No. 689,498. Patented Dec. 24, 1901.

W. H. LAUGHLIN.

RAILROAD GATE.

(Application filed Apr. 16, 1901.)

(No Model.) 2 Sheets—Sheet 1.

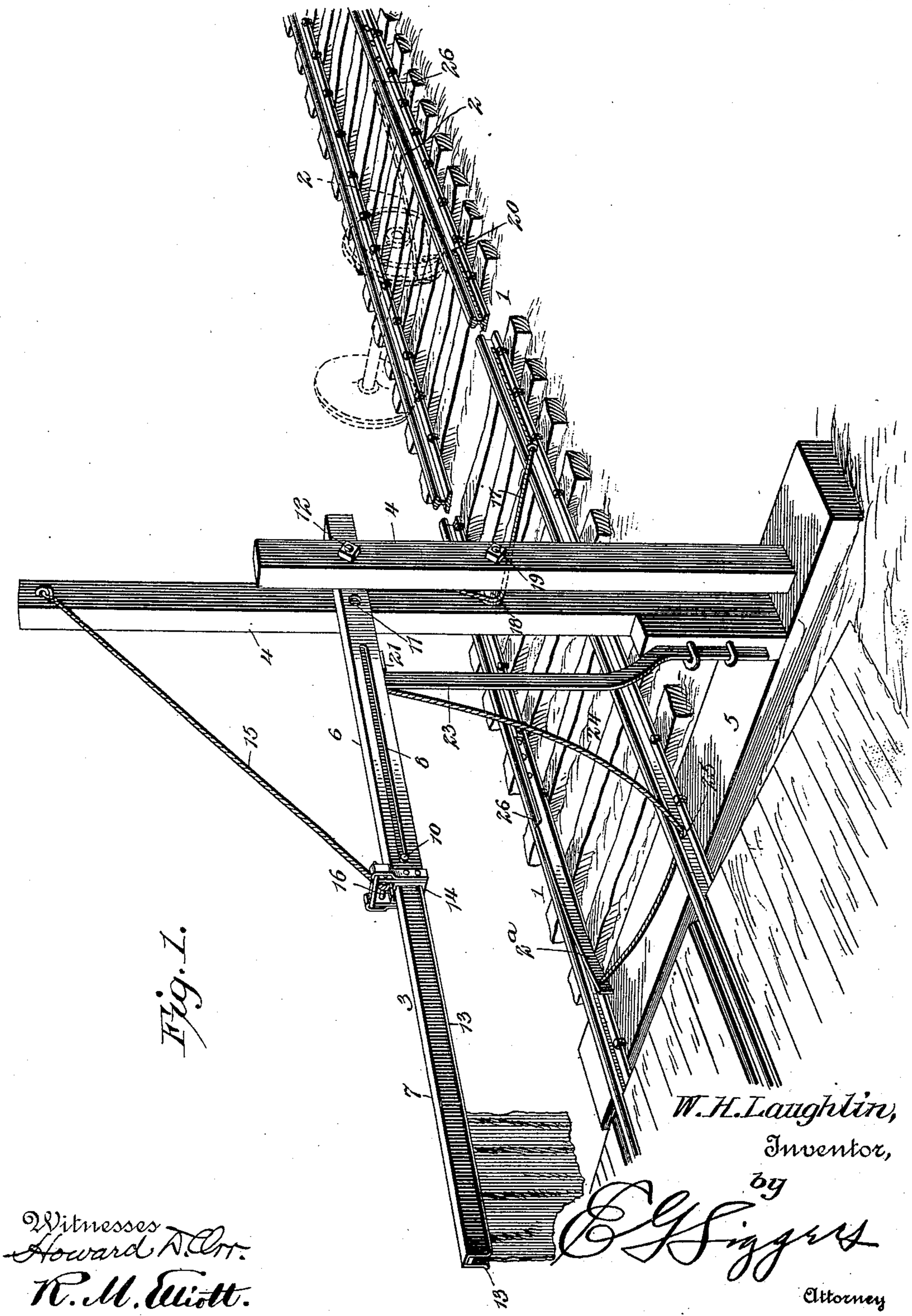

Fig. 1.

