(No Model.)

C. A. WELLER.

RAILWAY SIGNAL.

No. 527,914. Patented Oct. 23, 1894.

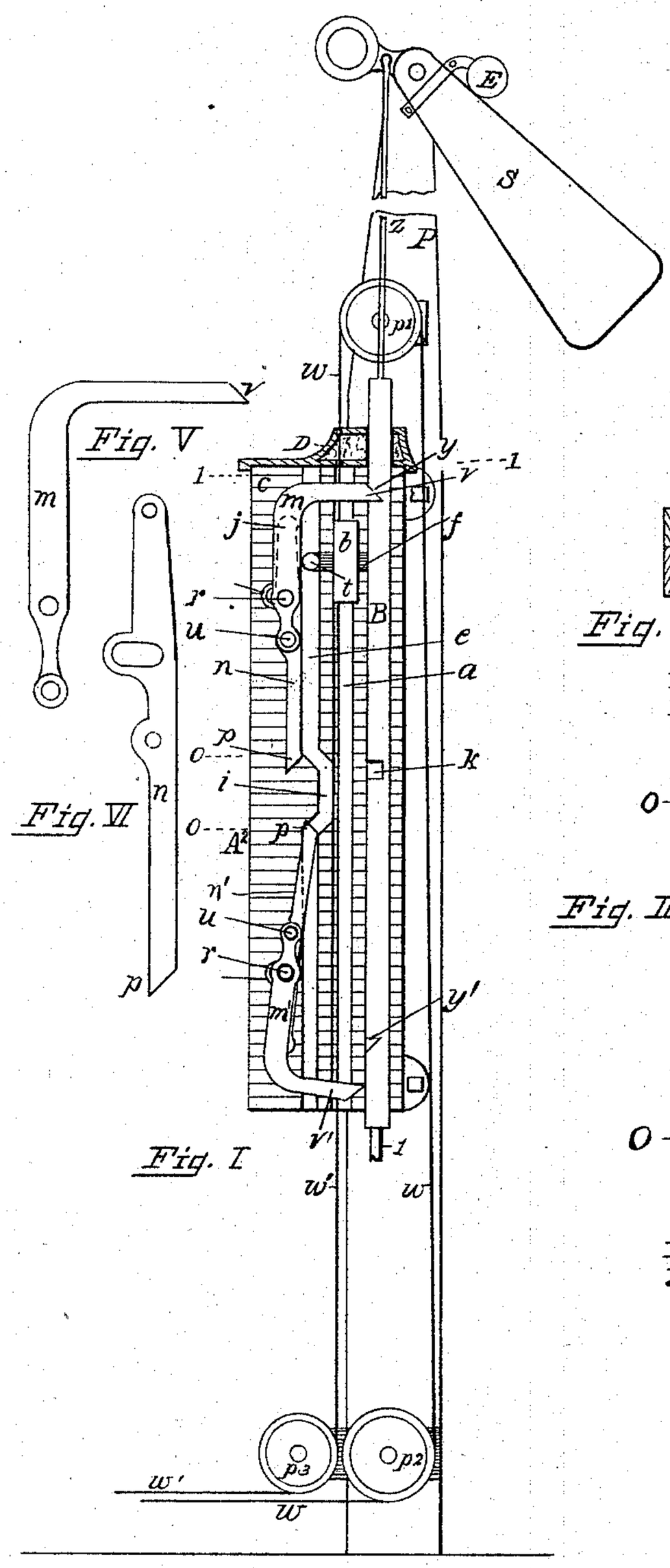

Fig. V

Fig. VI

Fig. I

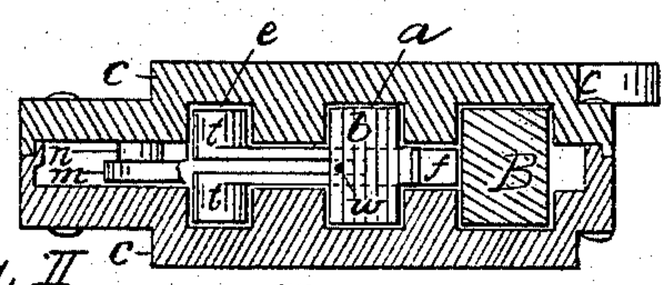

Fig. II

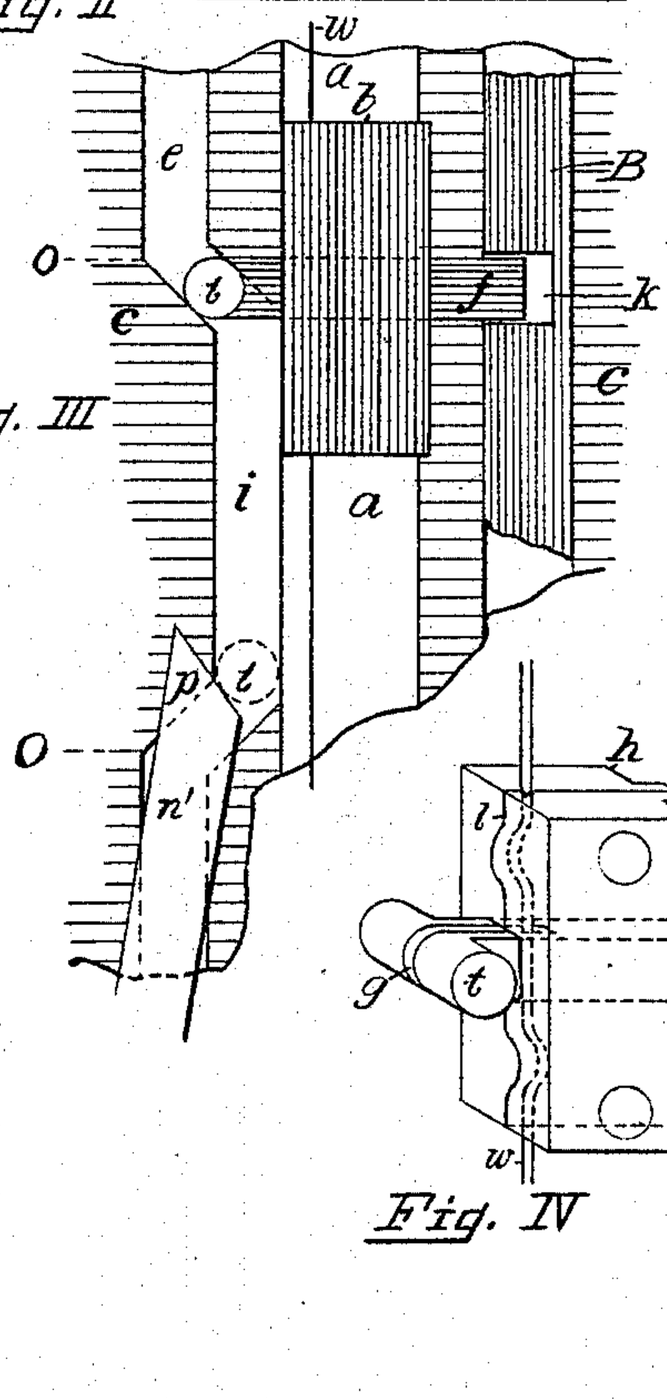

Fig. III

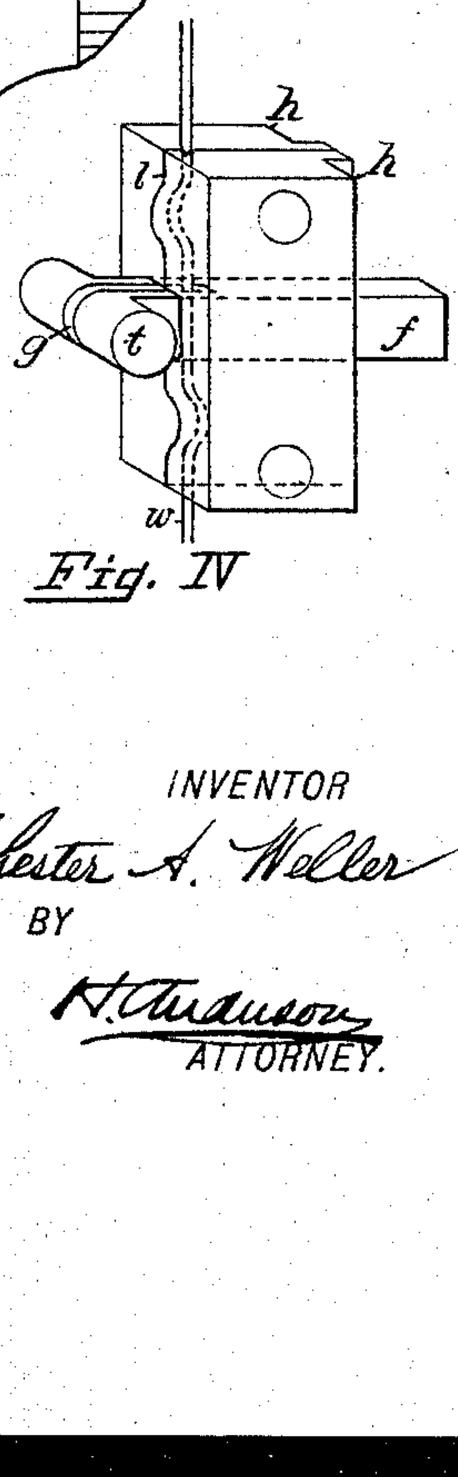

Fig. IV

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHESTER A. WELLER, OF SING SING, NEW YORK, ASSIGNOR OF ONE-HALF TO JOHN GIBNEY, OF SAME PLACE.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 527,914, dated October 23, 1894.

Application filed September 15, 1894. Serial No. 523,095. (No model.)

To all whom it may concern:

Be it known that I, CHESTER A. WELLER, a citizen of the United States, residing at Sing Sing, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Railway-Signals; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 and figures of reference marked thereon, which form a part of this specification.

This invention relates to railroad signals.

In the operating of signals from long distances, where the actuating device is connected with the signals by means of wires, considerable watchfulness is required to maintain a proper tension of the wires. A wire that may one day hold such a signal as shown in Figure I at the horizontal or safety position may the next day, even by reason of a higher temperature of the atmosphere, become so elongated as to allow the signal arm to droop from a horizontal to such a degree that the engineer may be in doubt as to its meaning. This is a source of much annoyance on railroads, and my