No. 617,507. Patented Jan. 10, 1899.

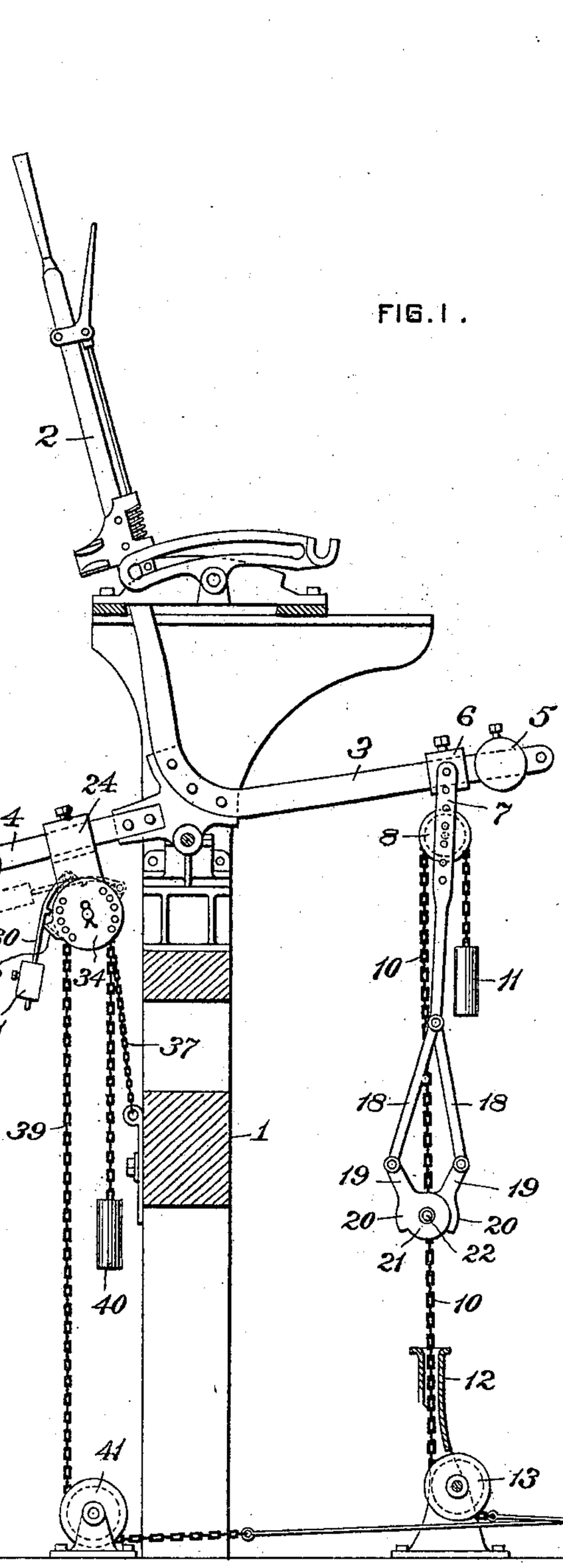
J. W. JONES.