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Fig. 2.

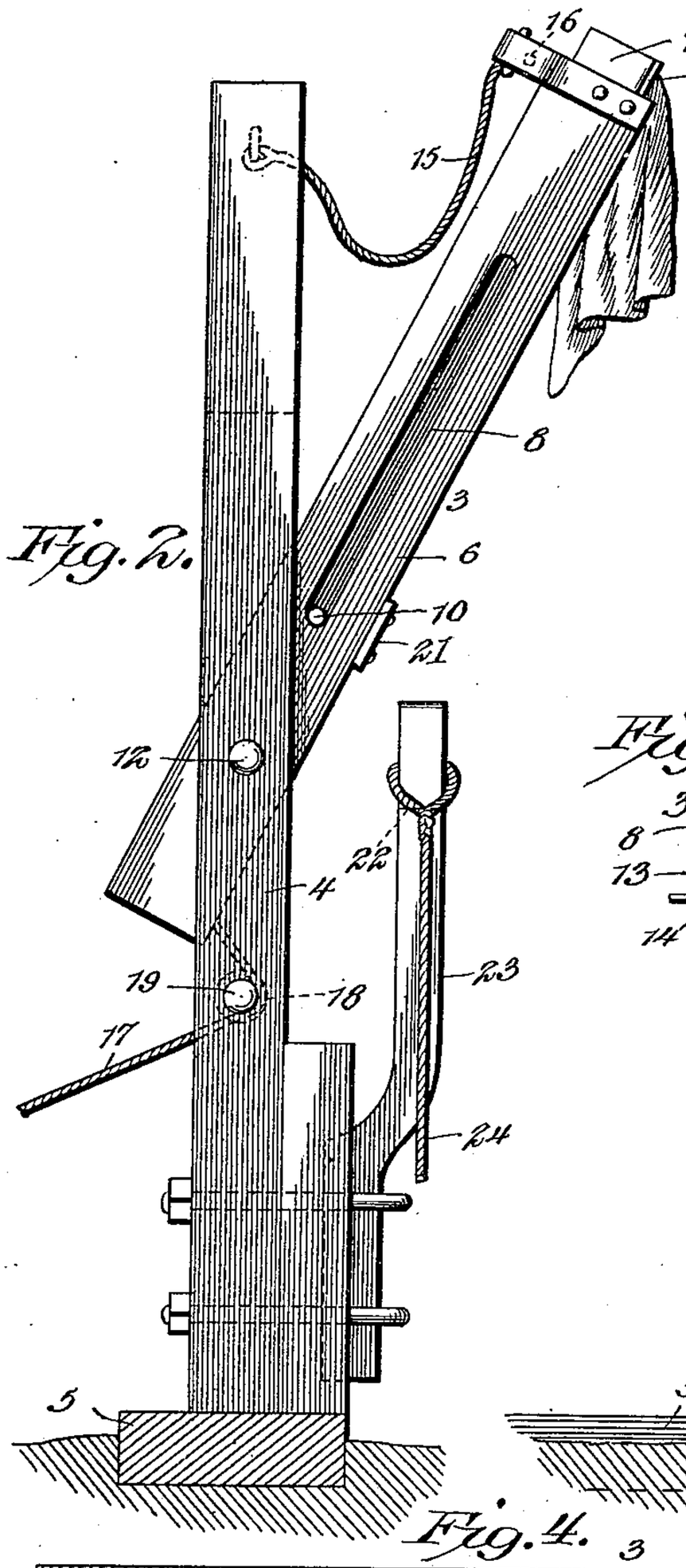


Fig. 3.

