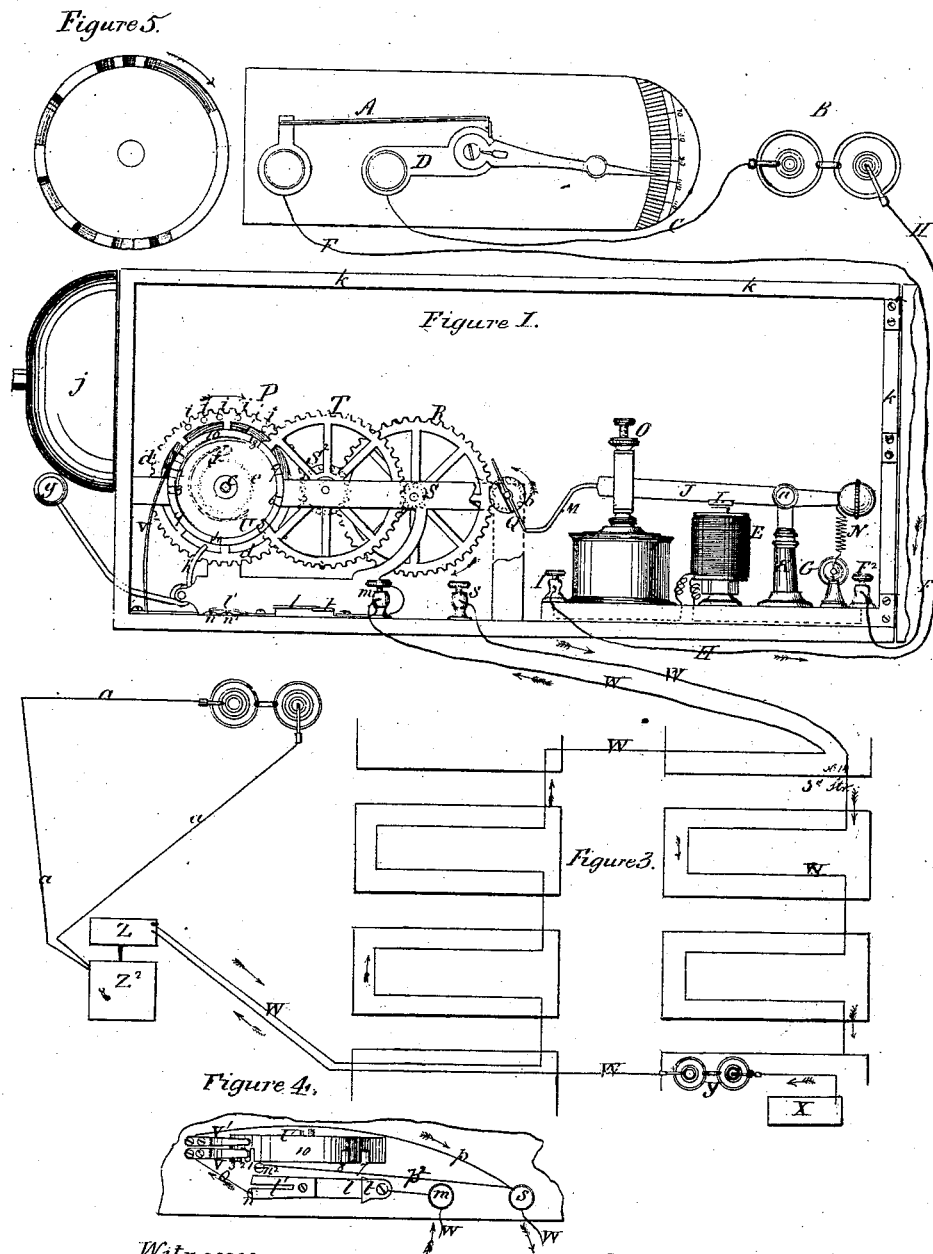


W. B. WATKINS.

Automatic Fire Alarm Telegraph.

No. 111,413.

Patented Jan'y 31, 1871.



Witnesses  
 W. Hamilton & Son  
 Harry C. Lyggett

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# UNITED STATES PATENT OFFICE,

WILLIAM B. WATKINS, OF JERSEY CITY, NEW JERSEY.

## IMPROVEMENT IN FIRE-ALARM TELEGRAPHS.

Specification forming part of Letters Patent No. 111,413, dated January 31, 1871.

