

No. 632,976.

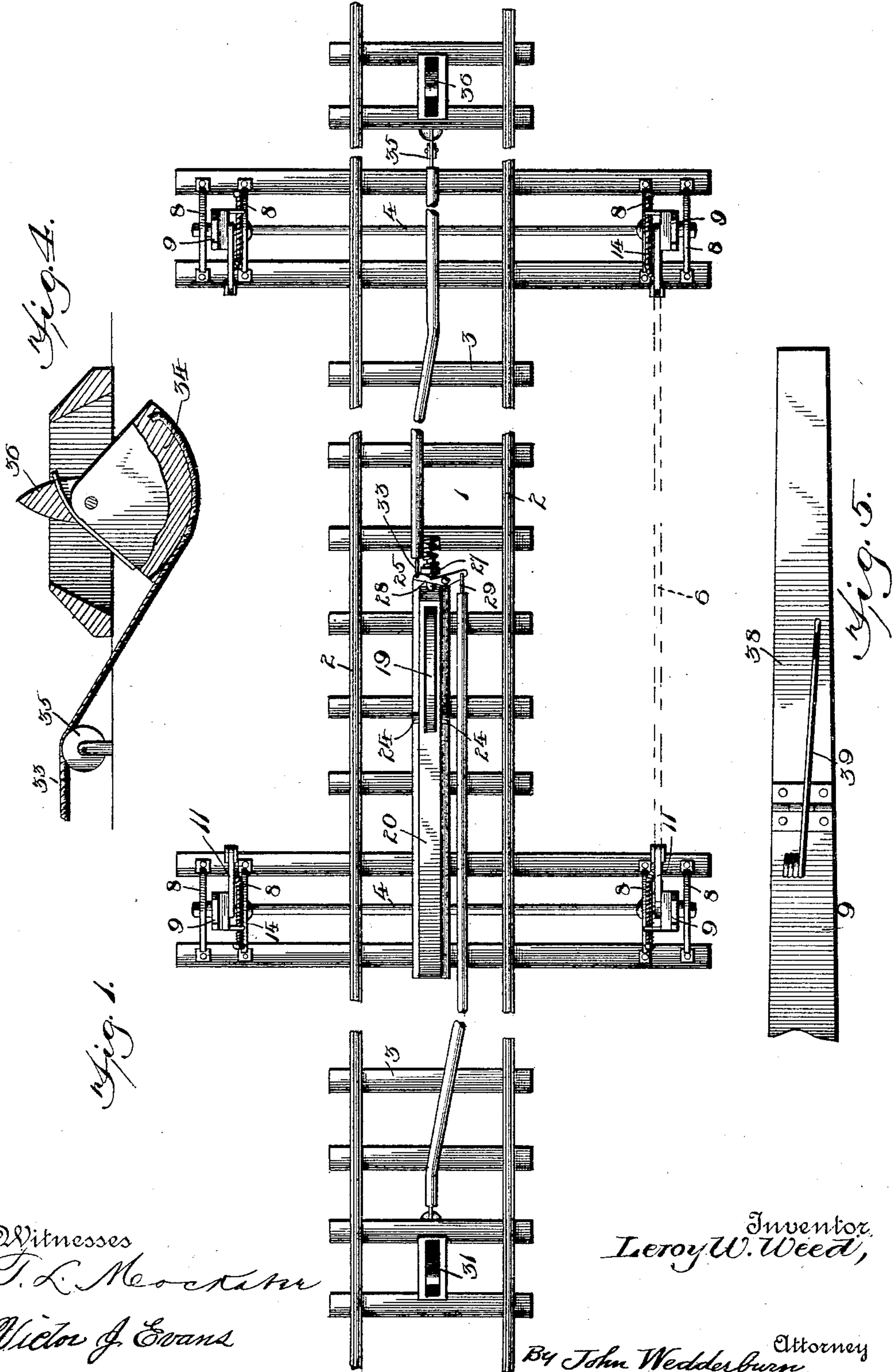
Patented Sept. 12, 1899.

L. W. WEED.
RAILROAD CROSSING GATE.

(Application filed May 14, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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2 Sheets—Sheet 2.

Fig. 2.