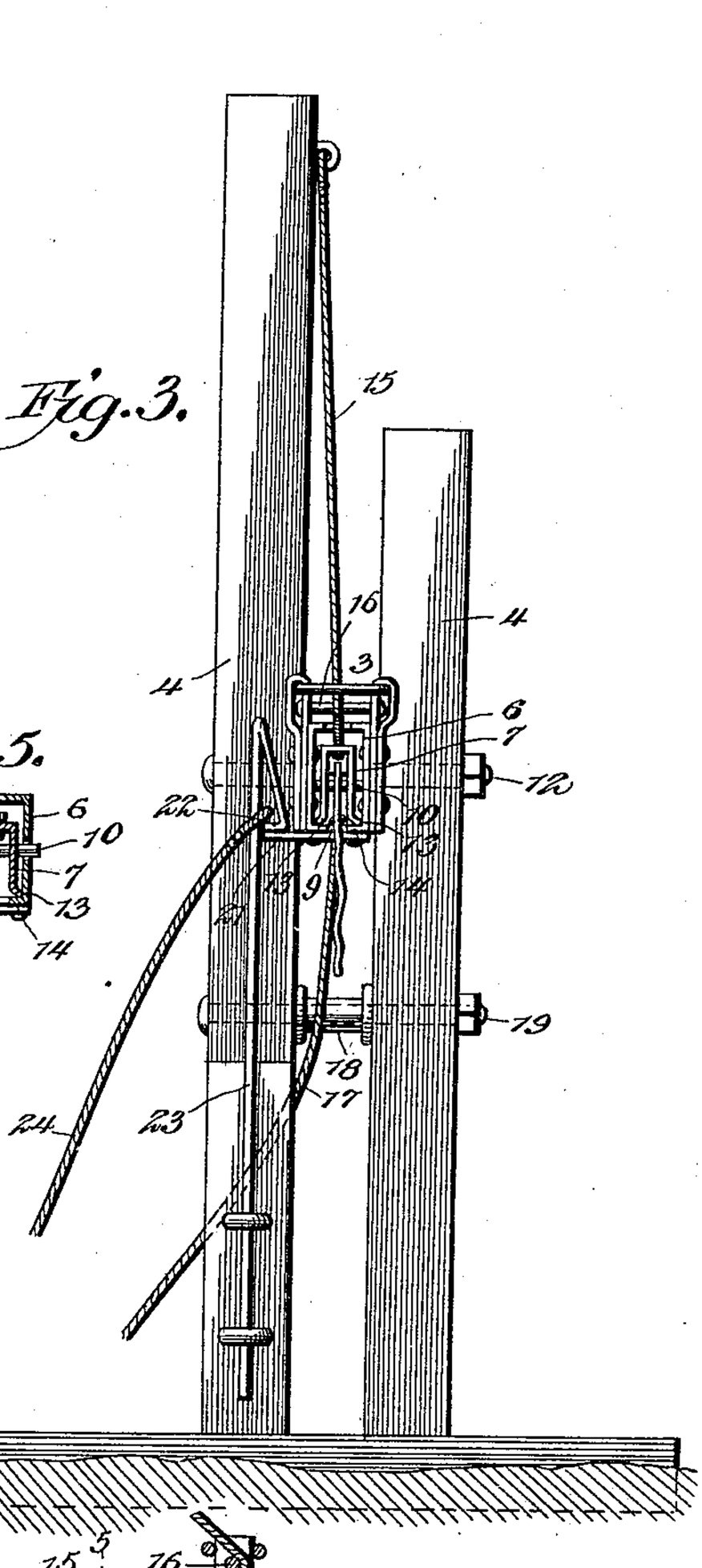


Fig. 5.