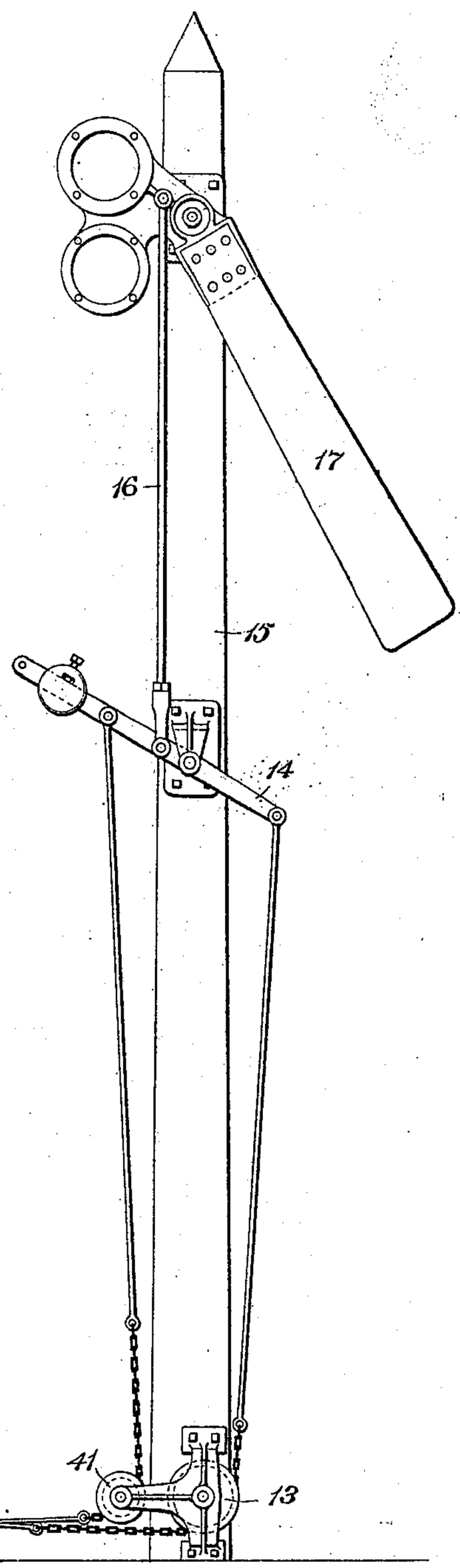
RAILROAD SIGNAL.

(Application filed Mar. 25, 1898.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.





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(Application filed Mar. 25, 1898.)

(No Model.) 2 Sheets—Sheet 2.

FIG. 2.

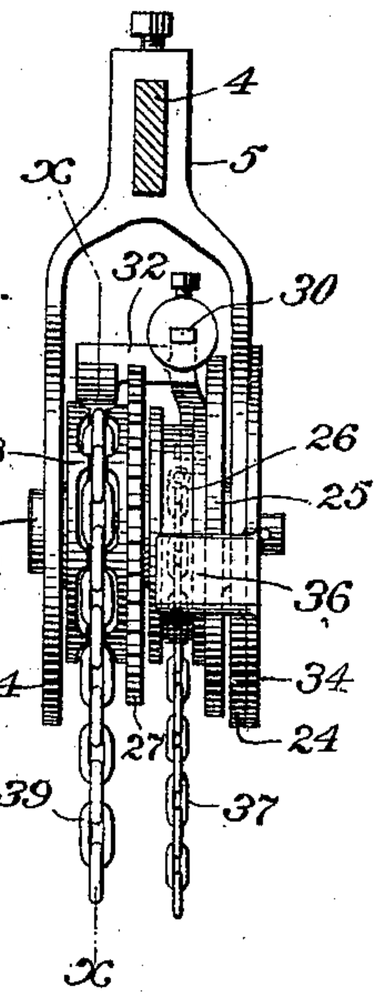


FIG. 3.

