

J. H. GUEST.

FIRE-ALARM TELEGRAPH.

No. 174,233.

Patented Feb. 29, 1876.

Fig. 3.

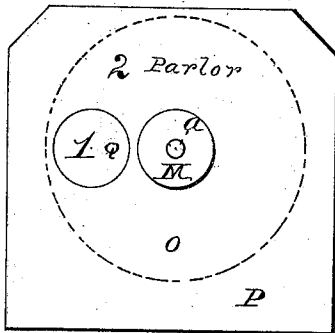


Fig. 4.

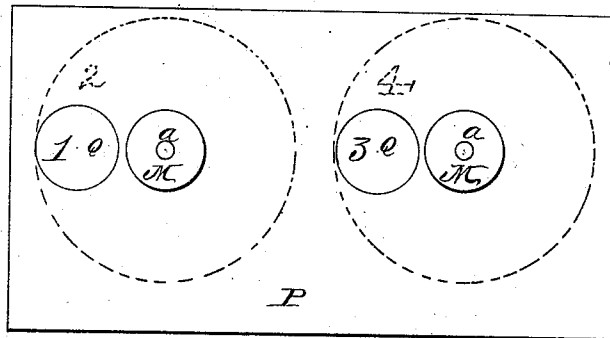


Fig. 2.

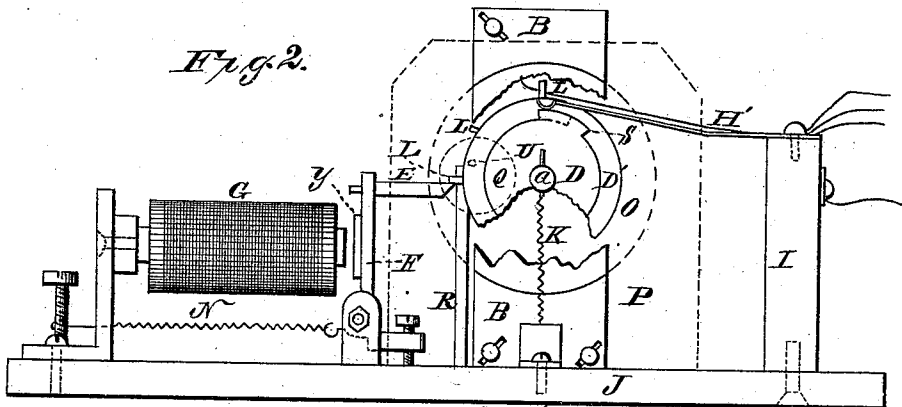
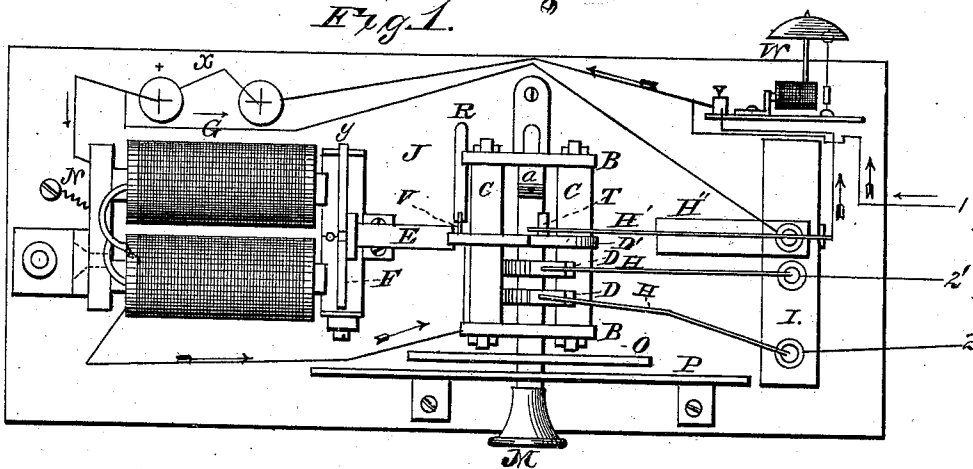


Fig. 1.