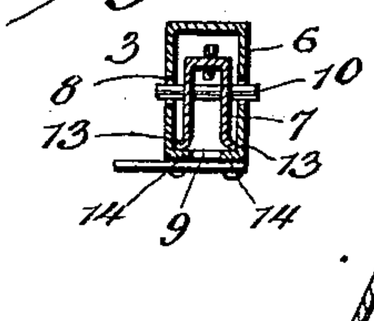
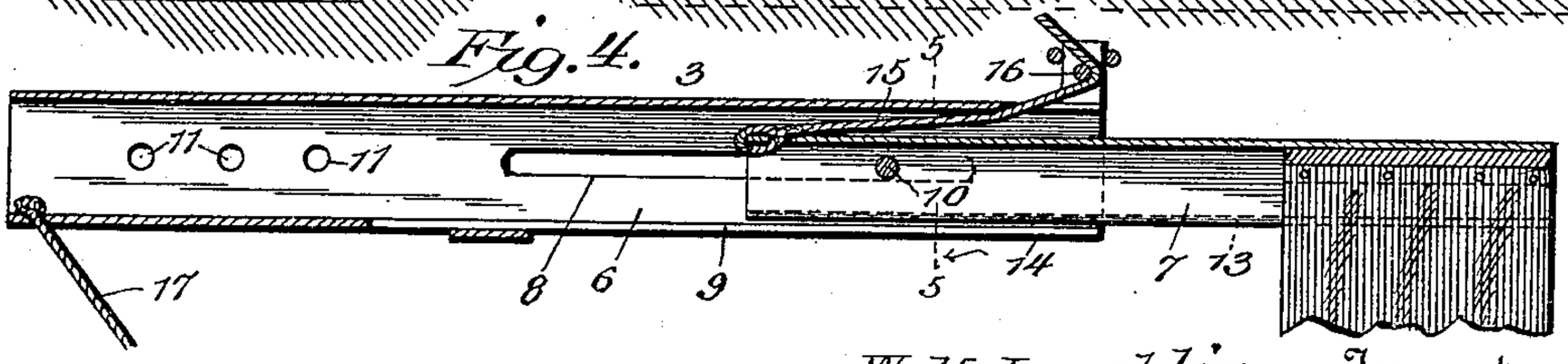


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER H. LAUGHLIN, OF GAVERS, OHIO.

RAILROAD-GATE.

SPECIFICATION forming part of Letters Patent No. 689,498, dated December 24, 1901.

Application filed April 16, 1901. Serial No. 56,160. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. LAUGHLIN, a citizen of the United States, residing at Gavers, in the county of Columbiana and State of Ohio, have invented a new and useful Railroad-Gate, of which the following is a specification.

This invention relates to gates, and more particularly to that class of gates employed at railway-crossings.

The object of the invention is to provide a simply-constructed, positively operative, and at once thoroughly reliable gate to be used more particularly at street-crossings, although it may be used in other positions where its employment will be advantageous, the device being, in effect, a combined gate and signal, as in operation a flag, target, lantern, or other visual signal is projected to view at the same time the gate is dropped across the road or track.

The parts of the device are all constructed and assembled with a view to certainty of operation and reduction to a minimum of danger of derangement in use, so that correct performance of the apparatus under all conditions of use will be practically certain.

Further and more specific points of advantage and details of construction will be hereinafter more specifically pointed out.

In the accompanying drawings, forming a part of this specification, and in which like numerals of reference indicate corresponding parts, I have illustrated a form of embodiment of my invention adapted for performing the functions designed.

Figure 1 is a view in perspective exhibiting a section of track and the railway-gate in operative relation thereto. Fig. 2 is a view in side elevation taken from the side opposite that shown in Fig. 1. Fig. 3 is a view in front elevation. Fig. 4 is a view in longitudinal section taken through the gate-arm. Fig. 5 is a transverse sectional view through the gate-arm, taken on the line 5 5 of Fig. 4.

Referring to the drawings, 1 designates a section of track, the same to be of any desired length in use—say two or three hundred feet. On the inner side of each of the rails and at the opposite ends of the section is secured an inward-curved spring 2 2^a, respectively, the same being held in position with the web of the rails by bolts or the like.