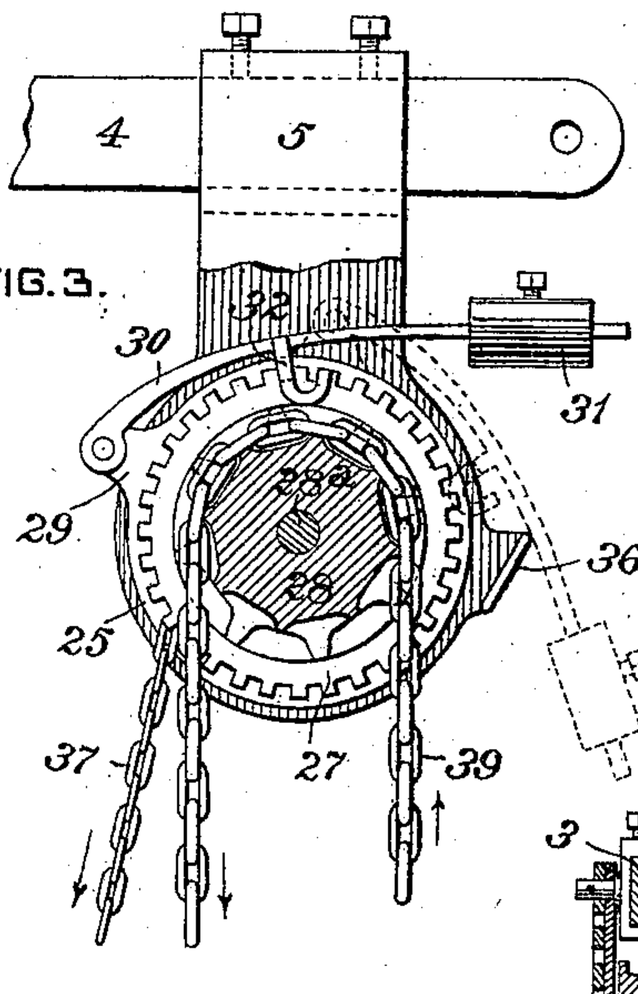


FIG. 7.

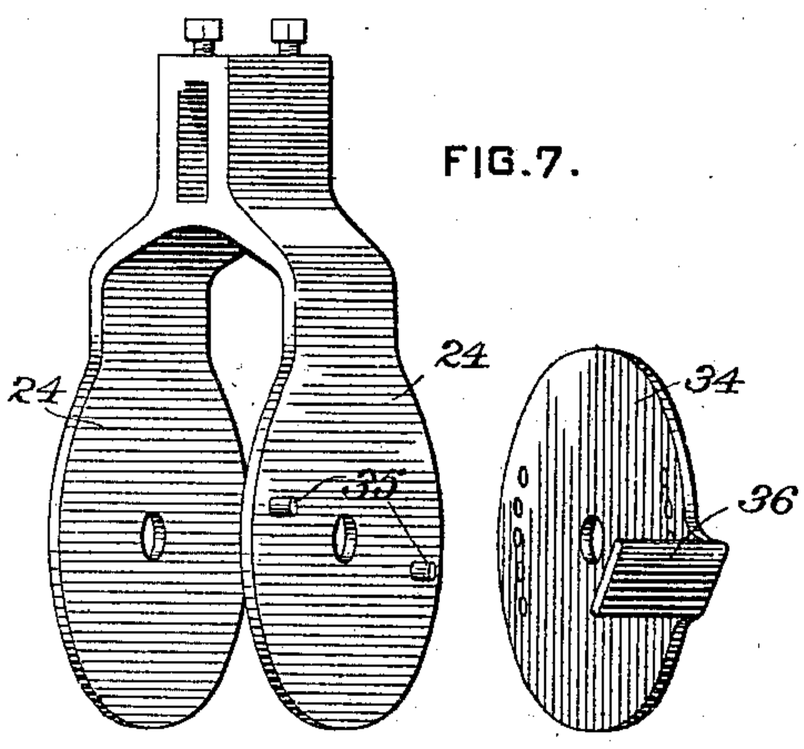


FIG. 8.

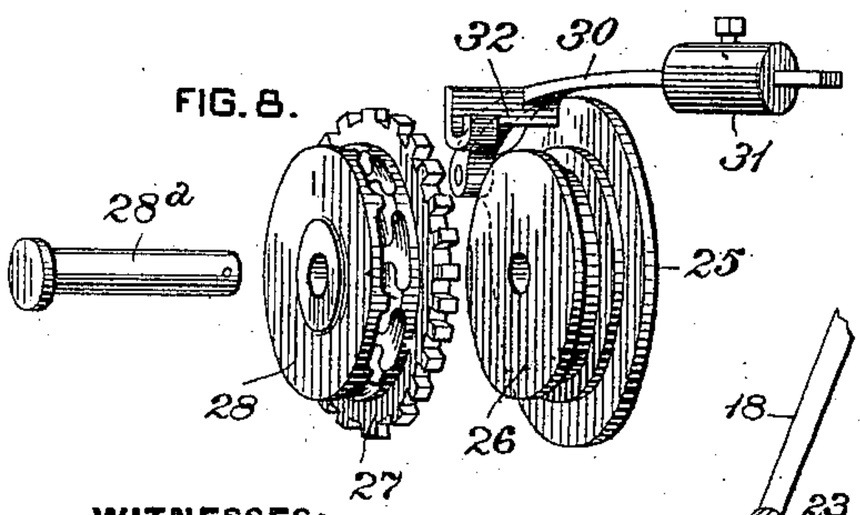


FIG. 4.