Witnesses:

George F. Hawthorn
Charles J. Mathews

Inventor:

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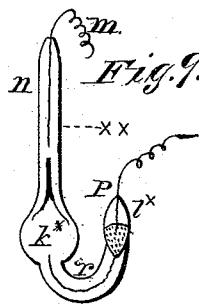
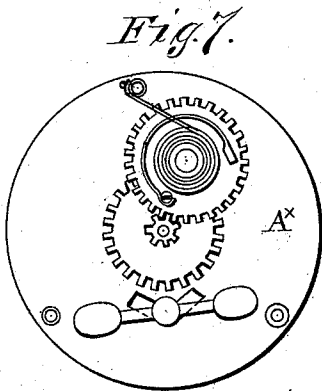
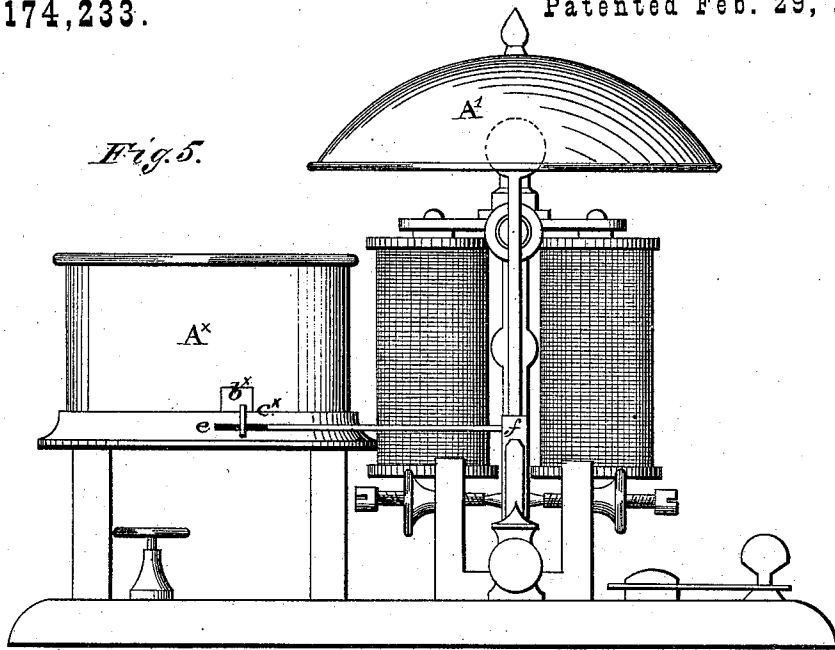
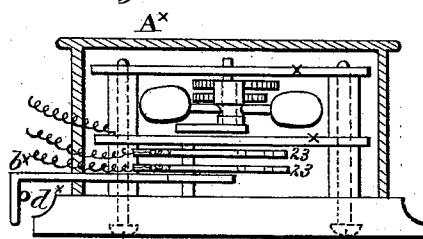
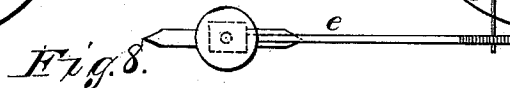
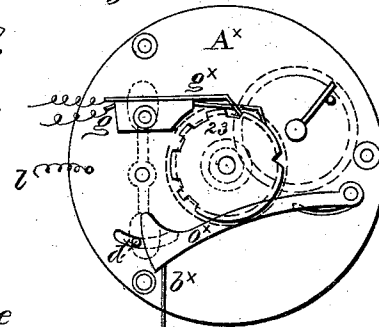


Fig. 6.



Witnesses:

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Inventor:

