A. C. & A. H. PALMER.

Fire-Alarm Telegraph Signal-Box.

No. 197,400. Patented Nov. 20, 1877.

Fig. 1.

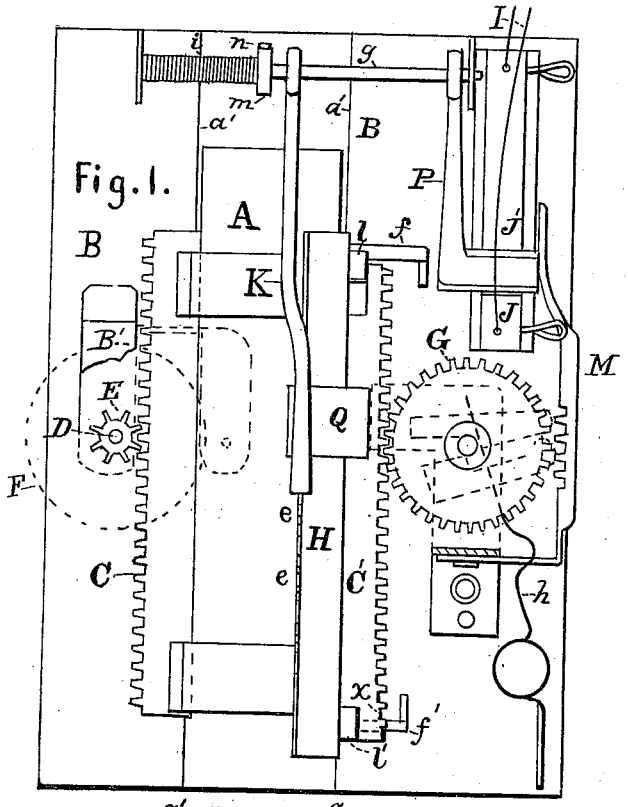


Fig. 2.

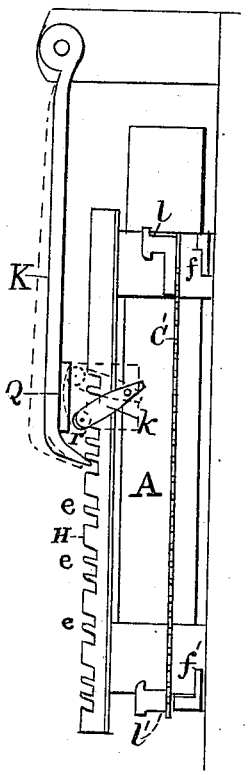


Fig. 3.

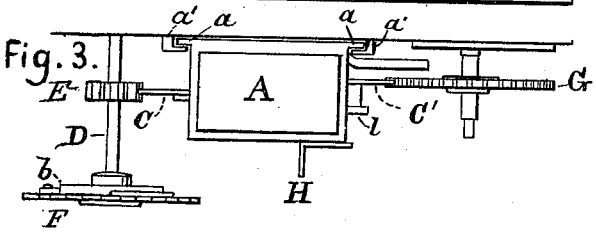


Fig. 5.

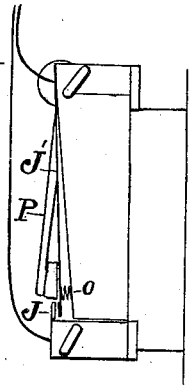


Fig. 6.

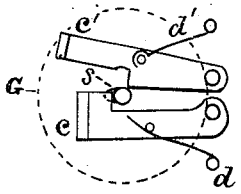
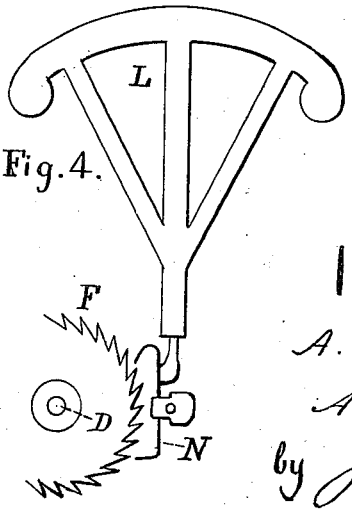


Fig. 4.



Witnesses:

H. J. England.

N. F. Greenaway

Inventors:

A. C. Palmer

A. H. Palmer

by J. S. Kellogg

Attorney.

UNITED STATES PATENT OFFICE.

AUGUSTUS C. PALMER AND AUGUSTUS H. PALMER, OF UTICA, NEW YORK.

IMPROVEMENT IN FIRE-ALARM-TELEGRAPH SIGNAL-BOXES.

Specification forming part of Letters Patent No. **197,400**, dated November 20, 1877; application filed April 25, 1877.

To all whom it may concern:

Be it known that we, AUGUSTUS C. PALMER and 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 we 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, and to the letters of reference marked thereon, which form a part of this specification, in which like letters designate like parts of the invention.

This invention relates to apparatus for fire-alarm telegraphs; and consists in certain improvements in the construction of the mechanism placed in the signal-box from which the alarm is transmitted, as hereinafter more fully shown and described.

In the accompanying drawings, Figure 1 shows, in front view, the sliding carriage and its connections. Fig. 2 is a side view of the carriage and other details. Fig. 3 is a top view of the carriage and other details. Fig. 4 is a front view of the verge and balance and the escapement-wheel. Fig. 5 represents, in side view, certain details in that part of the mechanism where the circuit is broken and renewed in the operation. Fig. 6 illustrates the working of the dogs used in connection with the shaft of wheel G, herein described.