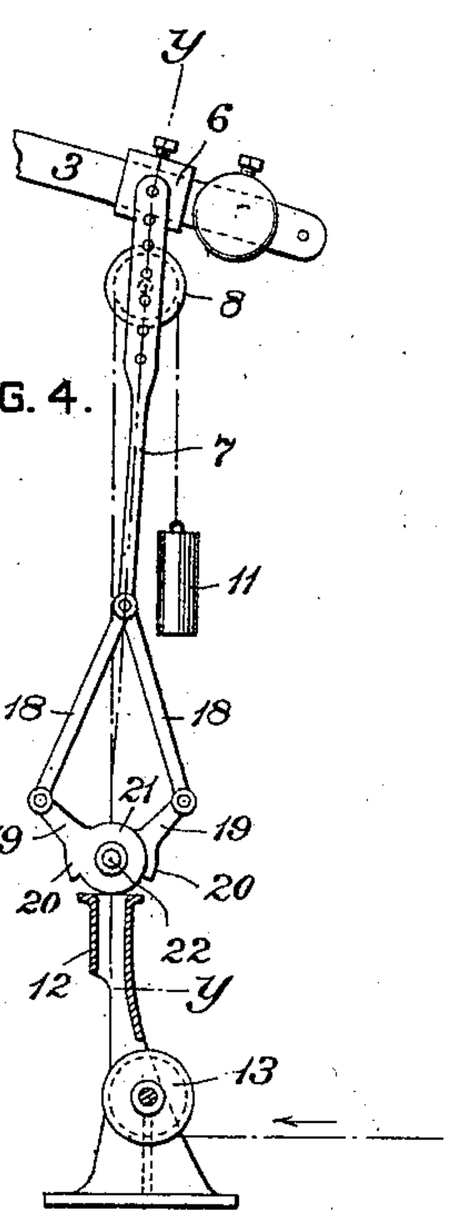


FIG. 6.

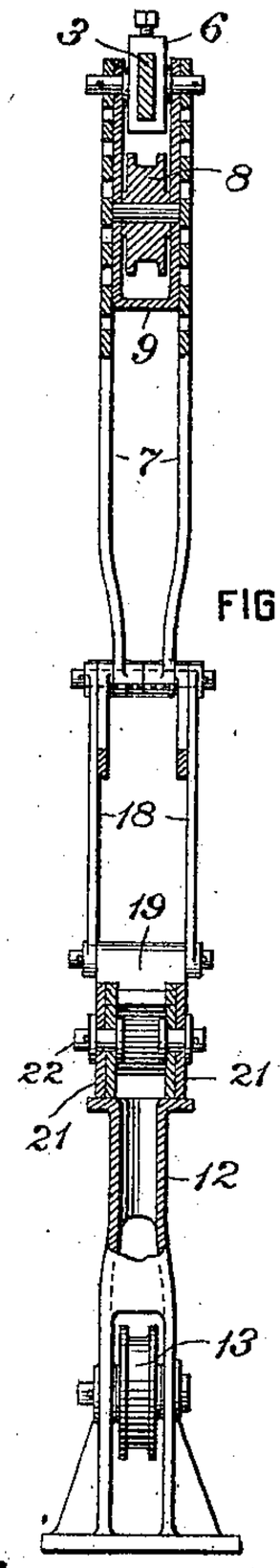
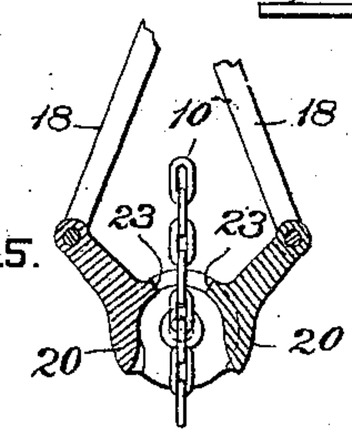


FIG. 5.



