

(No Model.)

2 Sheets—Sheet 1.

C. M. HAVEY & R. BLACK.  
SIGNAL FOR RAILWAYS.

No. 512,441.

Patented Jan. 9, 1894.

Fig. 1.

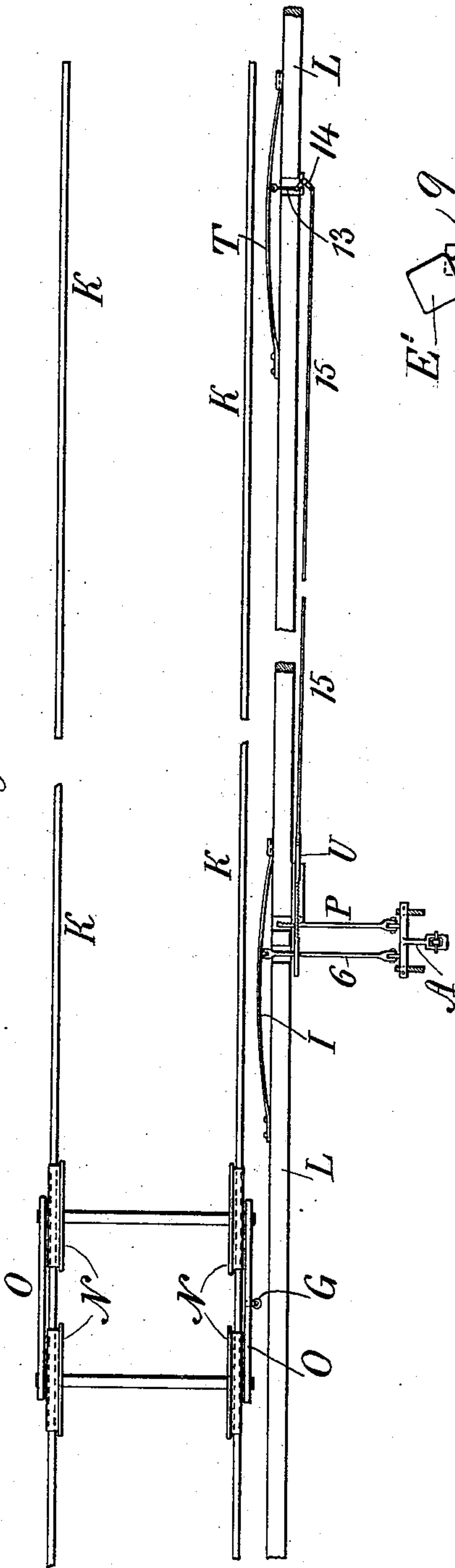


Fig. 2.