### CASE D.

*To all whom it may concern:*

Be it known that I, WILLIAM B. WATKINS, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Automatic Fire-Alarm Telegraphs; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation thereof, which will enable those skilled in the art to make and use my invention, reference being had to the accompanying drawings of the same, which make part of this specification, and in which—

Figure 1 represents an elevation of an apparatus for working an automatic fire-alarm-telegraph line. Fig. 2 represents a heat-detector or local fire-alarm, which connects with a magnet for operating a detent for releasing the operating mechanism. Fig. 3 represents a diagram showing an automatic telegraph-line in connection with its operating mechanism and the buildings, and also the connection of said line with a municipal line. Fig. 4 represents a top view of the break-circuit, showing its connection with a switch-key for cutting out said break; and Fig. 5, a view of the break-circuit used for printing.

My invention relates to operating fire-alarm telegraphs automatically by the fire itself; and it consists in operating a tripping-detent by means of a heat-detector or local fire alarm in such manner as to release a wound-up train of gearing to operate a break-circuit for the purpose of indicating or sounding automatically the number of the street and building, or the latter only, where the fire has broken out at its commencement, and thus sound the alarm at as many points as may be desired within the line or lines with which it connects.

In the accompanying drawings, Fig. 2 represents a heat-detector or local fire-alarm, consisting of a compound strip, A, of two different metals, which depends upon heat for its action, so as to close the electric circuit of a local battery, B, to actuate the mechanism for springing an alarm. This device is known as Ross's fire-alarm and heat-detector, patented March 10, 1863, and a further description of its construction and operation is deemed unnecessary in this patent, as any other fire-alarm device may be used instead of the one represented.

The battery B is connected, by a wire, C, to a metallic arm, D, with which the compound metallic strip A forms a junction when affected by the fire; and the compound metallic strip is connected to the magnet E by means of the wire F, through the screw-post F<sup>2</sup>, and the electric circuit is completed to the battery by means of the wire H, leading thereto from the screw-post I, connecting with the magnet. In connection with the magnet E I arrange a lever, J, pivoted to a standard, K, between binding-screws a, upon the points of which it is free to vibrate. This lever J carries an armature, L, in a position to be attracted by the magnet. An arm, M, extends from one end of this lever in a position to act as a detent to hold the train wound up when the electric circuit is broken, and for this purpose the opposite end of the lever J is pulled down by a spring, N, so as to constantly tend to pull the armature from the magnet and hold the detent M up. The upward movement of the detent and its lever J is regulated by means of an adjusting-screw, O, in a standard on the frame. The train of gearing may be of any suitable construction that will admit of being set in motion by a spring, P, or weight. Connected with this train is a fly, Q, the wings of which are arranged so as to be struck and be held by the detent M so long as the electric circuit is broken, as shown in the drawings. The shaft of the fly Q has a pinion, b, which engages with a gear-wheel, R, and the latter, by suitable gear-wheels S, S<sup>2</sup>, and T, with the shaft c, upon which is secured the mainspring. Upon the shaft c of the mainspring I secure a break-circuit consisting of a disk, U, mounted upon and revolving with the shaft, from which it may be insulated in any suitable manner. The breaks of this circuit are arranged upon the disk U so as to cause the alarm within the line to strike the street number, as 3, and the building number, as 14, in the following manner: The breaks are arranged in two divisions corresponding with said numbers, those in the first division at short intervals to produce strokes in quick succession, and those in the other division at longer intervals to distinguish between the street and building numbers. In the instance shown the breaks are formed by spaces cut in the revolving disk, the street

number, 3, being indicated by the spaces 1 2 3, and that of the building by 4, 5, 6, 7, and 8, and the two divisions of numbers are separated by the metallic interval 9, while the long metallic interval 10 is for distinguishing between the ending and the commencement of the alarm sounded. The break-wheel U has two spring-arms, V V', secured to the frame, so as to constantly bear upon the said wheel. One of these arms, V', is always in metallic connection with said wheel, while the other, V, is arranged to break the circuit at the cut spaces as the wheel is revolved, and thus open and close the circuit at intervals corresponding with the breaks.

The diagram, Fig. 3, shows the automatic line W, with which the break-wheel U is connected by means of the springs V V', so that when the electric circuit is closed the current will pass through and from the break-wheel U in the direction of the arrows. This diagram also shows the points of connections of the automatic line with buildings, an alarm apparatus, X, placed in the building where the line-battery Y is kept, and also with suitable alarm mechanism Z for operating the municipal alarm-box Z', so as to communicate the proper alarm through the municipal line *a* automatically by means of the fire.

