

No. 631,724.

Patented Aug. 22, 1899.

W. F. KUHLMAN.  
RAILWAY SIGNAL.

(Application filed Sept. 7, 1897.)

(No Model.)

Fig. 1.

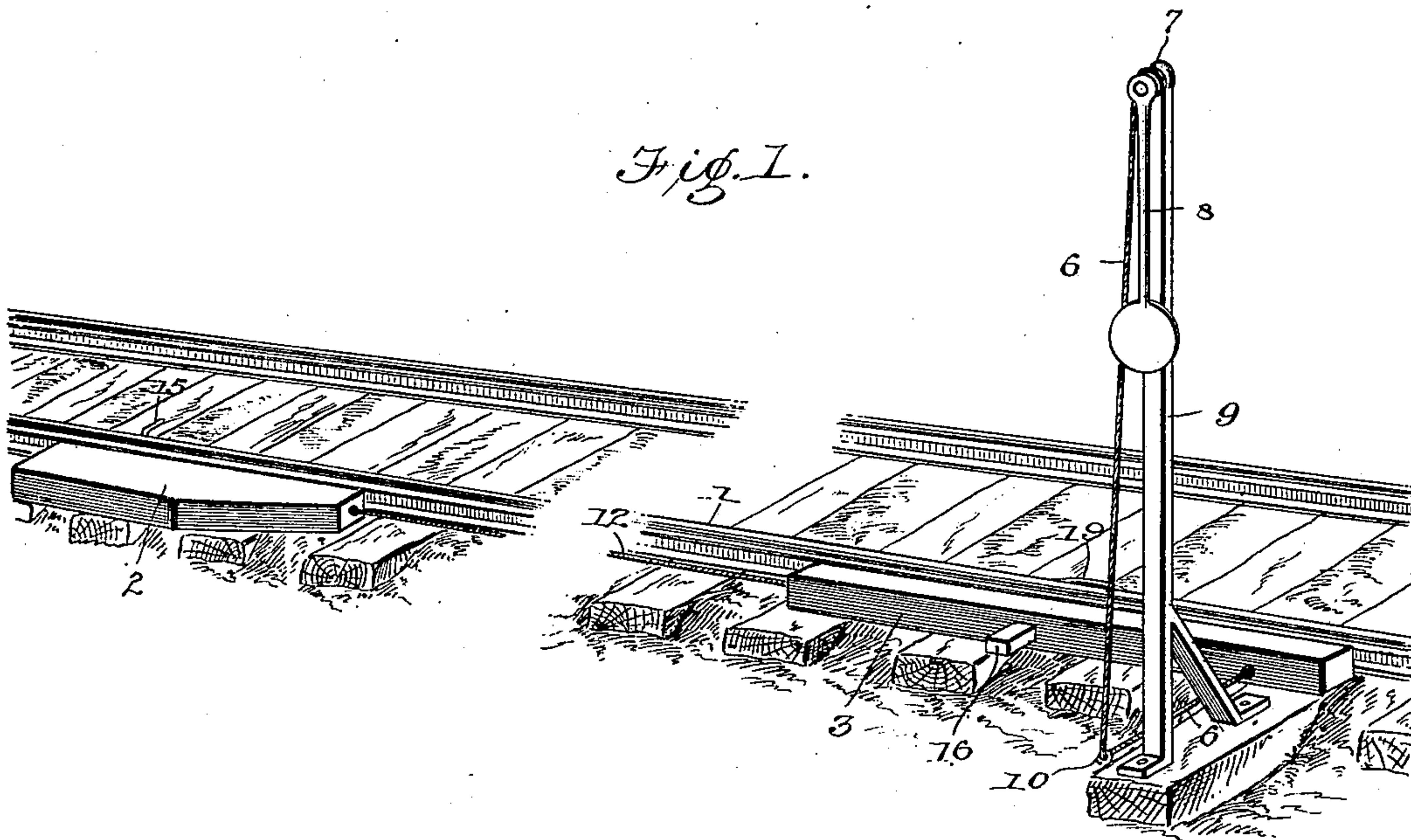


Fig. 2.

