

(No Model.)

2 Sheets—Sheet 1.

F. F. LOOMIS.

NON-INTERFERING FIRE ALARM TELEGRAPH BOX.

No. 469,745.

Patented Mar. 1, 1892.

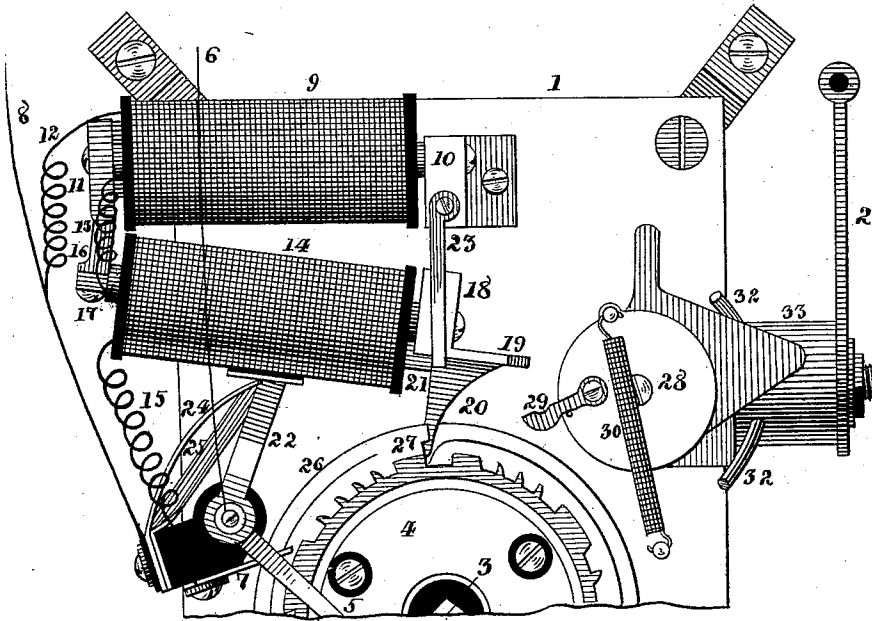


Fig. 1.

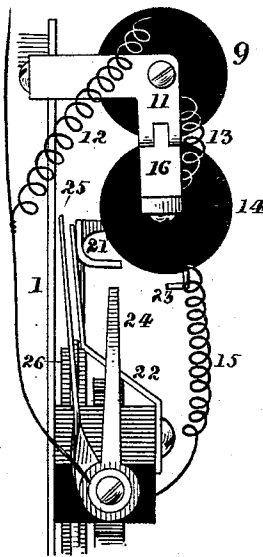


Fig. 2.

Witnesses
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Inventor
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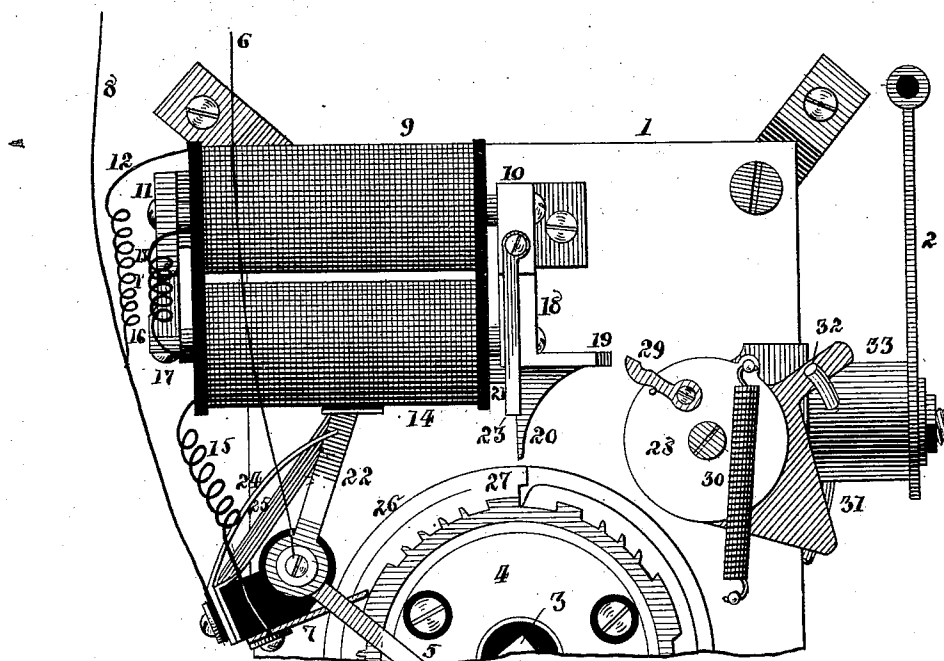