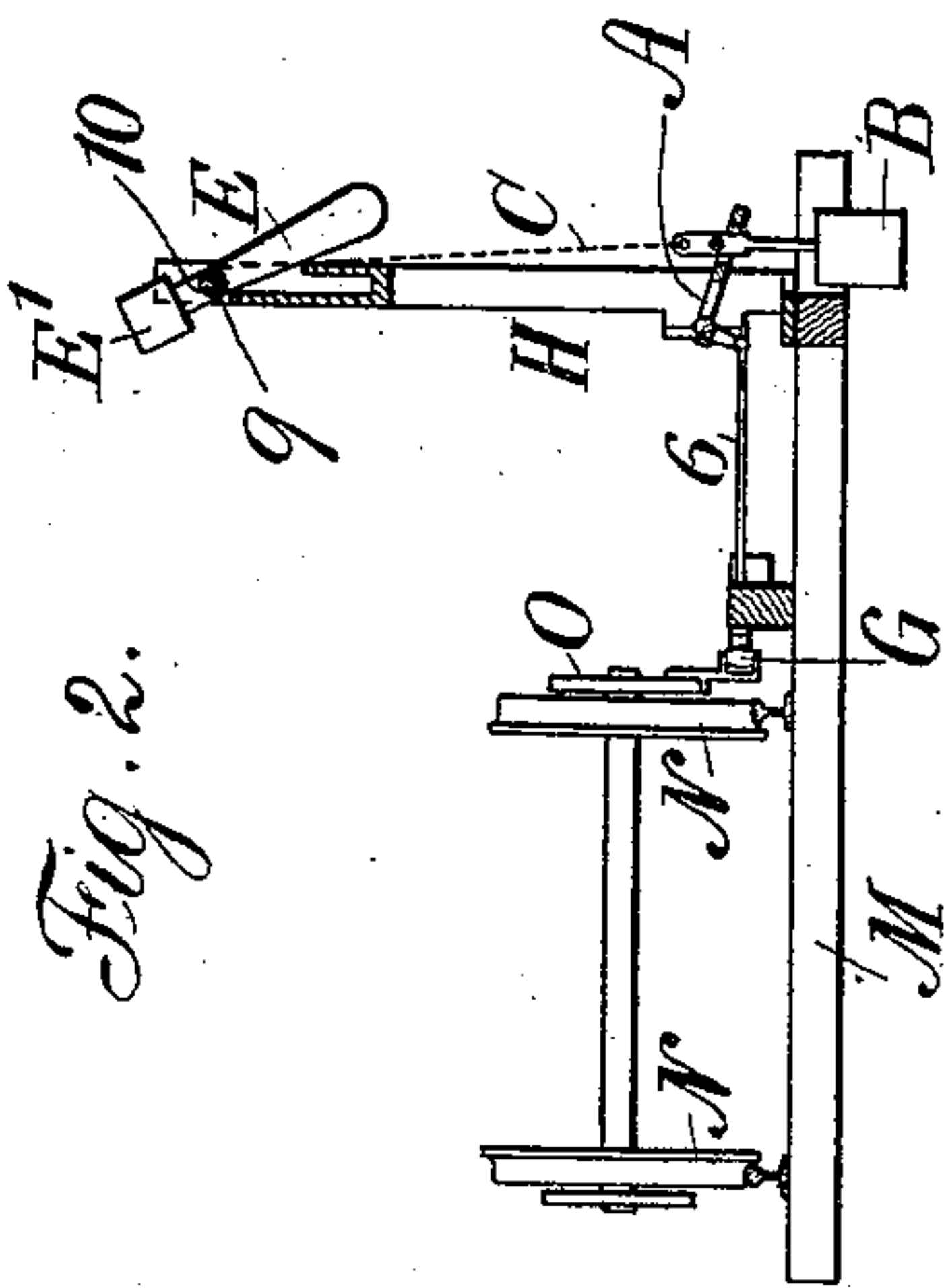