invention is designed to remedy the evil by affording a "compensator" device embracing signal moving elements that will effect a proper movement of the signal, unaffected by any slackness of wires due to ordinary causes. This object is accomplished by the means set forth in the accompanying drawings, in which—

Fig. I represents the application of my invention, showing the mechanism uncovered. Fig. II is a cross-sectional view through line 1, Fig. I. Fig. III is an enlarged view of part of the operating devices. Fig. IV shows the construction of block *b*. Figs. V and VI represent enlarged views of levers *m*, *n*.

This machine is inclosed within a casing as outlined vertically in Fig. I, and in cross-section as in Fig. II. It is represented in Fig. I as having one side of the casing removed in order to disclose the entire mechanism except the operating lever, which may be of the kind commonly in use in signal towers, adapted for pulling a signal two ways.

In Fig. I S represents an ordinary semaphore attached to a pole P, and is operated by wires *w w'*, from a distant point. These wires have not a direct connection with the semaphore, but pass through the machine A^2, which is fastened to the post, directly beneath the semaphore. It may be observed here that the casing of the machine is shown as made in two similar parts, as in Fig. II, the grooves in one plate corresponding to the grooves in the other. Inside of the casing *c* the wire *w* is secured to a sliding block *b* which moves vertically in the groove *a*. A groove *e* lies parallel with groove *a* except for a short length at the center, where it diverges toward groove *a*, as shown.

The sliding block *b* is shown in enlarged form in Fig. IV. It is made in two parts, with alternately convexed and concaved surfaces on its inner faces, as shown by the separating line *l*. The wire *w* is clamped between the parts of the block, and the object of the zig-zag faces is to kink the wire between them and give them a reliable grip on the wire. The course of the wire is indicated by the broken lines. The block is also mortised through the center to admit the pin *f*, which slides freely therein. As the wire *w* passes vertically through the center of the said mortise the pin *f* is slotted to clear the wire as shown at *g*.

When the block is put in place the edges *h*, *h*, will lie in the grooves *a*, and the trunnion ends *t* of the pin *f* will lie in groove *e*. It will be plain that as the block is moved up and down in its grooves, the trunnions *t* must follow the groove *e*, and will cause a reciprocating movement of the pin *f* as it passes the angular divergencies of the groove at *i*, as indicated in Fig. III.

Upon the right of groove *a* is another lying parallel with it, which receives a bar B, near the center of which is a notch *k*.

The several parts just described lie in such relation to each other that as the block *b* is moved up and down its groove the pin *f* will be caused to engage with the notch *k*, so that the bar B will be moved with the block the distance between the points *o*, *o*, Fig. I.