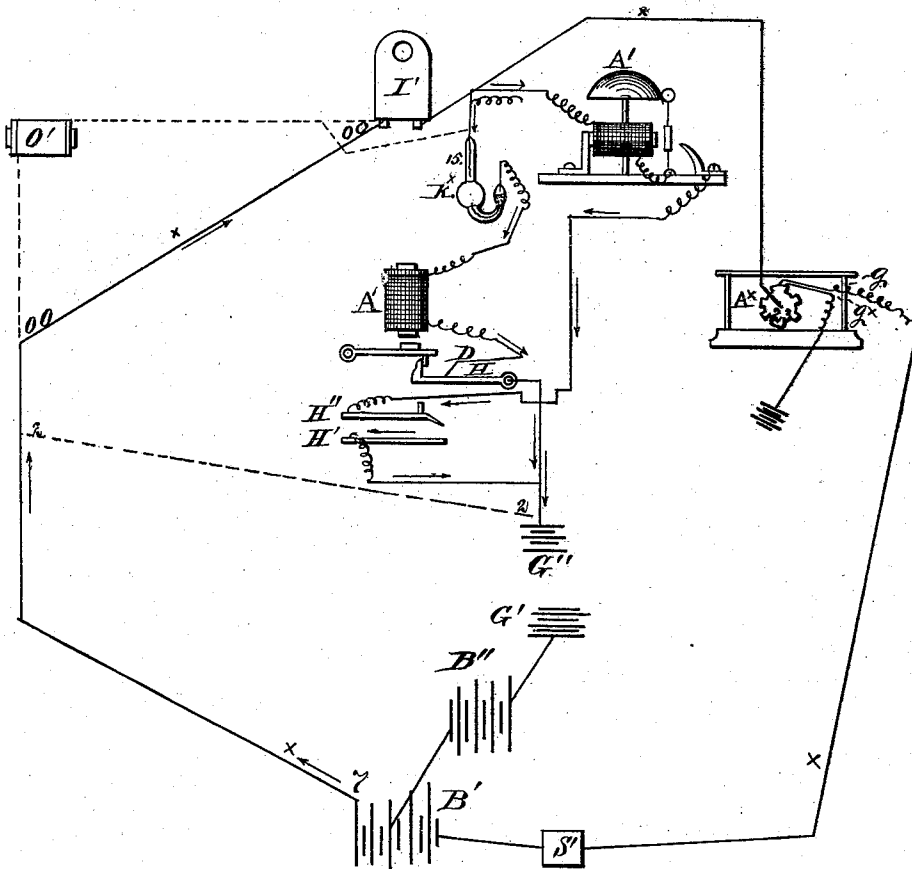
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Fig 10.



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UNITED STATES PATENT OFFICE.

JOHN H. GUEST, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN FIRE-ALARM TELEGRAPHS.

Specification forming part of Letters Patent No. **174,233**, dated February 29, 1876; application filed October 7, 1875.

To all whom it may concern:

Be it known that I, JOHN HENRY GUEST, of the city of Brooklyn, Kings county, State of New York, have invented certain new and useful Improvements in District and Fire Alarm Telegraphs, of which the following is a specification:

The object of this invention is to furnish a good system, with cheap and reliable instruments for the same, and make it capable of giving a continuous local alarm, locating the room, &c., as well as transmitting an alarm of fire or danger of fire to a central station.

In a patent granted to me, No. 144,535, bearing date November 11, 1873, I show a plan by which a local alarm can be given, in connection with which is an annunciator, to indicate the different rooms or floors, and at the same time an alarm can be communicated to a central station through the normally-closed circuit of a district telegraph; but, in giving the local alarm, clock-work is used to ring the bell, which, after operating, must be wound up, ringing for a short period of time only. In this case I employ what is commonly known as a continuous ringing or vibrating bell, which, when once started by closing the shunt-circuit, continues to ring so long as the battery holds out, or until it is switched out of circuit.

In the accompanying drawing Figure 1 represents a view of my automatic annunciator, taking a view of it from the top; Fig. 2, a front view of the same, with the front support-plate B broken away to give a view of the machinery. The break-wheels D D and stop-wheel D' are also broken away to give a view of the spiral spring K which revolves the shaft and series of circuit-breaking wheels D D, when, by the attraction of the magnet G, the armature F releases the stop-wheel D' and allows the machine to act. Fig. 3 is a front view of the same, exposing the Fig. 1 as it would appear if the annunciator were operated.