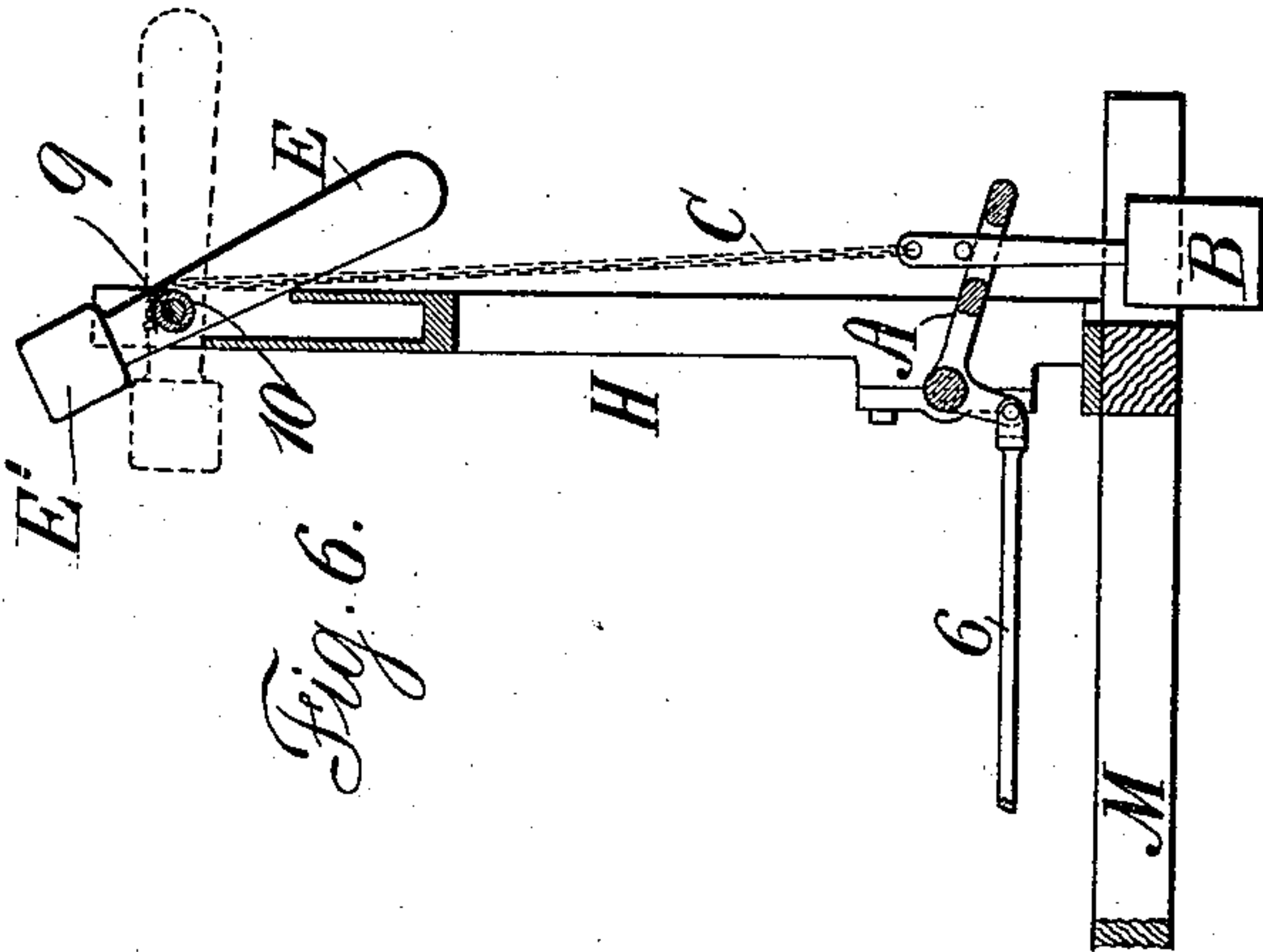