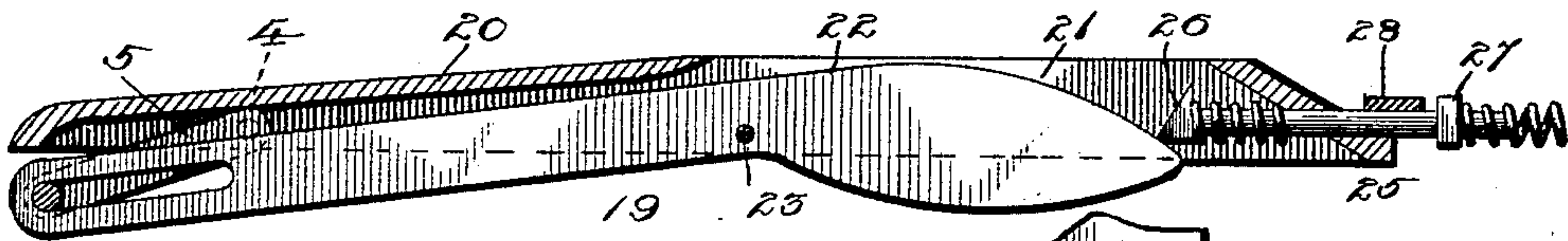


Fig. 6.

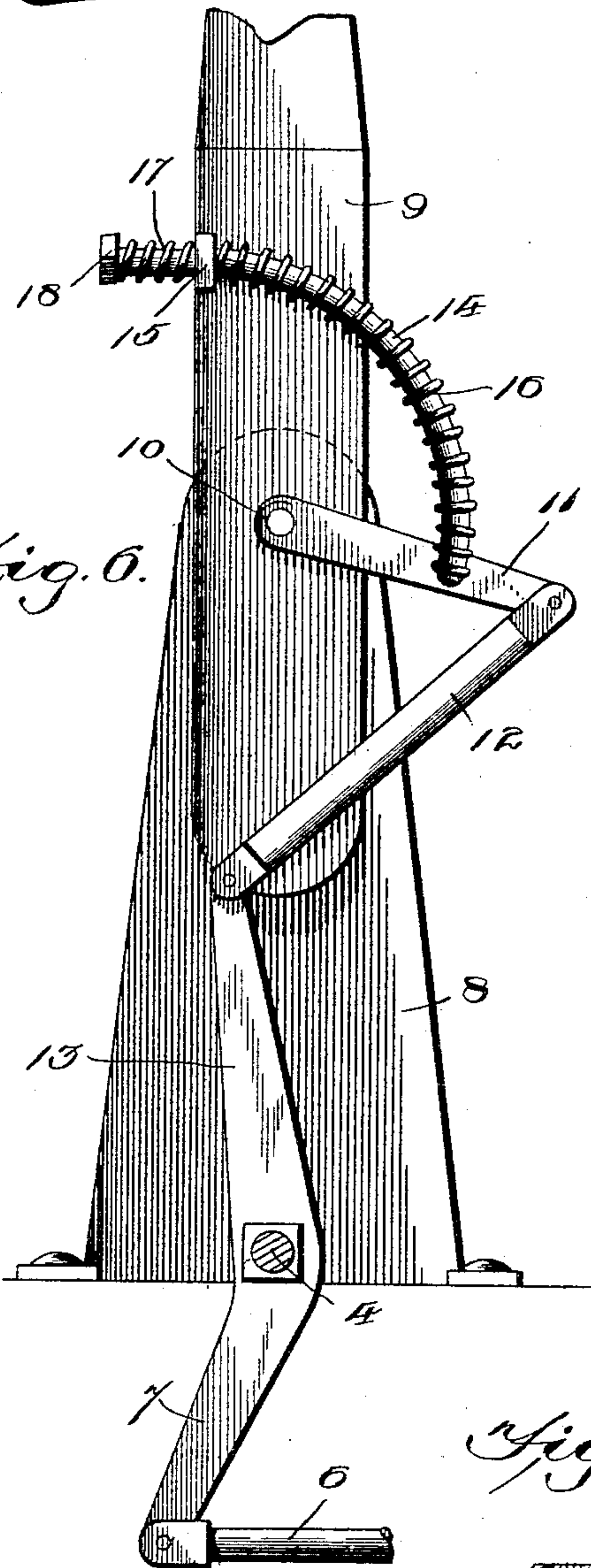


Fig. 7.