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UNITED STATES PATENT OFFICE.

JOSHUA W. JONES, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH AND SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA.

RAILROAD-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 617,507, dated January 10, 1899.

Application filed March 25, 1898. Serial No. 675,083. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA W. JONES, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Railroad-Signals, of which improvements the following is a specification.

My invention consists of a novel construction of railroad-signal in which provision is made for lessening the extent of movement required of the operating-lever to move the signal-arm when the latter and the lever are long distances apart.

It also consists of a novel construction of an adjustable clutch and compensating devices to be hereinafter referred to.

It also consists of a novel construction of clutch mechanism and its adjuncts.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a side elevation of a railway-signal embodying my invention. Fig. 2 represents an end elevation, on an enlarged scale, of a portion of the compensating device. Fig. 3 represents a section on line *x x*, Fig. 2. Fig. 4 represents in side elevation the clutch mechanism in release position. Fig. 5 is a sectional view of the clutch mechanism. Fig. 6 represents a sectional view on line *y y*, Fig. 4. Figs. 7 and 8 show, on an enlarged scale, detail views of parts of the compensating device.

Similar letters and numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, the operating-lever 2 is pivotally mounted on a stand or other suitable support 1, said lever being provided at its lower end with arms 3 and 4, which extend in opposite directions, the arm 3 being preferably longer than the arm 4 and having the weight 5 movably mounted thereon. A sleeve 6 is mounted on the arm 3, said sleeve having movably attached to each side thereof the ends of the rods 7. A pulley 8 is journaled in a yoke 9, which is pivotally mounted on the sleeve 6. A chain or other connection 10 is passed around the pulley 8, the free end of said chain having a weight 11 attached thereto. The chain after passing around said pulley passes down through the clutch mechanism A, thence through the tubular guide 12, then around the guide-pulleys 13, journaled in suitable supports, and is connected by a wire to one end of the balance-lever 14, which is suitably fulcrumed to the signal-post 15. The balance-lever 14 is connected by a rod 16 in the usual manner to the signal-arm 17, which is pivotally mounted on the signal-post.

The rods 7 have a series of eyes in their upper portions permitting of the adjustable connection of the rods to the pins employed for connecting the yoke 9 to the sleeve 6. The lower ends of said rods 7 have the clutch mechanism A mounted thereon. This clutch mechanism consists of the links 18, each of which has one end pivotally connected to the rods 7, while their opposite ends are pivoted to arms 19 of the clutch members 20. The latter are provided with check-plates 21, projecting inwardly and so constructed that the plates on one of the members will overlap the plates on the other member. The two members are pivotally connected together by pins 22, passing through the check-plates and are provided with the opposing jaws 23, which when moved toward each other engage the chain 10. There being a separate pivot-pin 22 for each pair of check-plates a clear central space is provided for the chain 10 to pass through.

The compensating mechanism is shown in Figs. 2, 3, and 7 to 11, inclusive. The cage or frame 24, consisting of side plates, is adjustably mounted on the arm 4 of the lever 2. The disk 25, having a grooved pulley or roller 26 attached thereto or formed integral therewith, and a toothed wheel 27, having a sprocket-wheel 28 secured thereto, are arranged between the side plates of the cage on a pin 28^a, passing through said parts and the side plates. To an ear 29, formed on the disk 25, is pivoted an arm 30, having a weight 31 secured to its outer end. This arm 30 is provided with a lateral extension or tooth 32, the teeth on the periphery of the wheel 27 thereby locking the disk, with its pulley, and the wheel 27, with its sprocket-wheel 28, together. A disk

34, provided with a series of perforations near its periphery, is arranged on the pin 28, against the outer face of one of the side plates of the cage, said plate being provided with studs 35, adapted to engage or project into the perforations of the disk 34. These series of perforations in the disk permit of its adjustment on the side plate, as hereinafter described. The disk 34 is provided with a lug 36, projecting laterally into the path of movement of the arm 30 and is adapted when the several parts are in certain relative positions, as hereinafter described, to lift the arm 30, so as to cause the disengagement of its tooth or lateral extension from the notch in the disk 25 and the teeth of the wheel 27. A chain 37 has one end attached to the grooved pulley 26, as at *a*, and passing partly around said pulley has its opposite end attached to a plate 38, adjustably secured to the standard 1. A chain 39 is passed around the sprocket-wheel 28 and has a weight 40 attached to one end thereof, while the opposite end is attached to a wire or other flexible connection passing around suitable guide-pulleys 41 and connected to the balance-lever 14.