Fig. 6.



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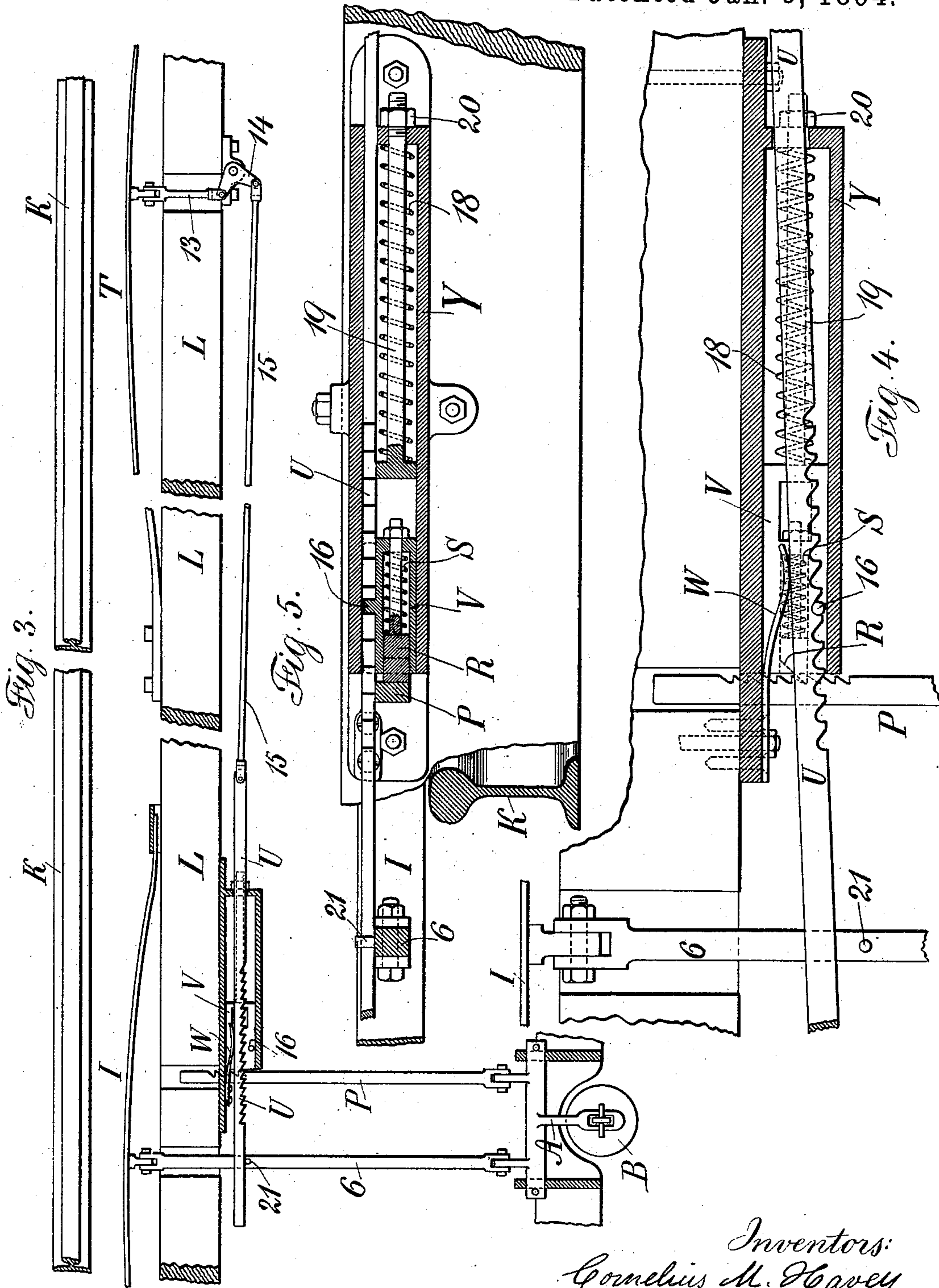
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2 Sheets—Sheet 2.

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# UNITED STATES PATENT OFFICE.

CORNELIUS M. HAVEY AND ROBERT BLACK, OF NEW YORK, N. Y.

## SIGNAL FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 512,441, dated January 9, 1894.

Application filed April 17, 1893. Serial No. 470,612. (No model.)

*To all whom it may concern:*

Be it known that we, CORNELIUS M. HAVEY and ROBERT BLACK, citizens of the United States, residing in the city and State of New York, have invented an Improvement in Signals for Railways, of which the following is a specification.

Signals have heretofore been used, especially on such structures as elevated railways where a semaphore has been counterpoised so as to make it come to a horizontal position to indicate danger except when otherwise acted upon. A signal of this character is represented in Letters Patent No. 493,211, granted to me March 7, 1893.

Difficulty has heretofore been experienced in moving the signal back to safety or after the train has passed a sufficient distance along the track. This difficulty has arisen in consequence of the expansion and contraction of the connection from the semaphore to the distant signal moving device.

Our present invention is made with reference to accommodating this expansion and contraction by a disconnection that is effected every time the train passes the signal, which disconnection leaves the rod or bar reaching to the distant station free to expand or contract, and the parts only remain in connection, the one with the other, during the time that the train passes from near the signal to the distant point where the signal is reversed to indicate safety.