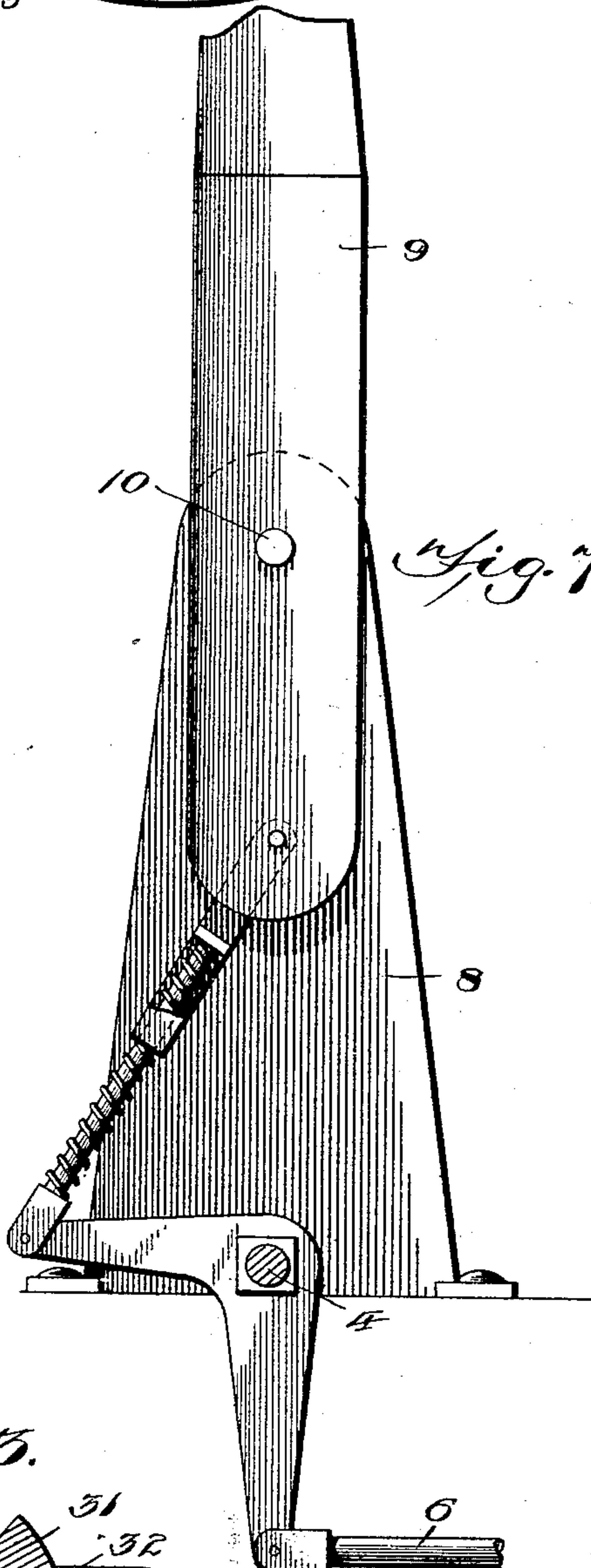
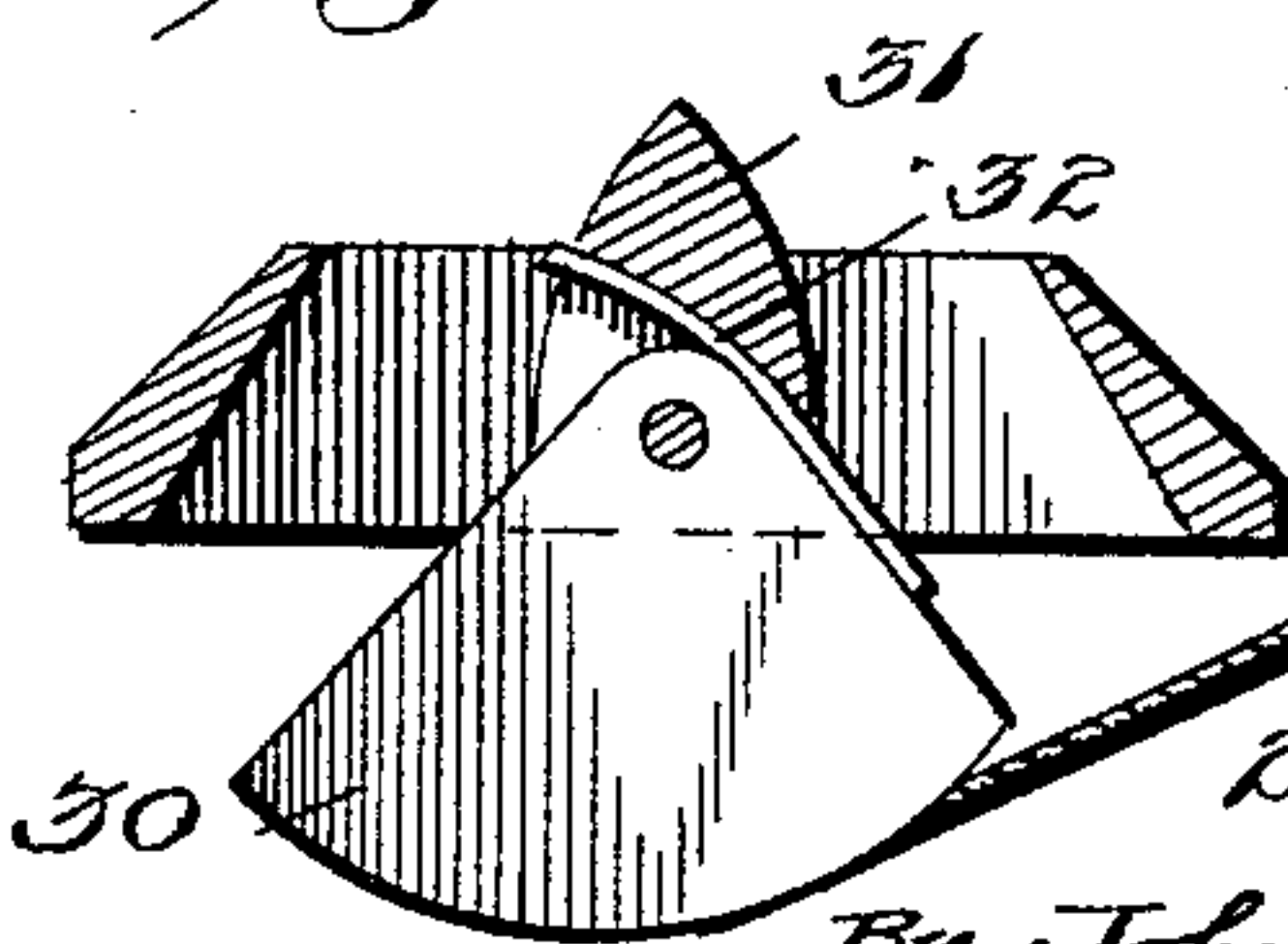


