C. H. POND.

Non-Interfering Fire-Alarm Boxes.

No. 212,869. Patented Mar. 4, 1879.

Fig. 1.

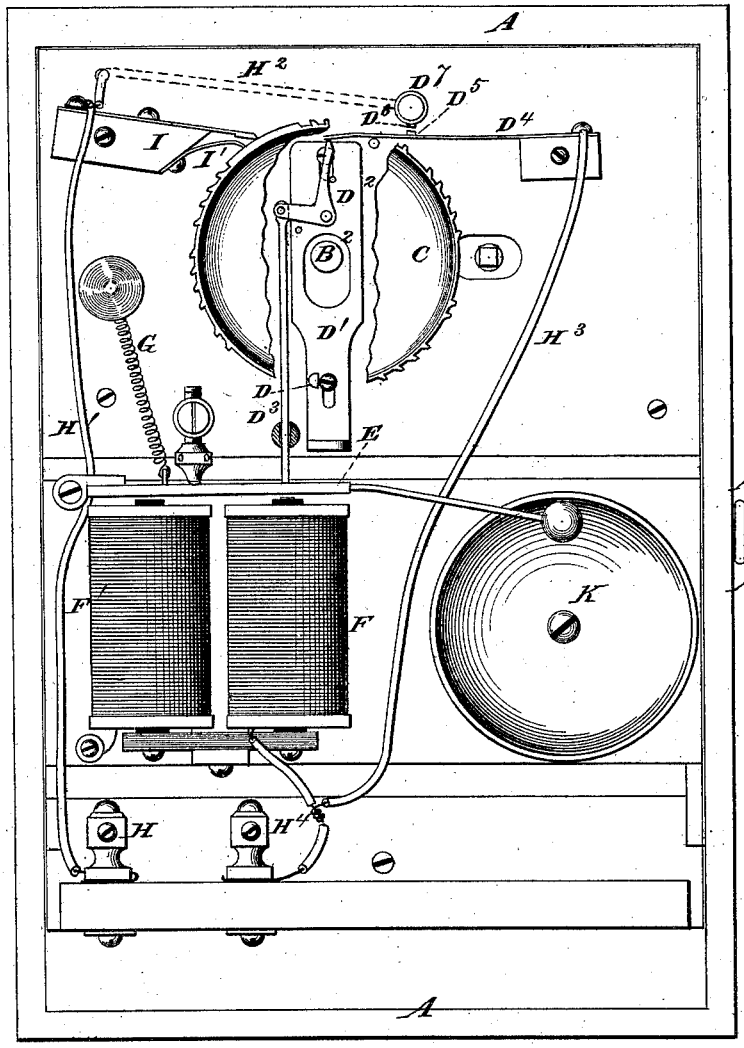


Fig. 2.

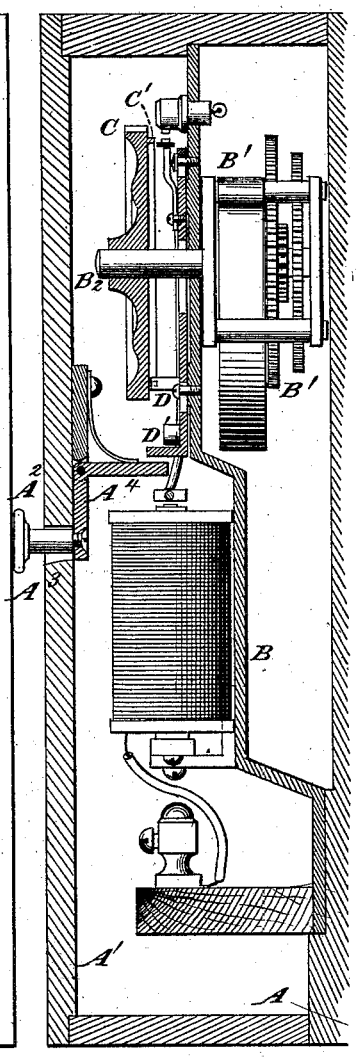
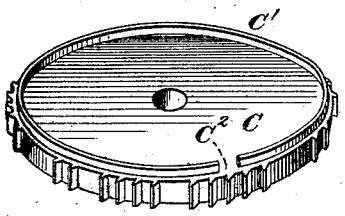


Fig. 3.



Witnesses.

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CHESTER H. POND, OF NEW YORK, N. Y.

IMPROVEMENT IN NON-INTERFERING FIRE-ALARM BOXES.

Specification forming part of Letters Patent No. **212,869**, dated March 4, 1879; application filed July 2, 1878.

To all whom it may concern:

Be it known that I, CHESTER H. POND, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Non-Interfering Fire-Alarm Boxes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates particularly to an improved device for securing in an automatic fire-alarm telegraph signal-box what is technically known as and termed "non-interference"—that is, mechanism so constructed that when one fire-alarm signal has been commenced from any box on a line, no other signal from a neighboring box is possible until he first signal has been completed; for if two or more signals are permitted to sound simultaneously, there will be confusion and utter failure in the reception of either.

Figure 1 is a plan view of a portion of the mechanism of a fire-alarm box, showing my improvements, a portion of the circuit-wheel being broken away for that purpose. Fig. 2 is a sectional elevation, showing in different view the parts as shown in Fig. 1. Fig. 3 is a perspective view of the circuit-wheel C, showing the teeth on its periphery, and a recess, C^2, in a flange formed on its inner surface.

