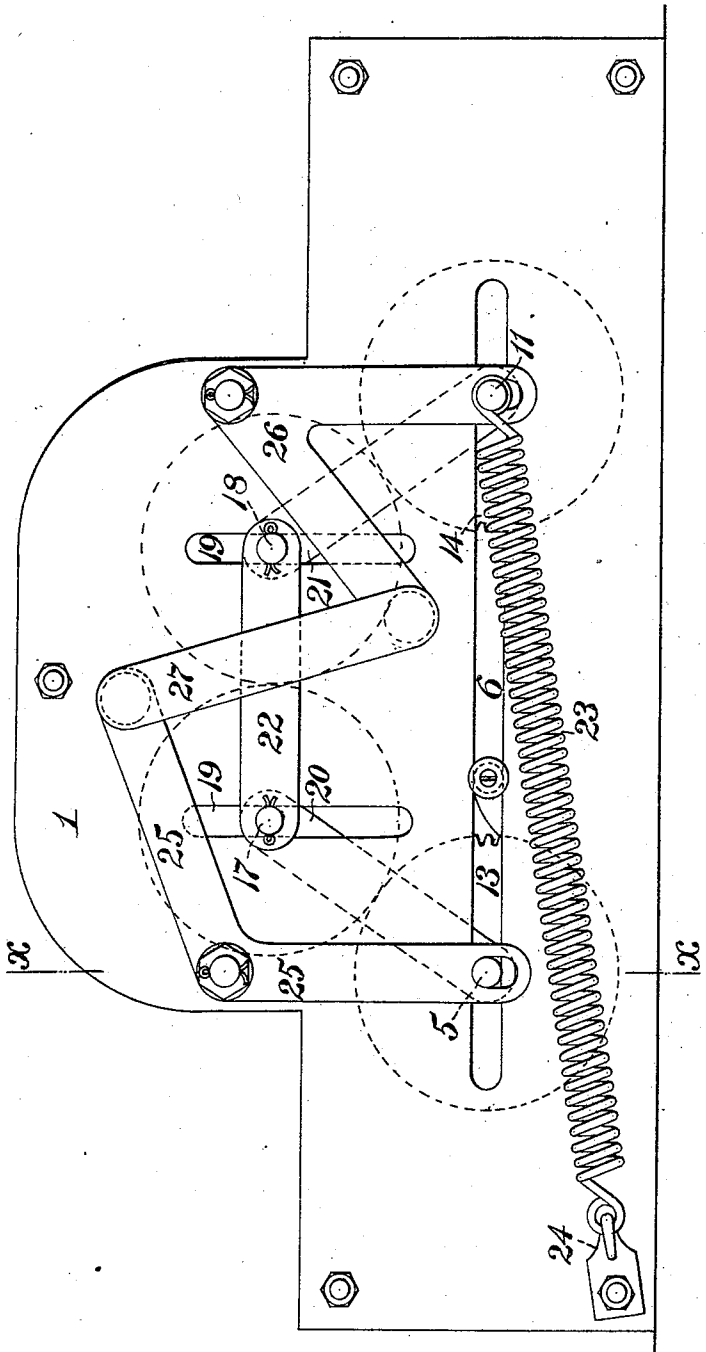
(No Model.) 3 Sheets—Sheet 1.

J. J. TURNER.

COMPENSATOR FOR SIGNALS.

No. 470,148. Patented Mar. 1, 1892.

FIG. 1.