In the drawings, Figure 1 is a general plan view illustrating the relative position of the parts. Fig. 2 is a diagrammatic sectional elevation of the track and signal. Fig. 3 is a plan view in larger size of the devices adjacent to the semaphore or signal. Fig. 4 is a plan view partially in section and in a still larger size of the latch box and its mechanism. Fig. 5 is a vertical section of the same, and Fig. 6 represents the semaphore or signal in sectional elevation.

This improvement is illustrated as in a form adapted to an elevated railway structure, in which K are the track rails, L the guard rail, M the cross ties, and the truck of a car is illustrated by the wheel N and side frames O.

The semaphore E is represented as upon a vertical column H and pivoted at 9 and having a counterweight E' which is sufficient to

raise the semaphore into a horizontal position to indicate danger except when otherwise acted upon. The crank lever A is at or near the base of the column H and to one of its arms the rod 6 is connected and this rod passes preferably through the guard rail L and terminates with a roller or joint adjacent to the inner surface of the spring bar I, and there is upon the truck frame or otherwise suitably supported by the car a roller G which is in such a position as to press against the spring bar I and move back the connecting rod 6, swinging the crank lever A and allowing the semaphore E to come up to the horizontal position to indicate danger. In operating this semaphore the devices represented in the aforesaid Patent No. 493,211 may be made use of, but we prefer and have represented a weight B hanging by a chain C which passes around a pulley 10 surrounding the axis 9 of the semaphore, said chain being permanently connected at its end to the pulley, and the crank lever A has an eye through which the chain C or the rod connected with the chain freely passes. Hence the weight B tends to draw the semaphore down to safety, but as soon as the spring bar I is forced back and the crank lever A turned it raises the weight B and slackens the chain C so that the counterweight E' of the semaphore brings such semaphore up into a horizontal position or nearly so to indicate danger, and when the holding device that acts upon the crank lever A is released so that the weight B is liberated, said weight draws the semaphore down again into the position of safety. We make use of a second rod P hinged to a crank on the same shaft as the crank lever A, as indicated in Fig. 3, and there is upon the edge of this rod P a series of notches, and a latch R is provided with a spring S which projects the said latch into one of the notches in the secondary rod P. Hence as the semaphore is raised to danger, the latch R catches in one of the notches in the rod P and holds the parts in position until the latch R is drawn back. The withdrawal of this latch R is effected from a distance as next described.

At whatever point it is desired to return the signal to safety a spring bar T is placed, against which the roller G acts to press the same toward the guard rail as the engine or



car carrying said roller passes by the spring bar T; and connected with this spring bar T is a link 13 to a crank lever 14, to the other end of which is pivoted a connecting rod 15 extending along the track and terminating as a rack bar U which is adjacent to a pin 16 upon the latch holder or stock V, and the spring W presses the rack bar U toward the pin 16 and hence engages such pin 16 so that when the spring bar T is operated at the distant location the rack bar U draws back the latch holder V and separates the latch R from the second rod P and allows the weight B to return the semaphore to the position of safety.

The latch holder or stock V is of any suitable character, but we find it advantageous to make use of a latch holder in the form of a block sliding within the stationary case Y and pressed toward the second rod P by a spring 18, which spring is represented as within the stationary case Y and around the rod 19 to the end of which the latch holder V is permanently fastened, and said rod 19 slides at its back end through the end of the case Y, and the movement thereof in a forward direction or toward the second rod P is limited by a nut 20 around said rod 19. It will now be apparent that the position of the latch holder V in its proximity to the rod P can be easily adjusted by the nut 20 and that this case Y, latch holder V and latch R can be comparatively small and compact and hence they are not interfered with in their action by the expansion and contraction and the parts remain in their proper relative positions, especially in cases where the base of the case Y is bolted to the side of the guard rail in the elevated railway, as illustrated in Figs. 4 and 5; and we remark that it is advantageous to allow the rack bar U to slide through this case Y in order that the parts may be protected from ice and snow, but we do not limit ourselves in this particular.