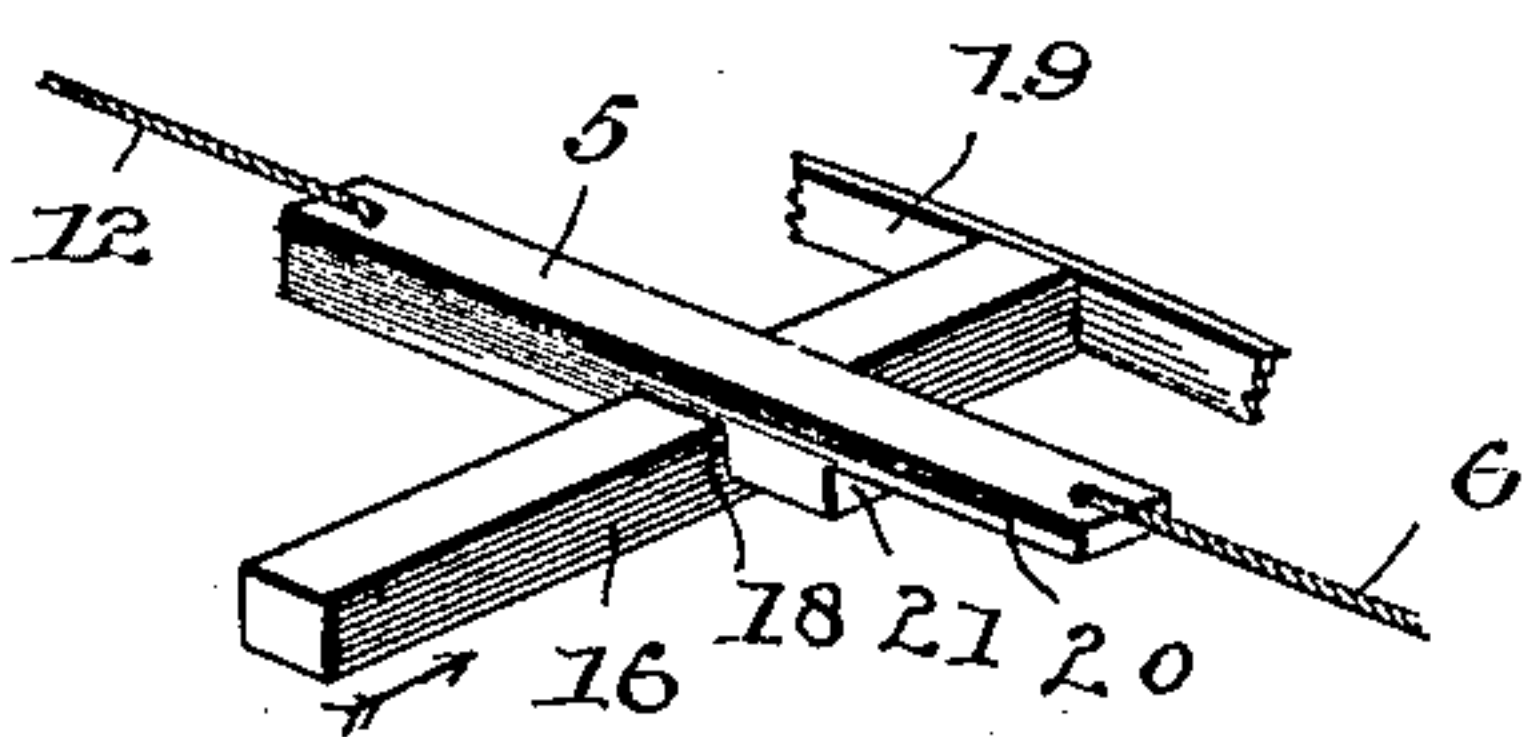
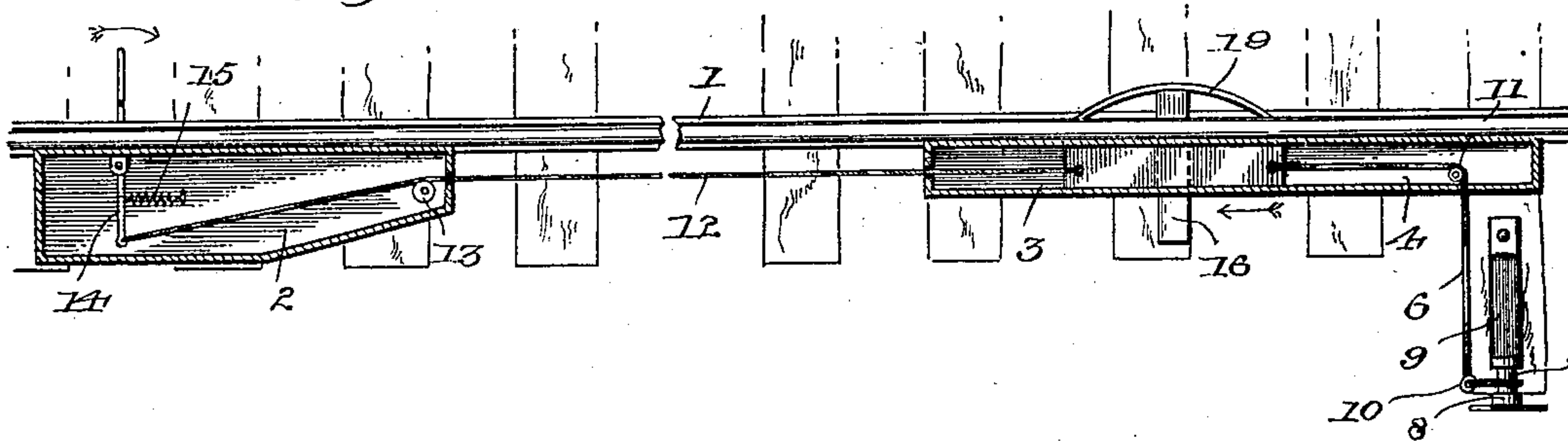


