

A. H. PALMER.  
Non-Interfering Fire-Alarm Boxes.  
No. 220,088. Patented Sept. 30, 1879.

Fig. 1.

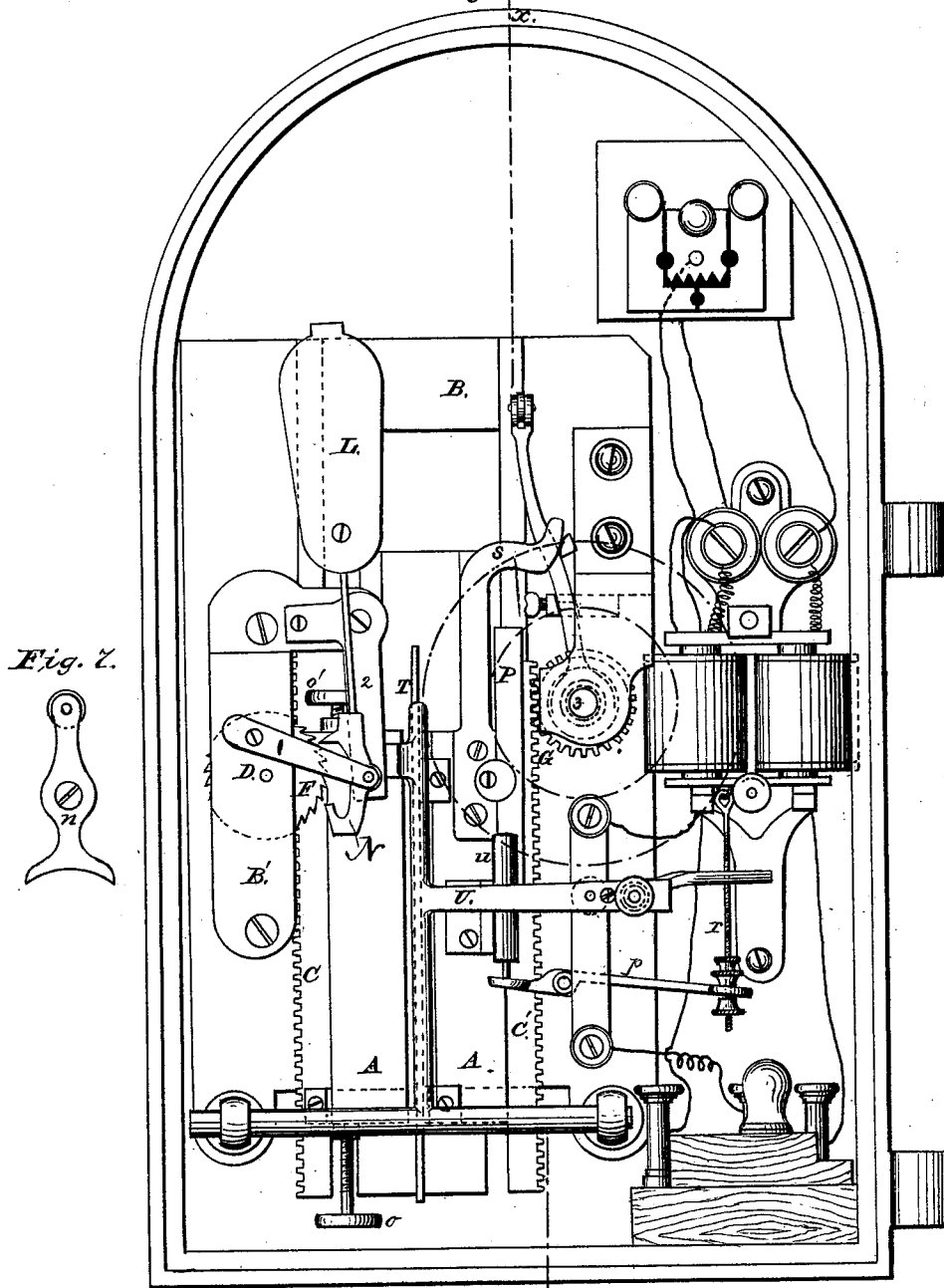


Fig. 2.