Mounted adjacent to that end of the track contiguous to the roadway or grade-crossing to be protected is the gate 3, supported in an operative position by standards 4, one of which, as shown, is taller than the other. These standards are held in vertical position in any suitable manner, as by being mortised into or bolted onto a bed-timber 5, which for the object of stability may be sunk and extend beneath both rails. The gate 3 is a hollow rectangular structure, preferably of metal, and comprises a swinging arm 6, pivotally mounted between the standards 4 and an arm 7, mounted for telescopic movement within the arm 6, the outer end of the arm 7 carrying the signal to be displayed, which may be, as before stated, a target, flag, or lantern. The arm 6, as herein shown, is tubular and preferably rectangular in cross-section and provided on each side with a slot 8 and in its bottom with a slot 9, the slots 8 to be engaged by pins 10, projecting laterally from the arm 7, and the slot 9 to be engaged by the signal when the same is a flag, as shown in Fig. 2. The rear portion of the arm 6 is provided with a series of transverse openings 11—in this instance three in number—through one of which passes a bolt 12 to hold the gate for pivotal movement between the standards. The object in providing a series of openings 11 is to permit the gate to be adjusted to cause its long or outer end to be heavier or lighter, as the case may be, thereby to effect proper coaction between it and its actuating-spring.

The arm 7 is a hollow structure, the lower edges of which are bent outward to form flanges 13 to bear upon the guides 14 on each side of the slot 9. While not shown herein, it will be obvious that to render the device more responsive in action the flanges 13 may be provided with rollers to bear upon the guides 14 of the arm 6. Connecting with the rear portion of the arm 7 is a rope or chain 15, which passes over a pulley or roller rod 16, carried by the outer end of the arm 6 and has its free end attached to the taller of the standards 4, the function of this rope or chain 15 being to cause automatic projection of the arm

7 when the gate drops, as will be readily understood by reference to Fig. 3. Connecting with the shorter portion of the arm 6 is one end of a wire rope or chain 17, which passes around a pulley or sheave 18, mounted on a bolt or shaft 19, passing through the standards, the other end of this wire rope or chain passing through an opening 20 in the web of the rail and being secured to the free or unattached end of the spring 2, as shown in Fig. 6, the tension of the wire rope 17, under the action of the spring to which it is connected, being sufficient to cause automatic return of the gate to a vertical or approximately vertical position when the gate has been released after the passage of the train.

Secured to the under side of the arm 6 is a plate or projection 21, the same to engage when the gate is dropped with a catch 22, carried by a spring-rod 23, rigidly held in vertical position on one of the standards and in line with the plate or projection 21. To the upper portion of the rod 23 is connected one end of a wire rope or chain 24, the other end being passed through an opening 25 in one of the rails and secured to the other spring 2^a, the wire rope or chain 24 being normally slack, while the wire rope or chain 17 is at all times under tension.

While not shown herein, it is to be understood that the openings in the rails through which the wire ropes 17 and 24 pass may be provided with pulleys or sheaves by which to reduce friction between the parts.

The operation of the device is as follows: The wheels of the engine or car truck (indicated by dotted lines in Fig. 1) come in contact with the spring 2, thereby forcing it in against the side of the track and slackening the wire rope or chain 17, thereby permitting the gate to drop and in the manner described causing the projection of the arm 7 and with it the exhibition of the signal. When the arm reaches a horizontal position, the catch on the spring-rod 23 engages with the plate or projection 21 on the arm 6 and holds the gate down until the wheels of the engine or car come in contact with the spring 2^a at the exit end of the section, which spring through the mechanism described retracts the spring-rod 23 and releases the gate, which immediately, through the mechanism described, resumes its normal position.

An important result obtained by constructing the gate in the manner described—that is to say, with a telescopic section—is that the employment of very long gates where used at the street-crossings in cities is obviated, thereby preventing damage to the gate caused by the wind-pressure, as frequently happens.