One of the train of gear-wheels *d* is mounted upon the shaft *c* of the mainspring, so as to be carried forward by a ratchet, *e*, secured to the shaft *c*, into the teeth of which a pawl, *f*, attached to the gear-wheel *d*, takes whenever the train is set in motion by the unwinding of the spring; but as such devices are common to gearing-trains, and as other gearing-trains than the one represented may be used, a more particular description of these parts is deemed unnecessary. The gear-wheel *d* is provided with pins *i*, arranged so as to actuate a hammer, *g*, by means of a short arm, *h*, held in position by a spring, the force of which causes the hammer *g* to strike the bell *j*, when the short arm *h* is tripped by the pins *i*, and thus strike the alarm. In order that the alarm may indicate the number of the building where the fire has commenced the pins *i* are arranged so as to strike the building-number only.

The apparatus thus described may be kept in a box, *k*, and placed on the outside of buildings with which the line is connected, and the force of the spring may be such that the number sounded may be distinctly heard at a distance, the bell for which purpose being placed on the outside of the box.

To prevent the opening and closing of the circuit by the reverse movement of the break-wheel U in winding up the spring, I employ a double switch-key, *l l'*, for the purpose of cutting out the current from the break-wheel U, and at the same time keeping the circuit closed, so as not to interfere with the working of the automatic line. This switch-key has two branches, *l* and *l'*, and is pivoted to the frame so as to be turned. The current passes from the post *m* through the key *l l'*, the button *n*,

from which a wire, *o*, leads, to the spring V, which allows the current to pass through said spring and the break-wheel U, and, by the spring V' and wire *p*, to the post *s* of the line. When, however, the branch *l'* is turned out, so as to leave the button *n* and connect with the button *n'*, the current will be cut off from the springs V V' and break-wheel U, and the circuit will be completed, through the wire *p'*, to the post *s*, thereby allowing the spring P to be wound up without interfering with the line. The switch-key can be used for telegraphing through the lines when connecting with either button, as the branch *l* is kept constantly in contact with a fixed plate, *t*, connecting with the screw-post *m*, and the other branch, *l'*, with one of the two buttons *n n'*, thereby keeping the circuit constantly closed. When the mainspring is wound up and the apparatus in working order the springs V V' are on the metallic interval 10 of the break-wheel.

Instead of having the break-wheel U fixed to the shaft it may be arranged thereon so as to be carried in a forward direction only by a ratchet and pawl in the same manner as the gear-wheel *d*, which trips the hammer.

In order to distinguish between the lines shown in the drawings and their connections, the local line, operated by the heat-detector, is represented by C, F, and H; the line connecting with the mechanism herein described in the different building and its automatic mechanism X and Z by W, and *a* indicates the municipal line connecting with its alarm-box Z' and its battery.

I have stated that X and Z represent certain alarm mechanism connecting with the line W; but as the construction and operation of this mechanism form the subject of another patent bearing even date herewith, a description thereof is deemed unnecessary, further than to state that when the heat-detector has been acted upon by fire such mechanism will be put in motion, and produce an alarm not only through the line W, but also through the municipal line *a* when desired.

The break-circuit U is adapted only for striking the number of the street and that of the building; but it is obvious that a break-circuit adapted to both sounding and printing the number or numbers may be used instead of the one described. Such a break-circuit is shown in Fig. 5 of the drawings, in which the breaks are arranged to make the proper intervals upon the paper in a manner fully described in an application bearing even date herewith.

From the foregoing description it will be evident that the main object to be accomplished is to pull away the detent which holds the train wound up, so that the alarm may be given.

Instead of using the electric current to act upon the magnet E for the purpose I can use any of the well-known fire-alarm devices or heat-detectors, which, when acted upon by the fire, will release a spring or weight to pull a bell wire or cord, and by this means accomplish the same result.

For the purpose of indicating the room where the fire has originated, any of the well-known indicators used in connection with heat-detectors or local fire-alarms may be embraced in the local line F, C, and H.

Having described my invention, I claim--

1. The combination of a device operating to automatically close an electric circuit on an increase of temperature with the circuit C F H, electro-magnet E, armature L, lever J, tripping-detent M, fly Q, or its equivalent train of wheels, levers *h* and *g*, and alarm-bell *j*, operating as and for the purpose described.

2. The combination and arrangement of the magnet E, the armature L, and its lever J, detent M, and spiral spring N, with the train of wheels, the break-circuit U, and a device operating to automatically close an electric circuit on an increase of temperature.

3. The combination of the switch-key *l l'* with the mechanism herein described for the purpose of cutting out the break-circuit U and telegraphing, as described.

4. The combination, with a device operating to close an electric circuit on an increase of temperature and its local line F, C, and H, of battery B, the magnet E, lever J, armature L, spring N, detent M, and the train of wheels and break-circuit U, with the line W and its battery Y, connecting with the buildings and alarm mechanism, as described.

In testimony whereof I have hereto signed my name.

WILLIAM B. WATKINS.

Witnesses:

A. E. H. JOHNSON,  
T. H. UPPERMAN.