Witnesses:

J. C. Quicks  
J. E. Jones

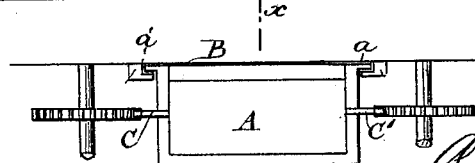


Fig. 8

Inventor:

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Fig. 2.

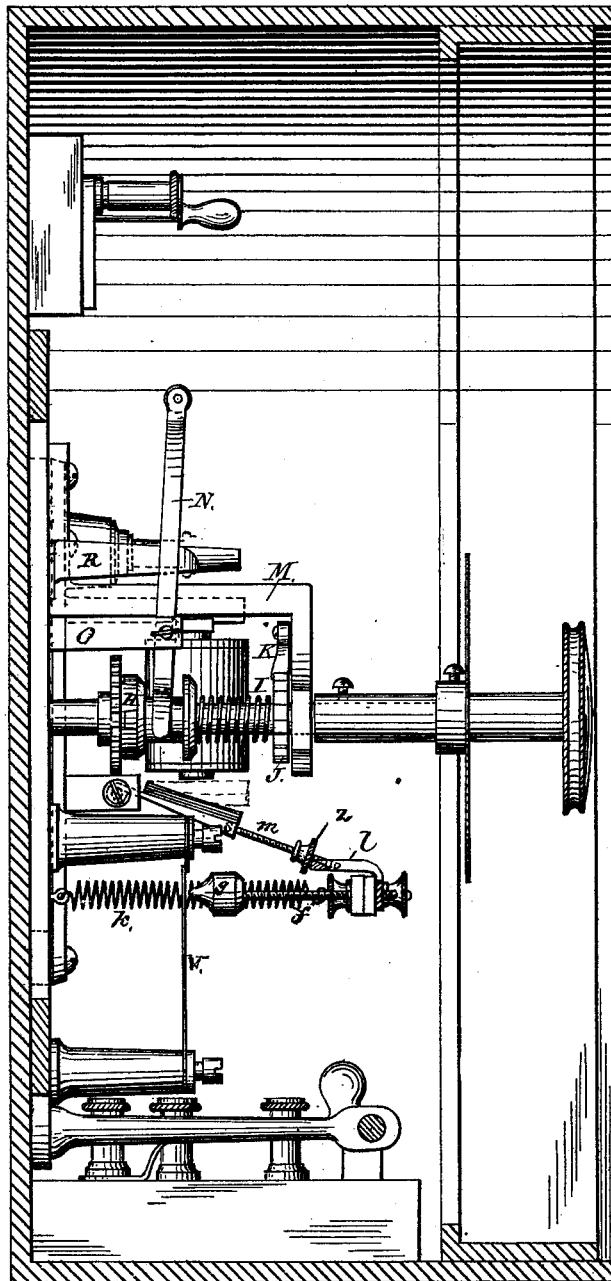


Fig. 3.

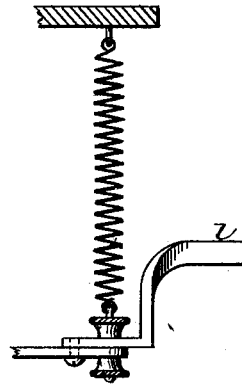


Fig. 4.

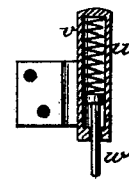


Fig. 5.



Witnesses:

T. C. Gerecht  
J. E. Jones

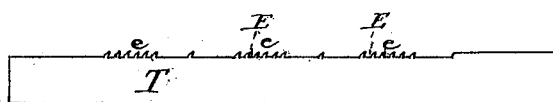


Fig. 6.

Inventor:

A. H. Palmer

# UNITED STATES PATENT OFFICE.

AUGUSTUS H. PALMER, OF UTICA, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO AMAZIAH D. BARBER, JR., OF SAME PLACE, AND JAMES E. JONES, OF ADDISON, NEW YORK.

## IMPROVEMENT IN NON-INTERFERING FIRE-ALARM BOXES.

Specification forming part of Letters Patent No. **220,088**, dated September 30, 1879; application filed December 4, 1878.