Fig. 3.

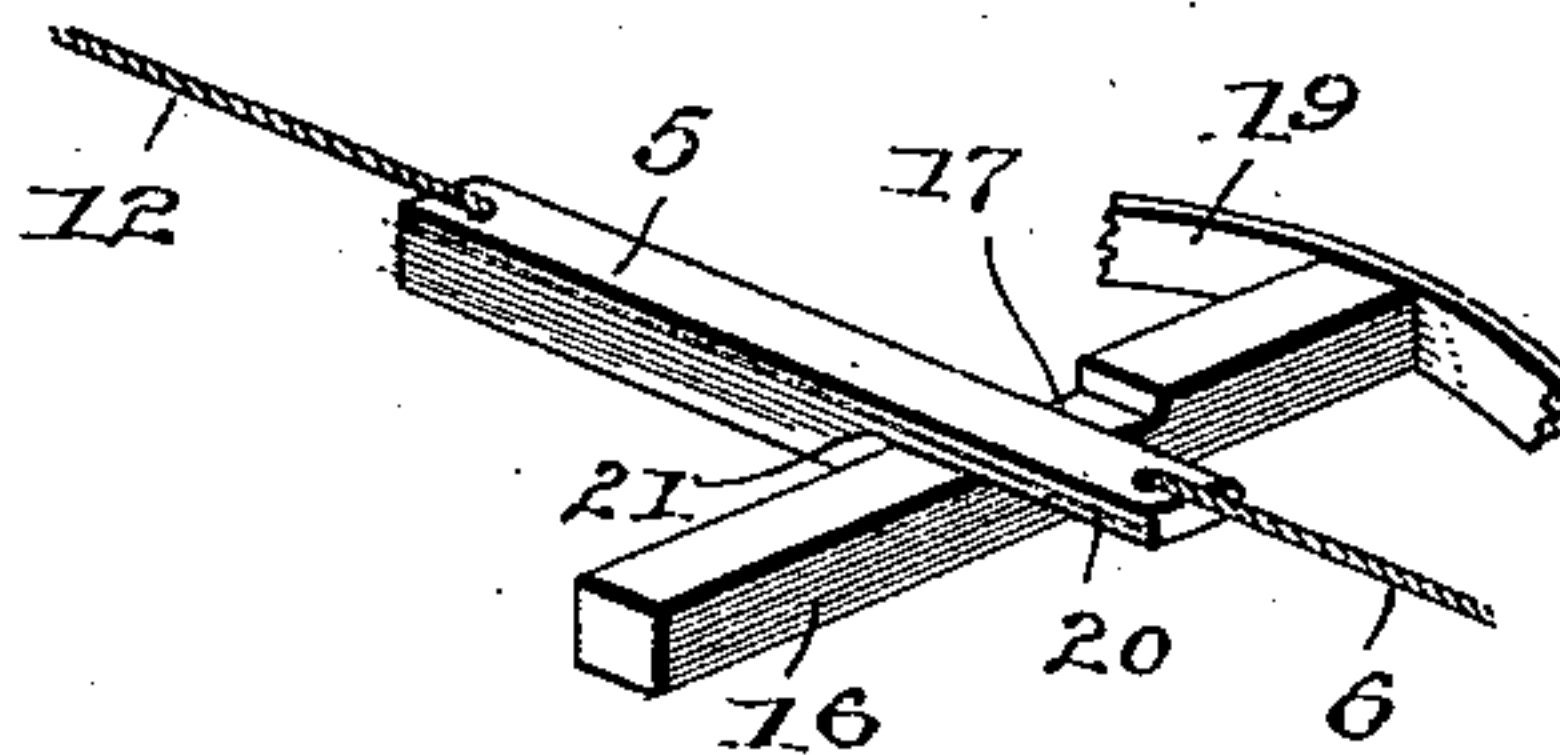


Fig. 4.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 631,724, dated August 22, 1899.

Application filed September 7, 1897. Serial No. 650,710. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. KUHLMAN, residing at Hebron, in the county of Thayer and State of Nebraska, have invented certain  
5 useful Improvements in Railway-Signals; and I do hereby declare that the following is 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  
10 use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to railway-signals, and has for its object to provide a simple, compact, and efficient construction and arrangement of parts adapted to be installed with facility and to serve as a reliable means of indicating visibly the position in a "block" or  
15 block-section of a train approaching a crossing or point of danger, and, furthermore, to provide simple and efficient means whereby the signal is automatically released and returned to its inoperative position when the train has reached or passed the point of danger.

25 Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

30 In the drawings, Figure 1 is a perspective view of the signal apparatus constructed in accordance with my invention. Fig. 2 is a plan view, partly in section, of the same. Fig. 3 is a detail view in perspective of the slide or block, with the locking means, as  
35 shown in their normal positions. Fig. 4 is a similar view of the locking devices shown in the positions they occupy when the signal is locked in its operative position.

40 Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Contiguous to one of the track-rails 1 and preferably supported by the ties or other  
45 means fixed in the road-bed are elongated casings or boxes 2 and 3, in the latter of which is arranged a guide consisting, preferably, of a base-plate 4, upon which is mounted a slide 5. This slide is connected at one end flexibly,  
50 as by a cord or chain 6, with the hub or drum 7 of the signal-arm 8, the latter being pivotally mounted upon the standard 9, erected