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 plate B at the rear, the tongues *a*, fixed to the carriage, projecting into grooves *a'*, forming a way on the plate B, the latter being usually about twice the length of the carriage.

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

The verge N is pivoted to an arm or support, in proper position to engage with the escapement-wheel F. It has attached to it a balance or regulator, L, the weight of which is mostly above, as shown.

G is a gear-wheel, which engages with the rack C', and is provided with a ratchet and pawl to prevent it turning back.

The shaft of wheel G has bearing for its forward end in a suitable support, and its rear end has bearing in an elongated eye, *s*, in plate B. This allows wheel G to be thrown out of gear and from the rack C' in the following manner, it being observed that the notches between the teeth of rack C' are gradually lessened in depth toward the lower end of said rack, as indicated at *x*. The carriage A being raised by rotating wheel G, and the rack C' rising with the carriage, as that part of the rack *x* where the notches are gradually reduced to a plane meshes with wheel G, said wheel is pushed from the rack, the eye *s* allowing a lateral movement of the shaft of the wheel.

Back of the winding-wheel G are pivoted two dogs, *c* and *c'*, (see Fig. 6,) each being provided with a spring, *d* and *d'*, pressing it to the shaft of the wheel.

When, by the upward movement of the carriage A, the wheel G is thrown out of gear and from the rack C', the dog *c*, being pressed by the spring *d*, detains the shaft, thus holding the wheel from the rack. At the same time a limb or projection, *f'*, on the side of the carriage, and at the lower end, pushes the upper dog *c'* from the shaft, and allows the slight lateral movement in the eye *s*. When the carriage descends the lower dog *c* is pushed from the shaft by a limb or projection, *f*, on the side of the carriage, near the top, and a spring, *h*, bearing against the shaft, throws the wheel G in gear with the rack C', the dog *c'* being closed against the shaft by the spring *d'*.

To the front of the carriage A is fastened the rack H, having the notches *e* properly cut to regulate the movement of the key K in giv-

ing the required signal. The horizontal shaft *g*, having its bearings in arms projecting from the plate B, has fixed thereto the key K, the lower end of which turns at an angle to the rack H, (see Fig. 2,) and has a wedge-shaped point, which is thrown into the teeth of the rack, the key K being actuated and pressed to the rack H by means of a spiral spring, *i*, on the shaft *g*. The spring *i* has one end secured to a collar, *m*, by which, with the screw *n*, the spring may be adjusted as to its tension.

A spring, M, is placed in position at one side of wheel G, the spring being provided with teeth, as shown, and so arranged that when the wheel G is thrown from the rack C′, the teeth of M mesh with the teeth of the wheel, and hold wheel G in correct position to strike the rack when again thrown in gear with it by the spring *h*.

I is the wire for conducting the current, the point where the circuit is broken being between the fixed piece J and the thin plate J′, which is fastened at its upper extremity, and has its lower end pressed against J by a spring, *o*. (See Fig. 5.) A rectangular arm, P, fixed to the shaft *g*, extends across and in front of the plate J′, and has a movement similar to and simultaneous with the key K, so that at every stroke of the key, as the carriage descends, the arm P strikes the plate J′, pressing it from the piece J, to which it is immediately returned by the spring *o*. Thus the circuit is broken every time the point of the key is thrown into a notch in the rack H.

About the time when the carriage A has run down, the key K is raised and held from the rack H by means of a small bar, *k*, provided with a friction-roller, *r*, at its forward end. (See Fig. 2.) This bar *k* is pivoted to a suitable support and held in position back of a plate, Q, which is fastened to the key K, so that by a movement of the bar on its pivot, the roller *r* moving against the plate Q, the key K may be raised from the rack H, as indicated in Fig. 2. The movement of the pivoted bar *k* to throw the key from the rack is caused by a projection, *l*, fixed to the side of the carriage A. As the carriage descends, this projection strikes the rear end of the pivoted bar, and the forward end, which holds the roller, presses the key from the rack, as above stated. When the carriage is raised, another projection, *l′*, fixed to the side of it, strikes upward against the rear end of the bar *k*, which is thus turned on its pivot, and the key K is allowed to return to the rack H. Suitable stops or shoulders are formed on the support, to which bar *k* is pivoted, to prevent the bar turning around too far.

The carriage having been raised, by means of a crank on the shaft of the wheel G, and being released, it descends by its own weight, the strokes of the key K being regulated by the notches in the rack H. The arm P, moving simultaneously with the key, at every stroke of the key, strikes the plate J′, pressing it from the piece J, to which it is returned by the spring *o*, and thus the circuit is broken and renewed.

We claim as our invention—

1. The carriage A, having the rack C′, formed as shown, to throw the wheel G out of gear, as set forth.

2. The wheel G, with its shaft, having bearing in the eye *s*, and the dogs *c* and *c′*, in combination with the projections *f* and *f′*, fastened to the carriage, substantially as shown.

3. The rectangular arm P on the shaft *g*, the plate J′, having spring *o*, and the fixed piece J, as and for the purposes described.

4. The pivoted bar *k*, having the roller *r*, in combination with the plate Q on key K and the projections *l* and *l′*, fixed to the carriage, as and for the purposes described.

5. The gear-wheel G, provided with the toothed spring M, as and for the purposes described.

In testimony that we claim the foregoing as our own we have affixed our signatures in presence of two witnesses.

AUGUSTUS C. PALMER.
AUGUSTUS H. PALMER.

Witnesses:
JAMES B. PADDON,
JESSE C. FOSTER.