Fig. 3.

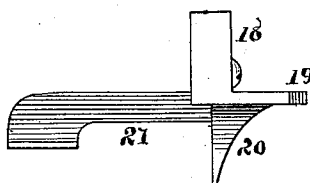


Fig. 4.

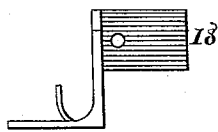


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

FRANK. F. LOOMIS, OF AKRON, OHIO.

NON-INTERFERING FIRE-ALARM-TELEGRAPH BOX.

SPECIFICATION forming part of Letters Patent No. 469,745, dated March 1, 1892.

Application filed August 31, 1891. Serial No. 404,252. (No model.)

To all whom it may concern:

Be it known that I, FRANK. F. LOOMIS, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Non-Interfering Fire-Alarm-Telegraph Boxes, of which the following is a specification.

My invention has a general relation to improvements in that class of fire-alarm-telegraph boxes known as "non-interfering," and has special relation to and is an improvement upon a device for which I have made application for Letters Patent of the United States, which application was filed May 1, 1891, the serial number of which is 391,304.

The object of my invention is generally to provide a new and improved device for placing a box in circuit when an alarm is given, cutting it out if another box is in operation, and restoring its actuating parts after it shall have given its alarm.

To the aforesaid object my invention consists of the peculiar and novel construction, arrangement, and combination of parts hereinafter described, and then specifically pointed out in the claims, reference being had to the accompanying drawings, forming a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different views, Figure 1 is a front elevation of the box mechanism, showing the position of the parts when the box is closed; Fig. 2, a side elevation of the same, looking from the left of Fig. 1, the parts being in the same position shown in that figure; Fig. 3, a front elevation of the box mechanism, showing the position of the parts at the moment the box is open; and Figs. 4 and 5, details of the mechanism hereinafter described.

Referring to the drawings, 1 is the front plate of a case containing a train of clock-work, which is not shown, as my preferred arrangement has already been shown and described in my former application hereinbefore referred to, and at the right of which is the lever 2, arranged to wind the actuating mechanism when the box is opened, as also described in said application. Extending through this plate 1 and actuated by the

train is a shaft 3, on which is frictionally mounted the insulated metallic signal-wheel 4, arranged, ordinarily, to be driven by and turned with said shaft, but sufficiently free to be moved thereon for adjustment, and has in its edge a series of teeth for the determined signal, alternating with longer blocks for a purpose to be stated. An insulated spring 5, connected at one end 6 of the line-wire, constantly presses on the front of the wheel 4, and a second insulated spring 7 engages the points of the teeth and faces of the blocks as the wheel revolves, and when thus in contact closes the circuit when electrically connected with the other end 8 of the line-wire, as hereinafter described. As thus far described, the mechanism does not essentially differ from the signal-box for which I was granted Letters Patent of the United States, No. 328,435, on the 4th day of August, 1885.