The operation is as follows: Assuming the parts to be in the position seen in full lines in Fig. 1, if now the operating-lever 2 be moved to the right in the direction of the arrow the arm 3 will be shifted downwardly, and by reason of the connections to the clutch mechanism A the jaws 23 thereof will open to release the chain 10. The shifting of the lever 2 to the right will raise the arm 4 and the parts connected thereto. While the parts are in the position shown in Fig. 1, and by the dotted lines, the arm 30 will be so supported by the lug 36 on the disk 30 that the tooth or extension 32 on said arm will be held out of engagement with the teeth of the wheel 27. As arm 4 commences to rise the disk 25 and pulley 26 will be rotated by the chain 37 in such direction as to lift the arm 30 from the lug 36. As the rotation continues the arm 30 can be moved by the weight 31, so as to cause its extension or tooth 32 to engage the toothed wheel 27, thereby locking said wheel and the sprocket-wheel 28. The continued upward movement of the arm 4 after the locking of the sprocket-wheel will exert a pull on the chain 39 to shift the signal to danger position.

It is characteristic of my improved mechanism that the wire employed for pulling the signal to "danger" is locked while the signal is in that position as against any movement in the direction necessary to permit of the signal being cleared, so that any pull on the connection 10 outside of the signal-tower cannot clear the signal. It is also characteristic of the improvement that while the signal is at "normal" or "danger" any expansion of the connection 39 will be taken up by the weight 4, the disk and wheels being free to rotate in the direction of the arrow *x* at all times, although locked as against rotation in the opposite direction by the chain 37.

I claim herein as my invention—

1. In a railroad-signal, an operating-lever having laterally-extending arms, compensating devices attached to one of said arms, a pulley secured to the other arm, connections from said pulley to a suitable clutch mechanism, the same consisting of the levers 19 and 20, the two latter having suitable jaws, a signal-arm, and suitable connections for actuating the latter, extending from said arm over said pulley and compensating device, substantially as described.

2. In a railroad-signal, the herein-described clutch mechanism consisting of the rods 7, having their upper portions provided with a series of eyes, the arms 18 attached to the lower portions of said rods, the clutch members 20, having the jaws 23, the sides 21, the latter being suitably pivoted together, and means for supporting and actuating said clutch mechanism, substantially as described.

3. In a device of the character described, the rods 7, the arms 18 pivoted thereto, the clutch members 20, the sides 21 attached to the latter, the pins 22, and means for holding the same in position, the tubular guide 12, and means for actuating said clutch mechanism, substantially as described.

4. In a device of the character described the herein-described compensating mechanism consisting of the supporting cage or frame 24, one of the side plates of the latter provided with pins 35, the aperture-disk 34 having a stop thereon, and adapted to be held as against rotation by said pins, a pulley with a toothed periphery and mounted in the frame, a weighted pawl adapted to engage the teeth on the pulley and a flexible connection from the signal passing over the pulley and provided at its free end with a weight, substantially as set forth.

5. In a device of the character described, an operating-lever having laterally-extended arms, a movable sleeve on one of said arms, a yoke and rods pivotally attached to said sleeve, and a clutch mechanism adapted to be actuated by said rods, a pulley mounted in said yoke, a weighted chain passing over said pulley, through said clutch mechanism, and adapted to operate a signal-arm in one direction, and means for operating said arm in the other direction, substantially as described.

6. In a railroad-signal, a compensating device consisting of the cage 24, pins 35 attached to one side of the cage, the perforated disk 34 having the lug 36 attached thereto, the disk 25 having a weighted arm pivotally attached thereto, a tooth secured to said arm, a ratchet-wheel having a sprocket-wheel attached thereto, and adapted to be locked to the disk 25, and suitable means actuated by said compensating device for moving a signal-arm, substantially as described.