If the parts heretofore described alone were made use of, the teeth of the rack bar U would always remain engaged with the pin 16 and hence the expansion and contraction of the rack bar U for the long distance to which the same frequently extends would interfere with the proper action of such rack bar in drawing back the spring latch R. We therefore make use of a pin 21 upon the connecting rod 6 located in such a position that when the semaphore is returned to safety by the action of the weight B this pin 21 presses the rack bar U back toward the guard rail, and in so doing the teeth of the rack bar U are separated from the pin 16 and the rack bar U is free to expand and contract under changes of temperature, but as soon as the train passes along and the roller G presses back the spring bar I and moves the connecting rod 6, the pin 21 moving with that rod releases the rack bar U and allows the spring W to move such rack bar toward the pin 16 and cause one tooth of the rack bar to engage such pin and thereby the parts are set so that

when the train in its passage reaches the second spring bar T and moves the same, the rack bar U properly draws back the spring latch R, disengaging the rod P and allowing the semaphore to return to safety, as aforesaid.

It will be apparent that in railways built upon the ground and without guard rails the parts before described can be supported upon the cross ties or in any other convenient manner, and that instead of using the spring bars I and T, any other suitable device may be employed for giving motion by the passing train to the semaphore or signal through the parts therewith connected, as aforesaid.

We claim as our invention—

1. The combination with a semaphore or signal and the mechanism for moving the same, of a latch for holding the signal in position, a rack bar and a connection extending to a distant place, and the mechanism for returning the signal to safety by the withdrawal of the latch, and a means for separating the rack bar from the latch holder by the movement of the signal in returning to safety, substantially as set forth.

2. The combination with the signal and the means for automatically moving the same from the passing train, of a spring latch for holding the signal in position, a latch holder and a spring for actuating the same, and a supporting case, a projection on the latch holder and a rack bar extending to the mechanism that is acted upon by the passing train at a distant place, whereby the rack bar is caused to withdraw the latch, and a projection acting upon the rack bar to separate the same from the projection on the latch holder as the signal returns to safety, substantially as set forth.

3. The combination with a swinging signal and a counterweight to raise the same, of a flexible connection and weight supported thereby to draw the signal down, and the automatic mechanism receiving its motion from the passing train for raising the weight and causing the signal to swing into a horizontal or nearly horizontal position, substantially as set forth.

4. The combination with the rails and guard rail, of a spring bar connected to the side of the guard rail, a roller supported by and moving on the car truck and acting against the spring bar, a signal and a connection from the same to the spring bar for setting the signal at danger by the passing train, a latch mechanism for holding the signal when so set, a spring bar at a distance supported by the guard rail, a rack bar adjacent to the signal, and a connection therefrom to the distant spring bar, a projection engaged by the rack bar and acting to draw back the spring latch and liberate the signal, substantially as set forth.

5. The combination with the rails and guard rail, of a spring bar connected to the side of the guard rail, a roller supported by and mov-



ing on the car truck and acting against the spring bar, a signal and a connection from the same to the spring bar for setting the signal at danger by the passing train, a latch mechanism 5 for holding the signal when so set, a spring bar at a distance supported by the guard rail, a rack bar adjacent to the signal, and a connection therefrom to the distant spring bar, a projection engaged by the rack bar and acting to 10 draw back the spring latch and liberate the signal, and means connected with the signal and acting to separate the rack bar and latch by the movement of the signal, substantially as set forth.

15 6. The combination with the signal and the automatic means for actuating the same, of the stationary case, a latch holder within the

case, a spring for moving the same, and a rod and nut for limiting the movement, a spring latch within the holder, a bar connected with 20 the signal and having teeth with which the spring latch engages for holding the signal, a disengaging device at a distance brought into action by the passing train, and a connection 25 for withdrawing the latch and allowing the signal to return to a normal position, substantially as set forth.

Signed by us this 14th day of April, 1893.

C. M. HAVEY.  
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Witnesses:

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