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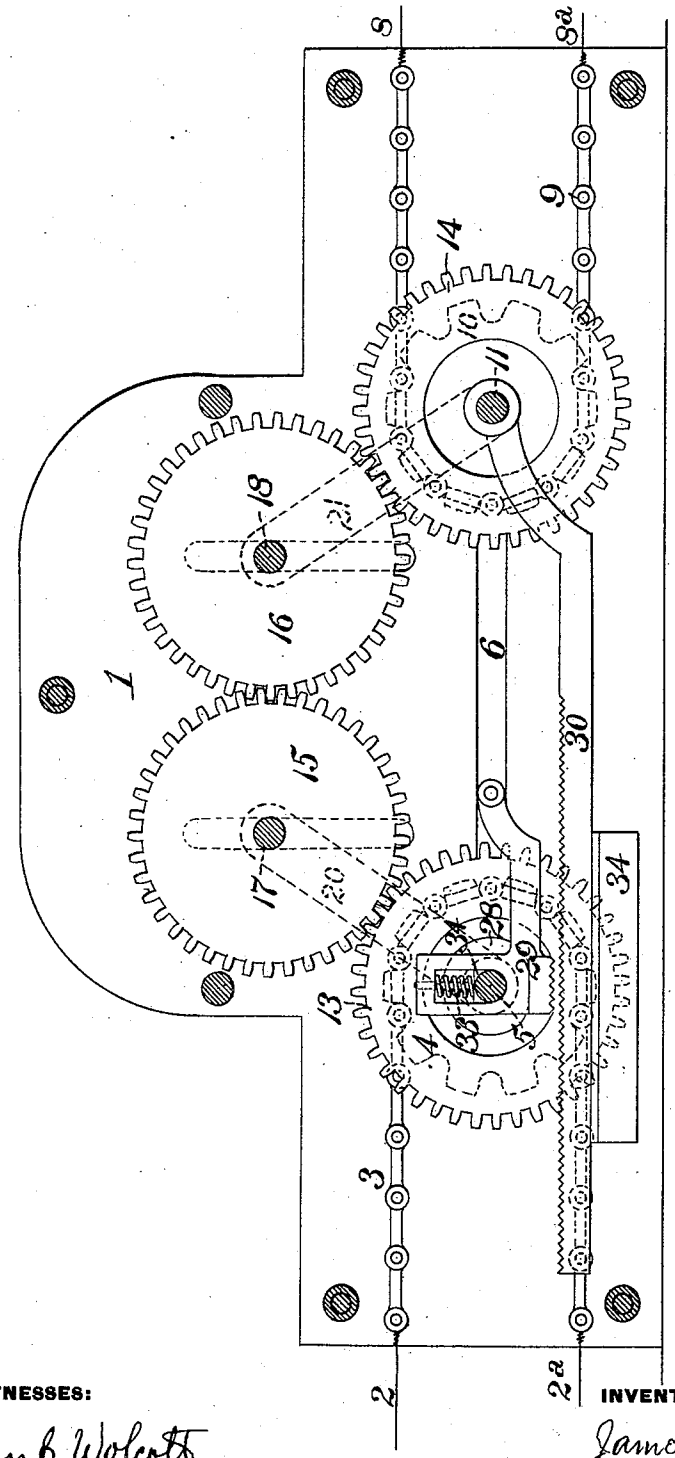
(No Model.) 3 Sheets—Sheet 2.

J. J. TURNER.

COMPENSATOR FOR SIGNALS.

No. 470,148. Patented Mar. 1, 1892.

FIG. 2.



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(No Model.) 3 Sheets—Sheet 3.

J. J. TURNER.

COMPENSATOR FOR SIGNALS.

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FIG. 4.