To the left of the devices just described are two sets of levers *m*, *n*, *m'*, *n'*. They are shown in enlarged forms by Figs. V and VI. The sets are precisely alike and are similarly

actuated. Lever n is pivoted to the casing at j, and extends toward the center of the casing to where the groove e becomes angular. The ends p of the levers are beveled so that when they hang in a free position and partly over the groove e, as shown by the lower pair, they may be easily moved by the trunnions t, as shown, Fig. III. To obtain steadiness of the levers and to retain their strength they are made to loop around the stud r which is fast to the casing. Lever m is pivoted on the stud r, and likewise on the lever n, at u, so that when the lever n is moved in one direction the lever m will move the opposite way. The extreme ends of the levers m are pointed as shown at v, and the points are adapted to engage with notches y, y', in the bar B.

The action of the mechanism will now be as follows: In the present position of the parts a trunnion of pin f presses against the lever n, causing said lever to hold lever m immovable, with its point in the notch y in the bar B, so that the bar cannot be moved. As the block b is moved downward in its grooves the conditions as to the levers will be unchanged until the trunnions t begin to move in the angle of the groove e. As soon as this movement begins the levers are released and the pin f engages with the notch k in bar B. By the time the trunnions are fairly in the part i of groove e, the levers are free and the bar B moves with the block until the lower angle of the groove is encountered. By this time the point v' of the lower lever and notch y' in the bar are engaging with each other, and when the trunnion reaches the main part of the groove e, it will have disengaged pin f with bar B, and have forced the point of lever m in the notch y', thus locking the bar in its lower position. Obviously, to effect these changes of the lever and the bar B, it is only needful to move the block to the extremes of the angles in the groove e, so that if the wires w, w', are set to carry the block the full length of the groove, which is the whole length of the casing, it will require considerable slackness of wire to prevent the operation of the machine.

To the top of the bar B a rod z is connected with the semaphore, so that as the bar is raised or lowered, so is the semaphore set at safety or danger.

The wire w passes out of the top of the machine, over a pulley p', down to a pulley p^2 in a horizontal frame, which also supports a pulley p^3, around which passes the wire w' from the lower part of the machine.

Connection may be made with the lower end of bar B for operating a torpedo machine, or any auxiliary signal, at 1.

The cap D of the machine is made hollow, so it may be filled with waste or like packing to keep out snow and water.

To provide a counterbalance for the weight of bar B I attach an adjustable weight E to the semaphore.

While I have shown this machine as used vertically it is plain it will work equally well in any position.

I do not wish to be limited to the construction herein shown so long as I adhere to the principles of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. In combination with a railway signal and its operating mechanism, a compensator for the varying tension of the connecting wires, consisting of a grooved casing c, sliding block b carrying a pin f operated by groove e in the manner described, bar B notched for pin f, and levers m, n, m', n', pivoted to the casing and to each other respectively as described, wire w, w', pulley wheels p', p^2, p^3, all substantially as herein shown and described.

2. In combination with a railway signal and its operating mechanism, a compensator for the varying tension of the connecting wires, consisting of a casing c, sliding block b carrying a pin f to be operated by groove e in the manner described, bar B notched for pin f and the ends of levers m, m', levers m, n, m', n', pivoted to the casing and to each other respectively as shown, the whole being actuated through wire w, w', attached to block b, substantially as shown and described.

3. In combination with the actuating wire of a railway signal, a compensator for the varying tension of said wire consisting of a casing inclosing the following elements: a sliding bar B having direct connection with the signal or signals, said bar having a notch k with which a pin f engages for moving said bar, and notches y for locking levers; a block b attached to the said actuating wires and moving parallel with said bar B carrying pin f for moving said bar B, the pin having trunnions t moving in a groove in the casing which acts with a cam-like movement on pin f as described; and levers m, n, m', n', actuated by trunnions t of the pin f, and serving as locks for the bar B, as herein shown and described.

4. In a compensator as described, a moving block b made in two parts with zig-zag inner faces for clamping the actuating wire, mortised through the center for a sliding pin f, substantially as shown and described.

5. In a compensator as described, a moving block b, made in two parts with zig-zag joining faces for clamping the actuating wire, and carrying through its center a pin f for actuating the bar B, said pin having trunnioned ends to slide in a cam-like groove, the said ends bifurcated to clear the actuating wire, substantially as shown and described.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHESTER A. WELLER.

Witnesses:

JOHN GIBNEY,

CHARLES WESLEY.