Corresponding letters denote like parts in all the figures.

Case A is provided with a door, A^1. This door is provided with a knob and spindle, A^2 A^3, which will, when pressed inward, cause a right-angled lever, A^4, to press against and raise a sliding bar, D^1, which liberates the circuit-wheel C, when it is made to revolve under the stress of the clock-work secured to and back of plate B.

To support the clock-work and operating mechanism, and to maintain them in their relative places, plate B is provided. This plate or support may be modified to any other form which seems best adapted for the use. To the back of plate B any suitable mechanism, B^1, may be secured, adapted to be driven by a spring or weight, and thus impart to shaft B^2 a rotary motion. Upon the outer end of said shaft a circuit-wheel, C, is secured, which has upon its periphery teeth or points so grouped as to give any number or signal with the circuit-wheel completing one revolution. Upon the inner surface of wheel C there is a flange, C^1, which extends entirely around the wheel, excepting a space or recess, C^2, into which a pin, D, falls and stops further movement, as will be hereinafter described.

Pin D is secured in sliding plate D^1, and moves with it. Sliding plate D^1 is placed on plate B in such position as to come directly behind wheel C, and has a vertical motion with reference thereto. Sliding plate D^1 is held in position by suitable bolts working in slots formed for the same, or in any manner so that a free vertical movement is secured. Its lower end is turned outward in a right angle in order that it may be pressed upward by lever A^4 when the mechanism is to be put in operation. Attached to plate D^1 there is a crank, D^2, freely hung, to the lower end of which is rod D^3, which comes in contact with an armature soon to be described. The upper end of crank D^2 is made to operate a switch or shunter, D^4, under circumstances hereinafter mentioned.

The operation of the parts is as follows: As before stated, circuit-wheel C is held motionless by pin D, resting in recess C^2 of the flange C^1, and when plate or bar D^1 is raised, by pushing upon the knob A^2, the said wheel C and driving clock-train are released, and the circuit-wheel begins to revolve. Now, if this is done, when the line is at rest and magnets F and F′ are electrically charged, armature E will be drawn down away from rod D^3, thus permitting crank D^2 to tilt out from under switch D^4, by reason of the weight of rod D^3 hanging on the lower end of said crank.

Plate D^1 cannot fall back to its normal position until the circuit-wheel has completed its full revolution, for as soon as pin D is raised out of recess C^2 the wheel C instantly starts, which brings flange C^1 under said pin, where it will be supported until recess C^2 again comes below pin D, when it will drop in and stop further movement. Switch-points D^5 and D^6 being open during this revolution of circuit-wheel C,

the current is compelled to pass through magnets F and F′, and through and over the points or teeth on wheel C to breaker I, and thence out, thus causing a signal to be sent over the line according to the number and arrangements of the teeth on said wheel; but to illustrate the use of switch D^4, and how it controls the non-interference with another alarm previously started, it will be now described.

It will be seen by the drawings that the teeth or circuit-breaking points on wheel C are very sharp and pointed. As this wheel revolves, the points only come in contact with breaker I and close the circuit so briefly that the line-circuit is practically open or interrupted during the entire time occupied in sending an alarm from any box. Now, should knob A^2 be pushed so as to raise plate D^1, and thus permit wheel C to revolve, (after a signal had been started from a distant box,) the line-circuit being open, magnets F F′ would not be charged; hence armature E would be raised under stress of spring G, thus tilting crank D^2 under switch D^4. Now, as the plate D^1 is raised, which also raises crank D^2, it follows that switch-points D^5 and D^6 would be closed during the revolution of wheel C, and no alarm be given, as the closing of switch D^4 short-circuits the whole box. Hence, as the magnets are shunted, the electric bell within the box remains silent, while switch D^4 remains closed. The person attempting to give an alarm would know that it failed to sound, because the bell, as before stated, would be silent. After waiting a moment the attempt can be renewed, when, if the bell is heard, it will be an indication that the signal was correctly made.

From the foregoing it is seen that an alarm from any one box does not affect any other on the same circuit only so far as to cause the little tilting crank D^2 in all the boxes to fall under switch D^4, which will shunt the operating mechanism of any box if pulled when crank D^2 is in that position.

In order that the teeth of a circuit-wheel may be kept free from dust or other foreign substance that would be likely to interfere with circuit-breaker I, a spring, I′, is secured to the rubber block, which holds breaker I in position. Spring I′ is thus insulated from the connections, and its only office is to clean the teeth of wheel C, so that each tooth will make a good electrical connection as the teeth come in contact with breaker I.

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

1. The sliding bar D^1, carrying a stud or pin for holding the same in elevation, and also for arresting the movement of a circuit-wheel in a fire-alarm box, substantially as and for the purpose set forth.

2. The combination of the sliding bar D^1, the stud or pin D, for holding the same in elevation, and the circuit-wheel C, substantially as and for the purpose set forth.

3. The sliding bar D^1, crank D^2, and rod D^3, substantially as and for the purpose set forth.

4. The shunting-switch D^4 in a signal-box, in combination with crank D^2, rod D^3, and armature E, substantially as and for the purpose set forth.

5. The combination of the circuit-wheel C, armature E, sliding bar D^1, pin D, crank D^2, rod D^3, and shunting-switch D^4.

6. Spring I′ in a signal-box, in combination with wheel C and circuit-breaker I, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHESTER H. POND.

Witnesses:

WM. A. BOWEN,

U. THOMPSON.