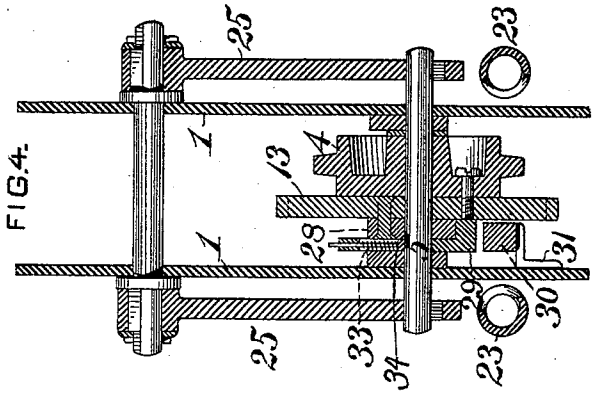
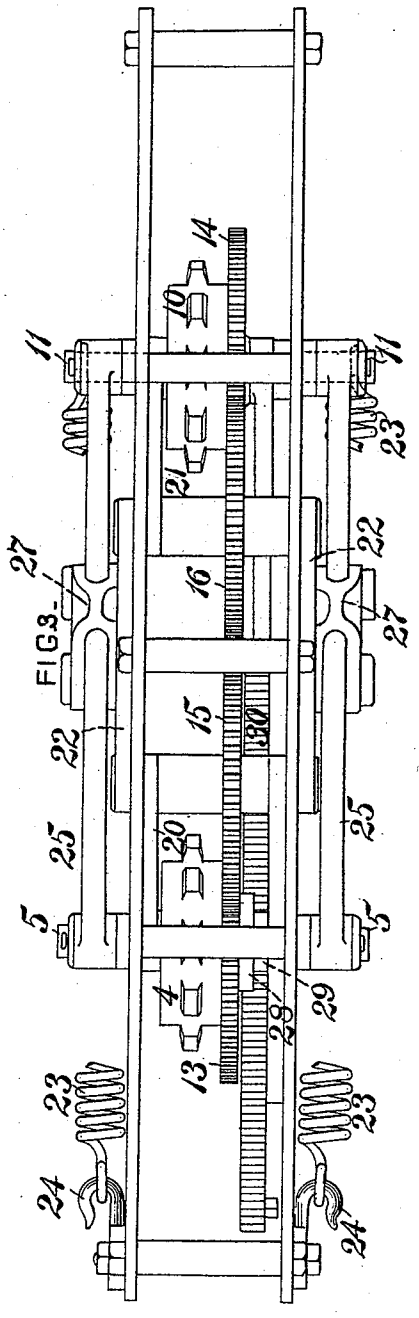


FIG. 3.



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UNITED STATES PATENT OFFICE.

JAMES J. TURNER, OF PITTSBURG, ASSIGNOR TO THE UNION SWITCH AND SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA.

COMPENSATOR FOR SIGNALS.

SPECIFICATION forming part of Letters Patent No. 470,148, dated March 1, 1892.

Application filed June 24, 1891. Serial No. 397,331. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. TURNER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Compensators for Signals, &c., of which improvements the following is a specification.

The invention described herein relates to certain improvements in railway signaling apparatus, and has for its object a construction whereby the wires leading to and from the signal may be maintained at a uniform state of tension regardless of atmospheric conditions, and the movements of the signal-lever may be communicated with certainty to the signal.

In general terms the invention consists in the construction and combination substantially as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a view in side elevation of my improved compensator. Fig. 2 is a sectional elevation of the same. Fig. 3 is a top plan view; and Fig. 4 is a sectional view, the plane of section being indicated by the line *x x*, Fig. 1.

The frame, consisting of the side plates 1, bolted together, is secured at any suitable point between the signal-tower and the signal. The wires 2 2^a, leading to and from the signal-lever, have their ends connected to the ends of a short length of sprocket-chain 3, passing around the sprocket-wheel 4, secured to a shaft 5, mounted in suitable boxes arranged in horizontal slots 6, formed in the side plates 1. The wires 8 8^a, leading to and from the signal, have their ends connected to the ends of a short length of chain 9, passing around a sprocket-wheel 10, secured on a shaft 11, having its ends mounted in suitable boxes arranged in the horizontal slots 6, formed in the side plates 1. On the shafts 5 and 11 are secured pinions 13 and 14, motion being communicated from one to the other by idlers 15 and 16 intermeshing with said pinions and with each other, as shown in Fig. 2. These idlers are secured on shafts 17 and 18, whose ends project through vertical slots 19 in the side plates and are connected, respectively, with the shafts 5 and 11 by links 20 and 21, whereby the idlers are shifted in accordance with the horizontal movements of the shafts 5 and 11, as hereinafter described. In order to prevent the shafts 17 and 18 from binding against the sides of the vertical slots 19, it is preferred to connect the ends of said shafts by links 22, as shown in Figs. 1 and 3. Springs 23, having one end attached to stationary portions of the apparatus, as the hooks 24, are secured to the sides and the opposite ends to the projecting ends of the shaft 11, serving to maintain the wires 8 8^a under a yielding tension, and a corresponding tension is imparted to the wires 2 2^a by means of suitable connections between the shafts 5 and 11, whereby the movements of one shaft are transmitted to the other shaft. These synchronic movements of the shafts 5 and 11 may be effected by means of bell-crank levers 25 and 26, pivoted to the side plates 1, each having one arm connected to the shafts 5 and 11, while the other arms of the levers are connected by bars 27, as shown in Fig. 1. When thus connected, an inward movement of either of the shafts 5 or 11 will effect a corresponding movement of the other shaft, and vice versa.