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

LEROY W. WEED, OF IONIA, MICHIGAN.

RAILROAD-CROSSING GATE.

SPECIFICATION forming part of Letters Patent No. 632,976, dated September 12, 1899.

Application filed May 14, 1897. Serial No. 636,506. (No model.)

To all whom it may concern:

Be it known that I, LEROY W. WEED, of Ionia, in the county of Ionia and State of Michigan, have invented certain new and useful Improvements in Railroad-Crossing Gates; and I do hereby declare the following to be 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 use the same.

This invention relates to improvements in gates for railroad-crossings and mechanism for automatically operating the gates by a passing train.

To this end the invention contemplates a construction and arrangement which provides tilting gates or swinging arms located at opposite sides of the roadway, each set of gates or arms being connected to a transverse shaft and the said shafts connected to each other and to a pivoted operating-lever actuated by the passing train, a certain device being provided to lock the operating-lever when depressed to hold the gates or arms elevated, the said lock being connected to levers by which it is tripped, releasing the operating-lever to permit the gates or arms to fall by their own gravity.

In the following specification I have entered into a detail description of the parts which constitute my invention, reference being had to the accompanying drawings and to numerals thereon, which designate the different parts, and what I consider to be the novel features of construction are specifically set forth in the claims.

In the drawings forming part of this specification, Figure 1 is a plan view showing the arrangement of the gates and operating mechanism therefor. Fig. 2 is a vertical longitudinal section through the casing of the operating-lever, showing its connection with one of the transverse shafts and the device which locks the same depressed. Fig. 3 is a sectional view through one of the devices which is acted upon by the train to trip the lock which holds the lever. Fig. 4 is a sectional view through the other device. Fig. 5 is an enlarged side view showing the manner of connecting the two sections of the gate. Fig. 6 is a side view, enlarged, of one of the gates or swinging arms, one of the supporting stand-

ards being removed to show the connections with the transverse shaft. Fig. 7 is a similar view showing the modification of the spring-bumpers which receive the impact of the swinging arms.

