letters Patent No. **148,215**, dated March 3, 1874; application filed December 26, 1872.

To all whom it may concern:

Be it known that we, ALBERT F. JOHNSON and FRANK B. JOHNSON, of Parkville, in the county of Kings and State of New York, have jointly invented an Improved Fire-Alarm Apparatus; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings forming a part of this specification:

The object of this invention is to provide, for use in cities and towns, a fire-alarm apparatus, simple in its construction and automatic in its operation, which may be easily managed and will not be liable to get out of order, and by means of which the exact locality where a fire breaks out may be instantly indicated at one or more engine-houses or stations of the fire department. The nature of this invention consists in the combination, with a fire-alarm signal mechanism, of a thermostat controlling the same, arranged within a flue or pipe, by which the heated air, from any apartment of the building to which our invention is applied, is conducted to such thermostat, which sets the said mechanism in motion. The said signal mechanism is so constructed that, when set in motion, it will operate the key of a telegraph-instrument, and thereby indicate at the different fire-department stations, through the medium of ordinary telegraph-wires connecting with said instrument, the exact locality where a fire has broken out.

We are aware that thermostats have been used for giving an alarm of fire, by arranging a thermostat in each apartment of a building, with its electrical wires and other adjuncts, but this is unsightly, costly, and inconvenient.

We use but one thermostat, with its accompanying signal mechanism, in a building of ordinary size, the said thermostat being arranged in a flue or pipe connecting with each apartment, so that in whatever apartment of the building a fire may break out, the heated air will be conducted to the thermostat, and the alarm mechanism put in operation.

One form in which our invention may be carried out is illustrated in the accompanying drawings, in which—

Fig. 1 represents an elevation of our apparatus, with portions of the same shown in sec-

tion; Fig. 2, a plan view of the reverse side of the cam-wheel or signal-wheel; Fig. 3, a plan view of the cover of the conducting-tube; and Fig. 4, a sectional elevation of a building supplied with our fire-alarm apparatus.

Similar letters of reference indicate the same parts in all the figures.

A is a column of mercury, or other substance which possesses similar properties or qualities of sensitiveness to heat and a high degree of expansibility. This is inclosed in a tube, which may be in the form shown in the drawing, having a bulb at its lower extremity, similar to the tube and bulb of an ordinary thermometer. Within this tube, which is open at its top, fits and works a plunger or piston, B, to the upper end of which is pivoted the end of a lever, C, which is hung on a shaft secured in the hanger D; or, if preferred, this lever C may be supported in other suitable manner. The opposite end of this lever serves as a pawl to keep the cam-wheel E at rest until the apparatus is set in motion by the rise or expansion of the mercury, such expansion raising the piston B and that end of the lever C to which said piston is attached, and consequently depressing the other end of the lever, and thus releasing the wheel E. This wheel E is fitted upon a shaft, *a*, and moves freely thereon, the shaft being stationary and secured to the hanger F, or in any other suitable manner; and upon the periphery of the said wheel are a number of bosses or inclines, which may be in the form of ratchet-teeth, as shown in the drawing. These bosses or inclines successively strike the end of the lever H, which represents the key of an ordinary telegraph-instrument; and this wheel E, when released by the expansion of the mercury, as before stated, rotates in the direction of the arrow marked thereon, being driven by a spring-coil, *b*, one end of which is secured to the shaft *a*, and the other end thereof similarly secured to the wheel near its periphery, as seen at *c*, by which means the circuit is alternately opened and closed, each incline causing the key to make one stroke. Several groups or series of these inclines are provided on the wheel, so that the number of the building, and the number of the street in which such building is located, may be indicated at

the station or stations to which the signal is conveyed. The wheel E, as shown in the drawing, would, when released by the action of the spring *b*, cause the lever or key H to make, first, one stroke to give warning, then six strokes, then one stroke, then two strokes, and then five strokes, with a pause of longer or shorter duration between each series of strokes, thus indicating, at the engine-house or station, street No. 6 and house No. 125 as the location of the fire. These, of course, will be varied as may be required, so as to correspond with the number of the street and the number of the building in which the apparatus is placed; and we may here state that any suitable mechanical device may be employed for retarding the motion of the wheel, so that a pause of sufficient duration may occur between each series of strokes, in order to make the signal distinct and certain. *d d'* represent the telegraph-wires, connecting with any desired number of fire-stations, which may be of ordinary construction, and arranged in the ordinary or any suitable manner. I represents a tube, of any suitable material, the object and purpose of which is to conduct the heated air to the mercury. This may be placed in any suitable position and location within the building, so as to extend from the ceiling of the lowest apartment up to and through the floor of the highest apartment in the building; and, where convenient or necessary, branch tubes *I'* may connect therewith, as shown in Fig. 4. Within the upper end of this tube we insert the tube and bulb containing the mercury A, already described, which latter tube may be provided with a flange, *f*, to rest upon the plate or cover *g* of the tube I. An air-chamber may be provided between the bulb and tube A and the inner surface of the tube I, as seen in Fig. 1, through which the

hot air may ascend, and perforations *h* may be provided in the plate or cover *g*, for allowing the escape of the same; or, if desired, the bulb may fill the tube I, and the air-chamber and perforations may be dispensed with; and we may state that the tube I and its connecting-branches may also be dispensed with in some instances without materially affecting the principle and operation of our invention. The quantity of mercury and the dimensions of its inclosing-tube are to be such that when the temperature of any apartment rises above a certain degree—say about 140° or 150° Fahrenheit—the expansion of the mercury will force up the piston B and release the wheel E, which will then commence to rotate, bringing the inclines or bosses successively in contact with the lever or key H, by which means, through the medium of the connecting-wires *d d'*, the alarm will be given at the several stations, and the precise location of the fire will be indicated.

It is evident that other thermostat fire-alarms may be used in lieu of those herein shown and described, without materially changing or altering the nature of our invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

The combination, with a fire-alarm signal mechanism, of a thermostat controlling the same, arranged within a flue, by which the heated air from any apartment is conveyed to such thermostat, as and for the purposes set forth.

ALBERT F. JOHNSON.
FRANK B. JOHNSON.

Witnesses:

HARRY C. CLARKE,
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