I will now explain the operation, reference being had to the letters indicating the different parts.

a is a shaft supported by uprights B B

which are held together by rods c c, the shaft running through and carrying the wheels D D and D'. Each point to be indicated requires a wheel or suitable piece of metal fixed to the shaft; but, for illustration here, I deem two wheels with what I term a stop-wheel sufficient. H, H', and H'' are springs fixed to the insulated support I, the springs H H resting upon the periphery of the circuit-breaking wheels D D. The spring H' is located over, but insulated from, the spring H'', and is kept, ordinarily, from contact with it by an insulated pin, T, projecting from the wheel D'.

It will be observed that the break-wheels D D are so cut that only a part of each one connects with, and holds contact with, its appropriate spring, and will so hold contact the proper length of time, until, by revolving, the circuit is broken therethrough, and when the right number or name will appear at the opening of the front plate P. L L L are pins or stops, and are put at proper distances on the wheel D' to come against the arm E and stop the rotation of the disk whenever the circuit, through the magnet, is broken, and the appropriate number displayed. v is another stop-pin, and is caught by the upright R, permitting the wheels to revolve only to the last indication on the dial Q. T is an insulated pin for the purpose of breaking contact between the springs H' and H'' when the instrument is wound up. E is an extension from the upright holding the armature y. M is a thumb-piece, and is for convenience in winding up the instrument.

It will be seen that this instrument requires but one magnet, and is so constructed that ratchet-wheels and escapements are dispensed with, and the springs and wheels make it adaptable where it is required to annunciate different apartments, by a permanent closing of the circuit at the manipulating point; also, it will be seen that this instrument is constructed in a simple but reliable way to give a continuous alarm, even after the circuit has again been broken. I do not claim this feature as new, only so far as it relates to my system of alarm.

I will here remark that, when many indica-

tions are required, say more than ten or twelve, a number of these instruments can be joined together, thereby indicating many apartments, as is partially illustrated in Fig. 4.

Now, in order not to be obliged to return to this part of my improvement again, I will explain its operation as illustrated in Fig. 1, connected, as I show, with simply a bell and battery.

x represents a battery, W a bell-magnet, and the arrowed lines the passage of the current. Closing the wires at 1 and 2' will cause the current to pass from the left-hand cell of x through the magnet G , thence to the frame of the instrument, thence to the break-wheel, to spring 2', and so on to the other pole of the battery, as indicated by the single-tailed arrows. This causes the magnet G to attract the armature y , releasing the stop-wheel D' , and by reason of the tension-spring K the wheels revolve until contact is broken between the wheel and spring; the armature then falls back, causing E to catch the proper pin L , and indicates the division at Q on the dial, the effect of which releases the spring H' making contact between it and H'' , thereby shunting the circuit and causing the current to pass through the bell-magnet, as shown by the double-tailed arrows, giving a continuous alarm, even should the circuit again be broken at 1 and 2', and so on with all the break-wheels.

Fig. 5 is a front view of a vibrating-bell magnet, A^1 , and signaling-box A^* with its metallic cover on; through the opening projects a hook-wire, b^* , which is fastened to the lever o^* , as shown in Fig. 6. When the instrument is wound up, and the hook-wire is pushed in, the lever o^* is held fast by the pressure of the d^* , thereby holding in check the signaling instrument. The rod e , insulated on its end passing behind the hook-wire b^* , and the other end connected to the bell-hammer staff f , must, as will be seen, cause the signaling-box to operate upon the first action of bell-magnet by the withdrawal of the hook-wire b^* , thus transmitting a signal to the central station.

Fig. 6 is a bottom view of the signaling-box, showing the lever o^* as held in place by the pin d^* ; the hook-wire b^* is also shown in combination with the rod e . g^* and g are springs, one of them, g , bearing upon the periphery of its signaling-wheel; the other one, g^* , is for the purpose of transmitting by a ground passage, and is not in connection with its signaling-wheel unless deemed necessary, when it is then connected to ground, as illustrated in Fig. 10. Spring g and the wire l , connected to the frame of the instrument, connect the instrument in the main line, as is shown in Fig. 10.

Fig. 7 is a view of the signaling-box mechanism, as seen between plates $x x$. Fig. 8 is an edge view of signaling-box. Fig. 9 is a

view of my thermostat, composed of a bulb, k^* , filled with mercury. l^* is a small chamber partially filled with mercury, and connected to the bulb k^* by the solid connection r .