The devices for placing the signaling mechanism in circuit and rendering the box non-interfering are as follows: Attached to the front plate 1 is an electro-magnet 9, its poles terminating in blocks 10 11, and the ends of its coil connected by a branch wire 12 with the end 8 of the line-wire and its other end by a wire 13 with one end of the coil of the second electro-magnet 14, the other end of the coil of such second magnet being connected with the spring 7 by the wire 15. These magnets 9 and 14 are alike, and the latter is connected with block 11 of the former by an iron hinge-piece 16, so as to rock vertically, and its core is pivotally attached to the piece 16 by a screw 17, so as to rock horizontally thereon, thus placing the cores of the magnets in magnetic connection. Attached to the opposite end of the core of the magnet 14 is a block 18, arranged to meet the block 10 when rocked upward, and having a projecting toe 19, a depending finger 20, and rearwardly-extending flange 21, for purposes to be stated. A spring 22 electrically connected with the spring 5, constantly presses against the flange 21, and serves the twofold purpose of constituting a part of the circuit connection, as hereinafter described, and also rocking the magnet 14 horizontally forward, and a stop 23, attached to the block 10, arrests the forward movement of the free end of the

magnet 14 at a determined point. Electrically connected with the line-wire 8 are two springs 24 25, the upper end of the latter being opposite the upper end of the spring 22 and arranged to be in contact with it when the magnet 14 is rocked horizontally backward and separate from it when the magnet rocks forward, and the other spring 24 is arranged to press against the flange 21, when the magnet rocks downward and out of contact when the magnet rises. Mounted on the shaft 3, between the plate 1 and alarm-wheel 4 and attached to and revolving with but electrically insulated from the latter, is what, for the purpose of this application, I denominate a "shunt-wheel" 26, consisting of a narrow pulley having two flat peripheral faces divided by a central annular flange, and the finger 20 is arranged to rest and travel on one or the other of these faces, as hereinafter described. At the point 27 the flange is broken, and one end is reduced in width and turned diagonally in the direction of the motion of the wheel to the outer edge of the front face and slightly past the opposite end of the flange, between which overlapping ends is a deep notch in the front face for the finger 20 to enter and stop the mechanism. At another point, (not shown,) the front face inclines upward in a direction opposite the motion of the wheel until it is even with the flange, beyond which both are abruptly cut away, forming a recess, while the flange from a short distance in the opposite direction is reduced by being incurved on the front, and thence in reduced thickness turns diagonally outward to the outer edge of the inclined front face; but as this has been fully illustrated and described in my application, to which reference has hereinbefore been made, it has not been deemed necessary to show it herein, the structure of the two boxes being identical, excepting the substitution herein of the magnet 14 with its attachments and wire connections for the armature of the other application and their operation being the same in effect and which is as follows: On the front of the plate 1, opposite the end of the magnet 14, is journaled a disk-wheel 28, bearing a pawl 29, arranged to engage and raise the free end of the magnet and bring the blocks 18 10 in juxtaposition. As the disk-wheel is partially rotated, the spring 30 serves to complete the partial revolution of the wheel in either direction after it shall have passed its center, so that the pawl shall not interfere with the movement of the magnet 14. This disk-wheel is rocked by the opening of the box by the pins 31 32, projecting from the hub 23. When the box is closed, as shown in Fig. 1, the magnet 14 is rocked down and the finger 20 rests in the notch at 27, while the springs 22 and 24, resting against the flange 21, establish a short circuit between the line-wires 6 8. At the moment the door is opened, as shown in Fig. 3, the free end of the magnet 14 is raised by the pawl 29, thus drawing the finger 20 from the notch at 27, thereby releasing the mechanism and breaking the contact between the spring 24 and flange 21. The circuit is thus established from line-wire 6 through the spring 5, wheel 4, spring 7, wire 15, magnet-coil 14, wire 13, magnet-coil 9, and wire 12 to line-wire 8, thereby energizing the magnets 9 14 and retaining the latter suspended as long as the spring 7 is in contact with one of the blocks of the periphery of the wheel 4, the relative arrangement of the parts being such that the spring 7 will always bear on one of the blocks when the finger 20 is in the notch of the wheel 27. The mechanism being released, the wheel 26 immediately commences to revolve until the block of the wheel 4 passes the spring 7, when, the current being broken, the free arm of the magnet 14 falls and the finger 20 rests on the front face of the wheel 27, the interval of its suspension, due to the length of the block on the wheel 4, being sufficient to permit the diagonal part of the flange at the point 27 to pass beyond it. The determined signal is then successively transmitted until the wheel 26 has completed one revolution and the finger 20 falls into the notch at the point 27. When the inclined part of the wheel 26, hereinbefore referred to, reaches the finger 20, the latter is thereby raised sufficiently to again bring the blocks 18 10 in juxtaposition, where the former is held for a short interval until the diagonal part of the flange at that point passes beyond it, the relative arrangement of the blocks on the periphery of the wheel 26 being the same with regard to it as with reference to the notch at the point 27, as hereinbefore described, when it again falls on the front face of the wheel and the signals are continued. If another box is in operation when this box is opened, the circuit is thereby broken by its signal mechanism, and the magnet 14 not being held up by the juxtaposition of the blocks 10 18 the finger 20 falls back of the diagonal part of the flange and the magnet 14 is thereby rocked backward so that the finger travels on the back face of the wheel and the springs 22 25 are brought in contact, thus establishing a short circuit and cutting the signal mechanism out. The back face of the wheel 26 at the point 27 is inclined upward until even with the top of the flange, which, when reached by the finger 20, traveling on the back face, raises the magnet 14 until the blocks 18 10 are in juxtaposition, when, if the line is still interrupted, it falls back of the inclined flange and is again forced by it on the back face; but if the line is closed it is held up by the current until the diagonal part of the flange is passed, as hereinbefore described, when by force of the spring 22 it falls on the front face and the signal is transmitted. If at the moment of opening the door some other box is in operation and its spring, similar to the spring 7, rests on one of the blocks of its wheel sufficiently long to permit the finger 20 to fall in front of the flange, a coincidence