*To all whom it may concern:*

Be it known that I, AUGUSTUS H. PALMER, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Fire-Alarm-Telegraph Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, 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, in which—

Figure 1 is a front view, showing all the parts in working position. Fig. 2 is a vertical section, looking to the right, on line *xx* of Fig. 1. Fig. 3 is a plan view of the spring which controls the rectangle-bar and bent arm. Fig. 4 is a sectional view of the spring-barrel and pin. Fig. 5 is a plan and side view of the lever which operates the armature. Fig. 6 is a side view of the signal-rack. Fig. 7 is a plan view of the dog for holding the rectangle-bar from the signal-rack. Fig. 8 is an end view of the ways in which the carriage works.

This invention relates to certain improvements upon Letters Patent granted to Augustus C. and Augustus H. Palmer, dated November 20, 1877, and numbered 197,400, for an improvement in fire-alarm-telegraph signal-boxes, but is applicable to any machine of the same class which operates in a similar manner.

My invention consists in devices which remove the armature beyond the attraction of the magnet, so as to effect a non-interference with the other boxes of the system on the same circuit until the alarm has been sounded or given from the proper box, or the box first "pulled," and consists, further, in certain details of construction, hereinafter more fully described.

Referring to the drawings, A designates a sliding carriage, which is made of suitable weight for the purpose of the operation herein described. Said carriage is in an upright position, and moves up and down against the bed-plate B. The sliding carriage A is provided with tongues *a*, which fit into projections or grooves *a'* on the bed-plate B, the bed-plate

being usually made about twice the length of the carriage.

C is a rack secured to one side of the carriage A, the opposite side being provided with a similar rack, C'. On a shaft having its bearings in the bed-plate B, and in an arm or support, B', projecting therefrom, is a pinion, which engages with the rack C. The escapement-wheel F is also mounted on the shaft D, and is provided with a ratchet and spring-pawl, so applied that the wheel F is not revolved with shaft D when the carriage is moved upward.

The verge N' is pivoted to and held by arms 1 and 2, secured to the arm or support B', in such position as to engage with the escapement-wheel F. It has attached to it a balance or regulator, L, the weight of which is above the pivotal point.

The cog-wheel G, by which the sliding carriage is raised, is mounted loosely on the shaft 3, and has notches on its side for the engagement of a clutch, H, said clutch being provided with a groove, which engages with a tongue or spline on the shaft 3. The clutch is held forward in contact with the notches on the wheel G by a spiral spring, I, thus insuring a positive lifting of the carriage to its operative position. On the shaft 3 is secured a ratchet-wheel, J, controlled by a double pawl, K, pivoted to the arm M, and by which the carriage is held at any position or point in its ascent. A bifurcated lever, N, is pivoted to an arm, O, which projects from the bed-plate. The bifurcated portion of this lever fits loosely over the outer end of the clutch H. Its upper end is provided with a friction-roller, against which a wedge-shaped cam, P, on the carriage A impinges as the carriage is being raised. This movement forces the upper end of the lever N back, thus releasing the clutch, and allowing the wheel G to turn freely and the carriage A to fall to its lower position. The lever N is held back by a latch-spring, R, until the carriage has passed down, when it is released by an arm or projection, s, secured to and projecting from the carriage.

To the front of the carriage A is secured the signal-rack T, having the notches *e* properly made thereon to regulate the movement of the rectangle-bar U and the key V in giving the signal.

The rectangle-bar U is secured to the lower part of the device, its upper end being provided with a projection for engagement with the notches on the signal-rack. Secured to one arm of the rectangle-bar is an insulated screw-rod, *f*, to the inner end of which is attached a piece of hard rubber, *g*, pointed at its inner end, for impingement against the key V. This is done by means of a spiral spring, *k*, which draws the insulated screw-rod backward as the point or projection on the rectangle-bar is moved in and out of the notches on the signal-rack, thereby opening and closing the circuit.

There is also secured to the same arm of the rectangle-bar, and in a line parallel therewith, a bent rod, *l*, (see Fig. 4,) on which the arm or rod *m* of the armature rests when the circuit is broken, and permits the rectangle-bar to operate on the signal-rack.

