(No Model.)

J. S. LYNAM & G. F. ADAMS.

COMPENSATOR FOR SIGNAL OPERATING WIRES.

No. 529,332. Patented Nov. 13, 1894.

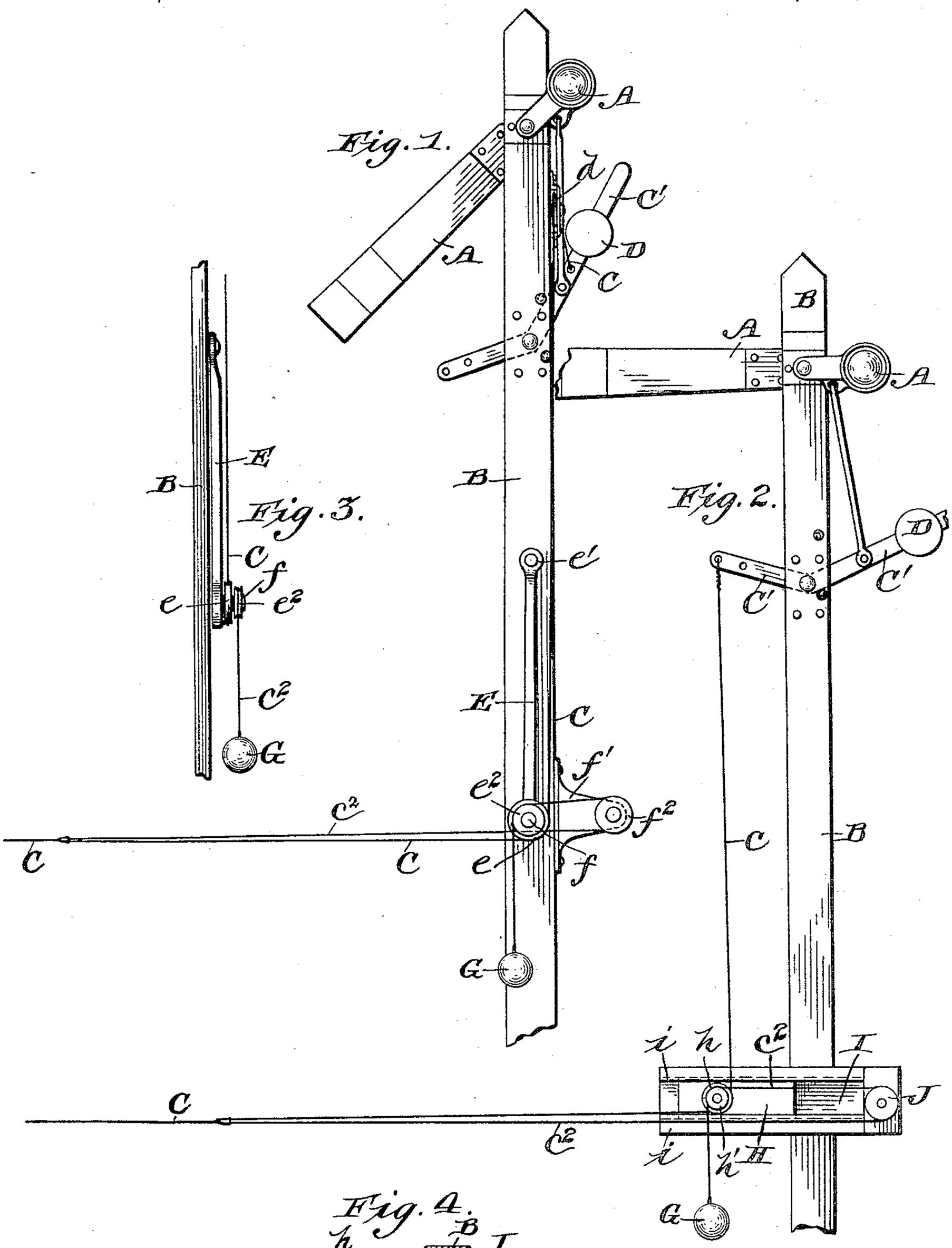

Fig. 1. Fig. 2. Fig. 3. Fig. 4.

UNITED STATES PATENT OFFICE.

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COMPENSATOR FOR SIGNAL-OPERATING WIRES.

SPECIFICATION forming part of Letters Patent No. 529,332, dated November 13, 1894.

Application filed March 22, 1894. Serial No. 504,684. (No model.)

To all whom it may concern:

Be it known that we, JOHN S. LYNAM, residing at Winchester, in the county of Middlesex and State of Massachusetts, and GEORGE F. ADAMS, residing at Nashua, in the county of Hillsborough and State of New Hampshire, citizens of the United States, have invented certain new and useful Improvements in Compensating Means for Signal-Operating Wires; and we do hereby 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.

Our invention relates to improvements in compensators for the operating wires or cords of semaphores and our invention consists of novel means for automatically taking up the slack of such wires caused by expansion and also allowing the contraction of said wires without permitting the signal connected to said wires to be operated by said expansion or contraction.