It will be readily understood from the foregoing that in case of the expansion of the wire connections the springs will immediately shift the shafts 5 and 11, the latter directly and the former through the medium of the lazy-tongs connections between the shafts, so as to maintain a normal or operative tension of said wires, and that in case of the contraction of the wires the springs will permit of the outward movements of the shafts, thereby preventing any undue strains. As the shafts 5 and 11 move in or out, the idlers 15 and 16 will be raised or lowered by the links 20 and 21, thereby maintaining a connection for rotary movement between the shafts 5 and 11 or the sprocket-wheels keyed thereon.

As a pull on the wires 2 2^a for shifting the signals will tend to shift the shafts 5 and 11 apart, thereby slackening the wires 2 2^a and 8 8^a, it is necessary to lock the shafts 5 and 11 as against movement along the slots 6 in the side plates during the shifting of the signal

and while the same is at "safety." To this end a cam 28 is so secured on the shaft 5 that as said shaft begins its rotation the cam will push down a slide 29, provided with teeth or projections on its under side, into engagement with the teeth on a bar 30. One end of this bar is connected to the shaft 11, while its opposite end is supported in proper relation to the slide 29 by a bracket 31, secured to one of the side plates 1. The slide 29 is pivoted to one of the side plates and provided at its lower end with a lug projecting laterally under the cam 28, against which it is held by a spring 33, arranged in a slot in the slide, one end of said spring bearing against the upper end of the slot, while its lower end bears against a block 34 on the shaft 5, as shown in Figs. 2 and 4. As soon as the shaft 5 begins its rotation the cam will force down the slide 29 into engagement with the bar 30, thereby locking the shafts 5 and 11 as against movement along the slot 6.

It is immaterial whether the springs 23 are connected to the shaft 5 or to the shaft 11, and, if desired, the locking device may be reversed, as any rotation of the shaft 5 is immediately transmitted to the shaft 11 by the interposed gearing.

I claim herein as my invention—

1. In a compensator for signals, &c., the combination of two shafts connected, respectively, to an operating-lever and to a signal mechanism for transmitting rotary movement from one shaft to the other, means for holding the connections from the operating-lever and signal under constant tension, and connections between said shafts, whereby horizontal movement is transmitted from one shaft to the other, substantially as set forth.

2. In a compensator for signals, &c., the combination of two shafts connected, respectively, to an operating-lever and to a signal, mechanism for transmitting rotary movement from one shaft to the other, means for shifting one of said shafts, connections between said shafts, whereby horizontal movement is transmitted from one shaft to the other, and a lock for holding said shafts as against movement toward or from each other, substantially as set forth.

3. In a compensator for signals, &c., the combination of two shafts connected, respectively, to an operating-lever and to a signal, pinions keyed on said shafts, idlers intermeshing with said pinions and with each other, and means for holding the connections from the operating-lever and signal under constant tension, substantially as set forth.

4. In a compensator for signals, &c., the combination of two shafts connected, respectively, to an operating-lever and to a signal mechanism for transmitting rotary motion from one shaft to the other, means for shifting one of said shafts, and lazy-jack connections between said shafts, whereby said shafts are shifted toward and from each other on the movement of one of the shafts, substantially as set forth.

5. In a compensator for signals, &c., the combination of two movable shafts connected, respectively, with an operating-lever and with a signal, a spring for shifting one of said shafts, connections between said shafts, whereby the movement of one is transmitted to the other, and mechanism for transmitting rotary movement from one shaft to the other, substantially as set forth.

6. In a compensator for signals, &c., the combination of two movable shafts rotatable in unison and connected, respectively, to an operating-lever and to a signal, means for moving one of said shafts, mechanism whereby the movement of one shaft is transmitted to the other shaft, a bar connected to one shaft, a slide, and a cam on the other shaft for shifting the slide into engagement with the bar, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES J. TURNER.

Witnesses:
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