upon an extended tie. This arm may be provided with any suitable signaling device—such as a disk, or, at night, a lantern, as in  
55 the ordinary practice—a disk only being illustrated in the drawings, as the application of a night-signal thereto will be understood to those skilled in the art to which the invention appertains. The connection 6 after leaving the hub or drum 7 extends downwardly  
60 to and through the guide loop or eye 10, near the base of the standard 9, and thence inwardly or toward the track-rail 1 and around or through the guide 11, arranged in the casing 3. Connected with the slide 5 at the other  
65 end is a flexible cord or chain 12, which extends into the casing 2, located at any desired distance from the casing 3 around a guide-pulley 13 or the equivalent thereof and is attached to one arm of a lever 14, mounted for  
70 horizontal swinging movement and having its inner operating-arm disposed, preferably, between the track-rails and in the path of a projection (not shown) depending from the  
75 engine or other rolling-stock, the function of such projection being to strike the operating-arm of the lever 14 and swing the latter in the direction indicated by the arrow in Fig. 2 to draw upon the connection 12, and  
80 thus move the slide 5 in the direction indicated by the arrow which is arranged contiguous thereto. In order that the lever 14 may be yieldingly held in its normal position transverse to the line of the track-rails, a return-spring 15 may be employed, arranged within  
85 the casing 2. Also arranged in operative relation with the slide 5 is a spring-actuated locking-bolt 16, having a reduced portion 17, forming a shoulder 18, which is adapted to  
90 bear against the outer side of the slide 5 when said bolt is retracted, as indicated in Fig. 3. Connected with the bolt (and preferably attached to the center of the inner end thereof) is a plate-spring 19, which bears terminally against the inner surface of the adjacent track-rail 1, the tendency of said spring  
95 being to advance the locking-bolt 16 in the direction indicated by the arrow in Fig. 3. Also the slide 5 is provided with a reduced portion 20, forming a shoulder 21.  
100