Our invention is set forth by the devices described in the following specification and illustrated in the accompanying drawings, in which—

Figure 1. represents a side elevation of the devices embodying our invention applied to the semaphore supporting post, the semaphore being at safety. Fig. 2. represents a modified form of the same, the semaphore being at danger. Fig. 3. represents a detail end elevation of the form shown in Fig. 1, and Fig. 4. represents a horizontal section, just above the compensating device of the form shown in Fig. 2.

A in the drawings represents the semaphore proper; B its supporting post or standard and C the main operating wire. The semaphore is provided with a counterweight or balance D connected thereto and the operating wire C is connected to the angular lever C′ carrying said counter weight, after first passing over the pulley wheel *e* on the swing arm E of the compensator and a stationary pulley *d* on said post B. The said swing arm E is pivoted to the post B at its upper end *e′* and is provided at its lower end with a pin *f* forming an axle for the pulley wheels *e* and e^2 which are loosely mounted thereon. A bracket *f′* is provided with a pulley wheel f^2 and is so mounted on the post B as to bring said pulley on the same horizontal plane as the pulleys carried by the swinging arm.

The main wire C which passes about the pulley *e* and thus to the semaphore is provided with a supplemental wire c^2 which passes between the pulleys *e* and e^2 without touching them and then over the pulley f^2, then back over the pulley e^2 and is provided at its lower end with a compensating weight G which is somewhat heavier than the weight D which is mounted on the angular lever C′ and the tendency of said weight G is always to draw the pulleys e^2 on the swinging arm, toward the pulley f^2 on the stationary bracket, the slack in the line C being thus taken up. The slack in the line C^2 which terminated in the weight G is taken up by the descent of the said weight G.

In the form shown in Fig. 2, a sliding block H carrying pulleys *h*, *h′* takes the place of the swinging arm E shown in Fig. 1. This sliding block is mounted in guides *i*, *i*, of a stationary guide way I fixed to the post B. A pulley J is mounted at the end of the guideway and corresponds in function to the pulley wheel f^2. In this form the main wire C passes over the pulley wheel *h* and up to the angular arm C′ and the wire C^2 passes over the pulley J then back and over the pulley *h′* and is provided at its end with a compensating weight G. It will thus be seen that the action of the compensator, in this form, as in the form shown in Fig. 1., is to draw the pulleys *h*, *h′* toward the pulley J and thus take up the slack in the main line. Upon any contraction of the main line the reverse action will take place.

The operation of the device is as follows: When the semaphore is in the position shown in Fig. 1. the weight D is exerting much less power than it does when in the position shown in Fig. 2., because of its position in relation to the pivotal point of the angular lever and said power is of course less than the power being exerted by the weight G. Now if the line is expanded by heat the weight G will pull the movable pulleys toward the station-

ary pulley in either construction and thus take up the slack in the main line C, the weight at the same time descending and taking up the slack in the line C^2. If the line is contracted by a fall in the temperature the effect will be just the opposite, the weight G rising and the movable pulleys moving away from the stationary pulley. To set the signal at danger the line C is suddenly slackened and before the compensator has a chance to act, the weight D has descended into a position which will make its operative energy greater than that of the weight G and the signal will be set in preference to the compensator operating. To reset the signal at safety the main line C is quickly operated, and before the greater operating weight of the angular lever C′ has a chance to throw the strain on the compensator, said weight is so lessened because of its shifting position, that the signal can be easily drawn down to safety. It will be seen from the foregoing that all gradual contraction and expansion of the line will be taken up or permitted by the compensator and the main line always kept taut and in operative condition without having workmen continually altering the wires.

It will be seen from the foregoing that the changing operative force of the weight D is simply due to the changing leverage of the arm C′, thus when the weight is almost directly above the pivotal point of said lever, the leverage has so decreased that said weight is exerting very little force, but when the weight takes a position nearly on the same horizontal plane with the pivotal point of lever C′ it is exerting a great deal of energy and thus the operative force of said weight is increased or decreased as before stated.

What we claim as our invention is—

1. In a compensator for signal wires, the combination of a supporting post, a signal operating lever pivoted on the same and provided with a counterbalance weight; the pivotal point of said lever being so located that the operative force of the said weight may be increased or decreased, a stationary pulley on said post, movable pulleys, means for supporting the movable pulleys on the post, a line wire having two branches, one of the same passing over one of the movable pulleys and being attached to the semaphore and the other passing over the stationary pulley and the other movable pulley and terminating in a weight, substantially as described.

2. In a compensator for signal wires, the combination of a supporting post, a signal operating lever pivoted on the same and provided with a counterbalance weight, the pivotal point of said lever being so located that the operative force of the said weight may be decreased or increased, a stationary pulley on said post, a guideway secured to said post and provided with a fixed pulley at its outer end, movable pulleys operating in said guideway and a main line wire having two branches, one of which branches being passed over one of the movable pulleys and connected at its upper end to the signal lever and the other provided at its outer end with a weight and passed around the stationary pulley and over the other movable pulley, substantially as described.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

JOHN S. LYNAM.
GEORGE F. ADAMS.

Witnesses:
F. E. PICKHAM,
IRA F. HARRIS.