To the frame in which the shaft D is secured is centrally pivoted a dog, *n*. This dog is operated upon by two adjustable headed screws, *o o'*, secured at the upper and lower ends of the carriage. When the carriage has been raised the headed screw *o* comes in contact with the outer end of the dog, thus turning it from under the rectangle-bar, and allowing the point of the same to come in contact with the notches on the signal-rack, and breaking the circuit by opening a Morse key. When the carriage has nearly completed its descent, the headed screw *o'* comes in contact with the outer end of the dog *n* and forces it up behind the arm of the rectangle-bar, thus holding it from contact with the signal-rack, ready for a repetition of the lifting of the carriage.

Pivoted to an arm projecting from the bed-plate is a lever, *p*, one end of which projects over to and in front of the carriage A. The other end of said lever is secured to a screw-rod, *r*, which connects the lever *p* with the armatures *s*. The lever *p* is pivoted to the base-plate at one side from its center, so that the longer arm is connected to the rod *r*, and by its weight frees the armature from the magnet when the dog has been turned by the headed screw *o'* and the point on the rectangle-bar has dropped into the cut-out at the upper end of the signal-rack.

The rod *m*, on which there is an adjustable thumb-screw, *z*, and jam-nut, drops down onto the bent bar *l*, and admits of the free working of the rectangle-bar on the signal-rack. In case a second box is pulled while the first is in operation, the bar *m* drops down on the bent bar *l*, with the thumb-screw resting against the rear side of said bent bar, as shown in Fig. 2, and holds the rectangle-bar away from the signal-rack, allowing the carriage to descend without giving an alarm,

thus completely effecting a non-interference of this box with the one first pulled.

The armature is held to the magnet by the force of the electric current until the carriage or weight A is raised and the dog *n* turned by the headed screw *o* coming in contact therewith, which allows the rectangle-bar to fall forward into the cut-out portion of the signal-rack, when the current is broken and the armature drops, with the nut resting on the bar *l*, allowing it to move in and out as the current is broken for sounding the proper alarm.

When the first box has been pulled, the electric current is in a measure weakened or cut off, so that when a second, third, or any of the other boxes in the circuit are pulled while the first is in operation, the armature or armatures of said boxes fall so soon as released by the rising of the carriage A from off of the lever *p*, allowing said armature or armatures to fall with the nut against the rear side of the bar *l*, and hold the rectangle-bar in its outward position and from contact with the signal-rack, so that if the box be pulled while another is in operation, the carriage A will descend without sounding an alarm. The first box pulled always controls the circuit.

A spring-barrel, *u*, is placed on one side of the carriage, in which is placed a spiral spring, *v*. A headed pin, *w*, is also placed in the barrel *u*, and as the carriage in its descent causes the pin *w* to come in contact with the short arm of the lever *p* to raise the armature to the magnet, the spiral spring relieves the shock and prevents the entire stoppage of the carriage, and also holds the armature to the magnet until the circuit is renewed.

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

1. In a fire-alarm-telegraph apparatus, the combination, with the carriage A and lifting-wheel G, of the clutch H, lever N, and cam P, whereby the carriage is raised and the lifting-wheel released, so as to admit of the free descent of the carriage, substantially in the manner and for the purposes set forth.

2. In a fire-alarm-telegraph apparatus, the combination, with the lever N, of the latch-spring R and arm or projection *s*, whereby the clutch is held from engagement with the lifting-wheel until the carriage has made the descent, substantially as shown and described.

3. In a fire-alarm-telegraph apparatus, the combination, with the lever N, latch-spring R, and arm or projection *s*, of the spiral spring I and clutch H, whereby the clutch is held from engagement with the lifting-wheel until the carriage has made the descent, and the parts automatically engaged ready for further operation, substantially in the manner and for the purposes set forth.

4. In combination with the carriage A, the spring-barrel, spring, and pin, lever *p*, rod *r*, and armature *s*, whereby the armature is posi-

tively raised and held to the magnet until the circuit is renewed, substantially as set forth.

5. In combination with the rectangle-bar U and bent rod *l*, the rod *m*, thumb-screw and jam-nut *z*, and armature *s*, whereby the rectangle-bar is held from engagement with the signal-rack, and a positive non-interference

obtained with all the other boxes of the circuit, substantially as shown and described, and for the purposes set forth.

AUGUSTUS H. PALMER.

Witnesses:

GEO. M. LOCKWOOD,

A. D. BARBER, Jr.