7. In a railroad-signal, a compensating de-

vice consisting of the cage 24, pins 35 attached to one of the side plates of the cage, the perforated disk 34 having the lug 36, the disk 25 having a weighted arm pivotally attached thereto, and provided with a tooth, a pulley attached to said disk, a chain or cord extending from said pulley to the adjustable plate 38, a ratchet-wheel having a sprocket-wheel attached thereto, a weighted chain passing over said sprocket-wheel, and having an end attached to a lever adapted to actuate a signal-arm in one direction, and means for actuating said arm in another direction, substantially as described.

8. In a railroad-signal, a compensating device consisting of a disk having a weighted arm provided with a tooth attached thereto, means for limiting the movement of said disk, a toothed wheel and a sprocket-wheel movable in unison, means for supporting the above parts, a weighted chain passing over said sprocket-wheel, and connected to means for actuating a signal-arm in one direction, and means for moving said arms in an opposite direction, said parts being combined, substantially as described.

9. In a railroad-signal, an operating-lever having arms extending laterally therefrom, a yoke and clutch mechanism pivotally attached to and movable with one of said arms, a compensating device attached to and movable with the other of said arms, in combination with suitable connections adapted to actuate a signal-arm, substantially as described.

10. In a device of the character described, the operating-lever having the laterally-extending arms 3 and 4, the sleeve 6 mounted on said arm 3, the rods 7 and yoke 9 pivotally attached to said sleeve, the pulley 8 mounted in said yoke, the clutch mechanism comprising the levers 19 and 20 suitably attached to said rods 7, the pivots 22 for said levers, said rods being suitably supported, a compensating device attached to said arm 4, and suitable connections for actuating a signal-arm, substantially as described.

11. In a railroad-signal, a standard, an operating-lever suitably pivoted on said standard, and having arms extending laterally therefrom, a clutch mechanism secured to one of said arms, a weighted chain passing over a pulley mounted in bearings connected with said arm, a weighted lever connected with said chain, a sprocket-wheel suitably journaled in an attachment connected with the other arm, a weighted chain passing over said sprocket-wheel and connected with said weighted lever, and a signal-arm connected with said weighted lever, said parts being combined substantially as described.

12. In a railroad-signal, an operating-lever having an arm with an adjustable sleeve thereon, a yoke mounted on said sleeve and having a pulley journaled therein, the rods 7 adjustably connected with said sleeve, the lever 19 pivoted to said rods, the clutch members 20 pivoted to said lever and each having a plate pivoted as described, and a weighted chain passing over said pulley and between the jaws of said clutch members, said parts being combined, substantially as described.

13. In a railroad-signal, an operating-lever having an arm extending laterally therefrom, a cage depending from said arm and consisting of two sides, one of which has pins in its outer face, a disk with holes for said pins and a central opening and an angular flange, a disk having a notch therein and provided with an ear having a weighted arm attached thereto, a pawl on said arm, having a portion adapted to engage said notch, a ratchet-wheel, a grooved pulley connected with said disk, a sprocket-wheel attached to said ratchet-wheel, a weighted chain passing over said sprocket-wheel and connected with a signal-arm, and a chain connected with said pulley, and a movable plate on a suitable support, said pawl being adapted to engage said ratchet-wheel, and having a curved strip riding freely on the chain on the sprocket-wheel, said parts being combined substantially as described.

14. The combination of a signal, an operating-lever provided with oppositely-projecting arms, a sprocket-wheel provided with a toothed flange mounted on one of said arms, a dog for engaging the toothed flange, a stop for shifting the dog when the lever is in normal position, a wire extending from the signal-tower over the sprocket-wheel, to a weight and a wire extending from the signal-tower, and connected through a clutch connection with the opposite arm of the operating-lever, substantially as described.

In testimony whereof I have hereunto set my hand.

JOSHUA W. JONES.

Witnesses:
DARWIN S. WOLCOTT,
WM. M. HARGEST.