A salient advantage accruing from adding my track devices to the gate of this invention is that it makes the gate entirely automatic in action, and therefore renders entirely unnecessary the employment of an attendant to operate it. Further, it will be absolutely certain to operate in ample time to give warning to vehicles or pedestrians of an approaching train. As is well known, accidents frequently happen from the carelessness or neglect of a gate attendant to drop the gate in sufficient time to warn persons of the approach of a train; but with this device the gate will always be dropped in time to obviate any possibility of accident. Generally the gate when in its horizontal position will be elevated about nine feet above the roadbed, so that should a person driving a buggy or ordinary carriage be caught on the track when the gate is down there will be room to pass under the same. It will be obvious, however, that if preferred the gate may be made to swing down close to the track, as in the ordinary railway-gates now generally employed at road-crossings.

It is to be understood that when a train backs over the track-section containing the mechanism described there will be no interference between the springs and the car-wheel flange, each of the springs 2 and 2^a being cut away, as shown at 26, to permit passage between the rail and the spring of the wheel-flange, the latter forcing the springs to one side, as will be understood by reference to Fig. 6.

Having thus described the invention, what I claim is—

1. In a railway-gate, a slotted tubular gate member, a slidable member telescoped therein, and a signal carried by the slidable member, the slot of the tubular member being located to accommodate the signal when the slidable arm is moved inwardly.

2. In a railway-gate, a vertically-tilting tubular gate member having a longitudinal slot formed in the outer free end thereof and also in that part which is the bottom of the member when the gate is closed, a telescopic member, and a signal projected at one side of the latter member and located in line with the bifurcation so as to be received therein when the gate is opened.

3. In a railway-gate, the combination with a support, of a vertically-tilting gate pivotally mounted upon the support, and having an outer terminal loosely-slidable extension, a flexible connection between the support and the rear portion of the extension, and a guide carried by the tilting gate portion and located outwardly beyond the point of engagement between the flexible connection and the extension, said flexible extension being passed loosely through the guide, whereby the extension is shot outwardly by the dropping of the gate.

4. A railway-gate comprising telescoped members, one of which is slotted, and the other is provided with a lateral projection slidably mounted in the slotted portion of the first-mentioned member, the opposite ends of the slot forming stops for engagement by the projection and to limit the endwise movement of the movable member.

5. In a railway-gate, the combination with a suitable standard, of a two-membered gate-arm, one member of which is pivotally connected with the standard and is provided with alined side slots, the other member being movable within the pivoted member, and having laterally-extending projections engaging the slots.

6. In a railway-gate, a gate-arm comprising two members, one of which is pivotally connected with a suitable standard and is provided with alined side slots and on its under side with a slot having guides formed contiguous thereto, a second member having telescopic connection with the first member and provided with laterally-extending projections engaging the side slots of the pivoted member and with flanges to work on the guides, and a signal carried by the second member.

7. A railway-gate, embodying a tubular member having an open end, and an extensible member telescoped within the tubular member, said extensible member being substantially U-shaped in cross-section and having outwardly-directed flanges carried by the outer edges of its opposite sides, and forming guides for coöperation with the opposite sides of the tubular member so as to prevent lateral play of the extensible member.

8. In a railway-gate, the combination with a support, of a vertically-swinging tubular arm pivoted thereto and provided with opposite longitudinal slots and a longitudinal slot formed in that part which is the lower side of the arm when the gate is closed, an extensible member telescoped within the tubular member and provided with opposite lateral projections slidably received in the corresponding opposite slots, the extensible member being of inverted substantially U shape in cross-section, a signal secured between the sides of the extensible member and alined with the bottom slot of the pivotal arm, a flexible connection having its upper end secured to the support at a point above the pivot of the swinging member and its opposite end connected to the rear portion of the extensible member, and a guide carried by the swinging member loosely receiving the flexible connection and located outwardly beyond the engagement between the flexible connection and the extensible member.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WALTER H. LAUGHLIN.

Witnesses:
JAMES G. MOORE,
JESS B. DAILEY.