$x x$ is a wire inserted at p , and continuing through the mercury-chamber l^* , thence through r , and enters the bulb k^* .

This plan of fixing a wire into a mercurial bulb I deem of much importance, inasmuch as air cannot enter the bulb k^* through the unequal expansion between the glass and wire $x x$, because of the wire $x x$ being at all times immersed in the mercury-chamber. m is the degree-wire passing down the tube n , and is fixed to any point of temperature desirable.

Fig. 10 is a plan of circuiting, and will illustrate to those skilled in the art how I operate my system. The same circuiting and instruments, in connection with springs, &c., at doors and windows can be used for burglar-alarms, or other purposes.

B' is the main-line battery. B'' is a second battery, one pole of which connects to the center or thereabout of the main-line battery B' , and the other pole to the ground. x is the main-line and unbroken circuit, the batteries and receiving instrument S' being located at a central station. Signaling instruments I' , forsignaling "messenger," "police," or "fire," and manipulated by hand, can be put at intervals in the line. A^* represents my signaling instrument connected in the main-line or normally-closed circuit; A' represents an automatic annunciator; A^1 , vibrating bell; k^* , thermostat; o' , resistance-coil, which, by connecting into the main line, as represented by dotted lines, enables me to operate my system independent of ground-currents, and through the normally-closed circuit of a district telegraph, with but one main battery B' .

Now, if the thermostat be closed at 15, the current will leave the battery at 7, pass through box I' , thence through the thermostat to the annunciator, through the spring D , through the drop H , thence to ground and to battery at G' , as indicated by single-tailed arrows. The circuit being broken at D and H by the attraction of the magnet, and the lever H closing the circuit again, between springs H' and H'' , the current becomes shunted and passes through the bell-magnet A^1 , thereby releasing and setting in motion the box-instrument A^* , transmitting a signal to the central office, and giving a continuous alarm, the passage of the current being as indicated by double-tailed arrows.

These operations may be performed in another manner without the use of grounding. In this method, suppose a resistance, o' , to be placed in the circuit, the part $o o$ to $o o$ being cut out, and the circuit in the dotted lines through o' substituted therefor. o' is of greater resistance than either the bell or annunciator magnet. A branch, 2 2, is led from

this line to the branch which, in the other plan, led to earth G. Normally there is no circuit through this branch, because, through the annunciator, it is broken at the thermostat, and through the alarm at H' H''. Now, if the thermostat closes circuit, a larger portion of the current, or portion sufficient for the work, will, on account of resistance 0', take the path 2 2, H, D, A', thermostat, line, causing the annunciator to be operated, which causes this circuit to break at D H and close circuit H' H'', throwing it through the bell-magnet.

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

1. The combination, with a single electro-magnet, of a rotating disk carrying numbers or names indicative of points to be guarded or signaled from, a series of circuit-wheels, one for each point, having contact-points, surfaces of varying lengths, and a detent controlled by the magnet, and releasing and stopping the numbered disk at suitable times, substantially as and for the purposes set forth.

2. The combination, in an electrical annunciator, of one magnet, the circuit-breaking wheels D D, stop-wheel D', springs H H and H' H'', circuits connecting the same, and an alarm-bell, substantially as described.

3. The combination, with a normally-closed circuit, of a normally-operated signalling-box, a resistance-coil in the main line, and a shunt branch or branches containing an automatic annunciator, vibrating-bell magnet, and a thermostat or thermostats controlling the shunt-branch circuit, substantially as and for the purpose specified.

4. The thermostat having the bulb l^x , chamber l^x , and connection r , substantially as set forth.

5. Combination with the main line, its battery, instruments of an additional battery, and an earth-connection at the point to be guarded, with two branch-circuits between the earth and line, one containing a thermostat or thermostats controlling the branch through a local annunciator, which, upon the completion of its work, breaks the branch through the thermostat, and completes the one through the local alarm, which in turn releases the signal mechanism for sending in an alarm over the main line to the central station, substantially as set forth.

JOHN HENRY GUEST.

Witnesses:

GEORGE T. HARTSHORN,
CHARLES J. MATHIS.