The normal positions of the bolt 16 and slide 5 are indicated in Fig. 3, wherein the bolt is retracted and the slide is arranged in



the recess formed by the reduced portion of the bolt, whereby the shoulder 18 of the bolt bears against the side of the slide and is thereby held retracted. When the projection 5 on an approaching train comes in contact with the lever 14 and swings the latter in the direction indicated by the adjacent arrow, the slide 5 is moved, as above described, sufficiently to arrange its reduced portion 20 in registration with the locking-bolt 16, whereupon the spring 19 advances the bolt inwardly and causes the engagement of said bolt with the shoulder 21 of the slide, as indicated in Fig. 4. The parts retain this position—viz., with the slide 5 in its adjusted position and the signal-arm 8 extended—until the train, having reached or passed the crossing or other point of danger, causes the repression of the bolt 16 by the contact of the projection on the train with the beveled inner surface of the spring 19. Obviously a projection coming in contact with the beveled surface of said spring will repress the bolt 16 sufficiently to release the shoulder 21 on the slide 5, and thus allow the latter to return to its normal position (indicated in Fig. 3) by the gravity of the signal-arm 8. Thus as a train enters the block of the signal the first operation caused by the engagement of the projection thereon with the lever 14 is to set the signal, and when thus set the slide 5 is locked with the signal-arm extended. The parts remain in this set or adjusted position until the train when about to leave the block causes the repression of the bolt 16, and this, releasing the slide 5, allows the signal-arm to return to its normal or inoperative position.

The obliquely-disposed terminal portions of the spring 19, which bear against a fixed object, such as an adjacent track-rail, form cams with which the wheel-flanges or other means carried by the rolling-stock are adapted to engage to move the bolt 16 in a direction to release the slide, and hence allow the automatic return of the slide to its normal position. It will be understood that the signal-arm is yieldingly held in its normal position and is returnable thereto by gravity.

It will be understood from the foregoing description that the device embodying my invention is simple and that the operation thereof is direct and positive. There are no parts comprising the structure which are liable to become displaced or to be rendered inoperative by reason of shocks or strains or by

reason of any effect of the weather. When the signal is set, it remains in this position until the train leaves the block, and the return of the parts to their normal positions is accomplished by the same instrumentalities as are employed to set the signal.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim is—

1. In a block-signal, the combination with a movable signal-arm, and a trip-lever connected with the signal-arm for actuating the latter, of a slide actuated by the connections between the said trip-lever and the signal-arm, and having a cut-away portion forming a stop-shoulder, a locking-bolt mounted for movement in a plane transverse to the slide, and provided with a reduced portion and an adjacent stop-shoulder, and a plate-spring centrally attached to one end of the locking-bolt and arranged in terminal contact with the contiguous track-rail, for exerting a normal tendency to advance the locking-bolt to cause the engagement of the latter with the stop-shoulder of the slide, substantially as described.

2. In a block-signal, the combination of a pivotal signal-arm, a yieldingly-actuated trip-lever arranged with one arm in the path of a projection carried by the rolling-stock, a flexible connection between the other arm of said trip-lever and the signal-arm, and being attached to the hub of said arm, a slide inserted into said connection and operating in a suitable guide, said slide being provided with a stop-shoulder 21, a locking-bolt mounted for movement in a path transverse to the slide and provided with a stop-shoulder 18 for normal engagement with the outer side of the slide, and a plate-spring attached to the inner extremity of the bolt and bearing terminally against the inner side of the contiguous track-rail, to advance said bolt inwardly when the slide is moved to disengage the stop-shoulder of the bolt.

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

WILLIAM F. KUHLMAN.

Witnesses:

CHARLES JAECKEL,

H. B. DAVIS.