Referring to the drawings by numerals, 1 designates the road-bed, 2 the rails of the track, and 3 the cross-ties, upon which the rails are mounted. At each side of the roadway which crosses the railroad-track is journaled a transverse shaft 4, extending beneath the rails parallel with the roadway and at right angles with the railroad-track, one of these shafts having a crank portion 5, to which the operating-lever 19 is connected. The shafts 4 are connected to each other by a rod 6, attached to arms 7, extending from said shafts.

8 8 designate the supporting standards or posts, between which the tilting gates or swinging arms 9 are pivoted upon a transverse shaft or bearing-pin 10, the inner ends of said arms being weighted to give the proper throw to the same. Upon the transverse shaft or bearing-pin is mounted an arm 11, connected by a link 12 to an arm or crank portion 13, projecting from the end of the transverse shaft 4, which is locked by means of the operating-lever hereinafter described. Each tilting gate or swinging arm is connected to the arm or lever 11 of the operating mechanism by means of a curved bar or rod 14, which is rigidly attached to said lever and passes through an apertured lug 15, projecting from the gate or arm. Upon this curved bar or arm are mounted helical springs 16 and 17, the spring 16 being interposed between the lever 11 and lug 15, while the spring 17 is interposed between said lug and a nut or head 18 at the outer end of the bar. These springs receive the impact of the gates or arms when they are thrown by the operating mechanism, and as the said arms are lowered by their own gravity the lower spring 16 is longer than the other, as a greater pressure comes upon the same. The transverse shafts 4 being connected to each other by the rod 6 provides for operating all of the gates or arms by turning one of the said shafts, and as the said arms are weighted to bring them normally into a closed position or to extend across the roadway the operating-lever 19 is disposed in

such manner that when depressed it will raise the arms. For this purpose the said lever is pivoted in a frame or casing 20, mounted upon the cross-ties and having a slot at one end through which the operating end of the lever passes, the upper edge of said operating end presenting oppositely-inclined surfaces 21 and 22. The lever 19 is preferably provided with trunnions 23, having bearings in the sides of the casing or frame 20, the said lever having a slot by which it is connected to the crank portion extending from the transverse shaft 4. The disposition of the weight of the parts is such that the lever 19 will be brought to an operative position when the arms 9 are lowered, and in order to hold said arms elevated a spring-actuated catch or lock 25 is mounted within the casing 20 and is provided with a head 26, adapted to automatically engage said lever when it is depressed. This lock or catch for the lever has a rigid collar 27, which is engaged by a lever 28, fulcrumed and connected to the device by which it is operated. To one end of the lever 28 is attached a cable or flexible connection 29, which extends back to a cam or segment 30, to which it is attached, the said cam or segment being engaged by a lever 31, extending upward on a plane with the rails of the track. This lever is bifurcated at its lower end and a forward movement thereof acts to turn the segment, while the opposite movement merely swings the lever upon its pivot, said lever being brought to its original position by a flat spring 32. The other end of the lever 28 is connected to the cable 33, extending to a cam or segment 34 over a suitable guide-roller 35. The segment 34 also has an operating-lever 36, operated in the same manner as the lever 31, but in an opposite direction thereto. The cables which extend from the trip-lever 28 to the devices for operating said lever may be inclosed within a conduit made up of ordinary pipes, the said devices being located a considerable distance from the lever which raises the gates or arms.

In connection with the operating-lever 19 and levers 31 and 36, which are connected to the trip-lever, I contemplate providing the locomotive with a shoe rigidly secured to the under side of the point of the cow-catcher or fender and extending downwardly a sufficient distance to strike the aforesaid levers.