extremely unlikely to occur, this box would communicate its signal until finger 20 ascended the inclined face of the wheel 26, as hereinbefore described, when, the circuit being continually broken by the signaling mechanism of the other box, it would fall back of the diagonal part of the flange and the box would be cut out of the circuit in the same manner as hereinbefore described.

10 I claim as my invention—

1. In a signal-box, a signal-transmitter and a motor for driving it, in combination with two electro-magnets having their cores hinged and in magnetic connection at one end, one of said magnets being fixed and the other free to swing on said hinge and provided with a detent to arrest the signaling mechanism, the opposite ends of their cores arranged to meet, and both magnets arranged to be simultaneously brought in the electric circuit, substantially as described.

2. In a signal-box, a signal-transmitter and a motor for driving it and a fixed electro-magnet, combined with an electro-magnet hinged to the core of the first magnet, the cores being in magnetic connection and their coils in electric connection and having the opposite ends of their cores arranged to meet, the second magnet arranged to close the circuit through the signal-transmitter when rocked in one direction and open the circuit when moved in the opposite direction, substantially as shown and described.

3. In a signal-box, a signal-transmitter and a motor for driving it, combined with two electro-magnets, one arranged to be attached to the box, the other hinged thereto, the cores of said magnets being in magnetic connection

and their coils in electric connection, the second magnet arranged to swing vertically and horizontally from its point of support and when raised to rock in one direction to close the circuit from the signaling mechanism and when allowed to rock in the opposite direction to close a short circuit and cut the signaling mechanism out of circuit, substantially as shown and described.

4. In a signal-box, a signal-transmitter and a motor for driving it, combined with two electro-magnets, one whereof is attached to the box and the other hinged to and in magnetic connection with the core of the other, and the coils of said magnets being in electric connection, combined with the shunt-wheel, arranged to revolve with the wheel of the signal-transmitter and provided with a notch to receive a detent attached to the second magnet, substantially as shown and described.

5. In a signal-box, a signal-transmitter and a motor for driving it, combined with two electro-magnets having their cores hinged at one end, one of said magnets being fixed to the box, the other being free to swing vertically and horizontally, in combination with the shunt-wheel, arranged to be engaged by and move the rocking magnet horizontally and vertically to throw it in and out of connection with the line-circuit, substantially as shown and described.

In testimony that I claim the above I hereunto set my hand.

FRANK. F. LOOMIS.

In presence of—

C. P. HUMPHREY,
C. E. HUMPHREY.