From the foregoing description, in connection with the accompanying drawings, the construction and operation of my improved railway-gate and means for operating the same will be readily apparent, for upon the train approaching the roadway the shoe carried by the locomotive will operate the trip device by depressing either of the levers 31 or 36, according to which side of the crossing or roadway the train approaches the same, and when the said lever is thrown it will operate the trip-lever 28, releasing the operating-lever 19, which permits the arms or gates to fall by their own gravity, thus bringing the

said operating-lever 19 in position to be acted upon when the locomotive reaches that point. This operation lowers the gates in advance of the near approach of the train, and when the train reaches the gates the shoe on the locomotive will act to depress the operating-lever 19, which will turn the transverse shaft 4, throwing the arms at the ends thereof to raise the gates or swinging arms, being locked in this position by the spring-actuated bolt 25. When the train reaches the other operating device of the lock, it will throw the lever in an opposite direction from that by which it moves the segment, the said lever being returned by the flat spring, as hereinbefore described. Thus the arms or gates will be held elevated until they are lowered by a train approaching the roadway. From this it will be seen that the operating mechanism for the gates is automatic in its operation to first lower the gates by releasing the locking device and then raise said gates when the train is at the roadway.

As the gates are automatically operated, I construct the same to permit a section thereof to be opened outward. To this end each gate or arm is composed of two sections which are hinged to each other, the hinged section being normally brought on a line with the main section by a suitable spring 39, located at the hinge. The hinge is arranged upon the outer side of the gate, so as to permit the outer section to be opened outward and prevent its being opened inward. The hinged sections are of such length as to allow a vehicle to pass off the tracks should the gates be lowered in front of the same.

It will be understood that though I have shown my invention as applied to a single track the transverse shaft could be extended under a number of tracks and the gates at each side operated by levers located between the rails of each track.

In Fig. 7 of the drawings I have shown a modification of the arrangement providing the gates or arms with spring-bumpers, and in this modification the rear ends of the arms or gates are connected to the crank portions extending from the transverse shaft by means of a link or rod 40, passing through a loop 41, attached to the gate, the said link or rod having helical springs located thereon at each side of the connecting portion of the loop 41, the upper spring 42 receiving the impact of the gate or arm when it is elevated and the lower spring 43 forming a bumper for the said arm when it is lowered.

Other changes or modifications of the parts might be made without affecting the spirit and scope of my claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a railway-gate, the combination with the transverse shafts connected to each other and to the gates, of a lever connected to one of the shafts and held normally elevated by

the weight of the gates when lowered, a spring-actuated sliding bar or lock adapted to engage the operating-lever when the latter is depressed, means in engagement with the sliding bar or lock for releasing said lock, and cables extending from said lever, and devices which operate the same, substantially as shown and for the purpose set forth.

2. In a railway-gate, the combination with the transverse shafts which operate the gates, said shafts being connected to each other, of a lever connected to one shaft and presenting an operating end which is inclined in opposite directions, a spring-actuated bolt adapted to engage the lever when depressed, a lever connected to the spring-actuated bolt, and tripping devices connected to the said lever by cables or flexible connections, substantially as shown and for the purpose set forth.

3. In a railway-gate, the combination with the transverse shafts which operate the gates, said shafts being connected to each other, of a lever connected to one of the shafts and thrown to its operative position by the weight of the arms, a lock engaging the operating-lever when depressed, together with a second lever connected to the lock by a cable or flexible connection, substantially as shown and for the purpose set forth.

4. In a railway-gate, the combination with the transverse shafts by which the gates are operated, of a lever for rocking the shafts to open the gates, a lock engaging the operating-lever when it is depressed, a lever engaging the lock, and supplemental levers connected to the lever which actuates the lock, substantially as shown and for the purpose set forth.

5. In a railway-gate, the combination with the transverse shafts which operate the gates, of an operating-lever connected to one of the shafts and operated to raise the gates, a lock engaging the lever when depressed, a segment located at a distance from the operating-lever and connected to the lock by a cable or other flexible connection, and a lever pivoted upon the segment and adapted to operate the same when the said lever is thrown in one direction, substantially as shown and for the purpose set forth.

6. In a railway-gate, the combination with the transverse shafts connected to the vertically-swinging arms, said shafts being connected with each other so that they will be rocked in unison, of an operating-lever connected to a crank portion of one of the shafts, said lever being thrown to its operative position by the weight of the arms when lowered, a spring-actuated catch for engaging the operating-lever when it is depressed to elevate the arms, together with levers located in the track at a considerable distance beyond each side of the roadway, the said levers being connected to the spring-actuated catch for operating the same to release the operating-lever, the mechanism being actuated by a shoe on the locomotive, substantially as shown and for the purpose set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

LEROY W. WEED.

Witnesses:

S. L. ALDEN,
HENRY A. SOULE.