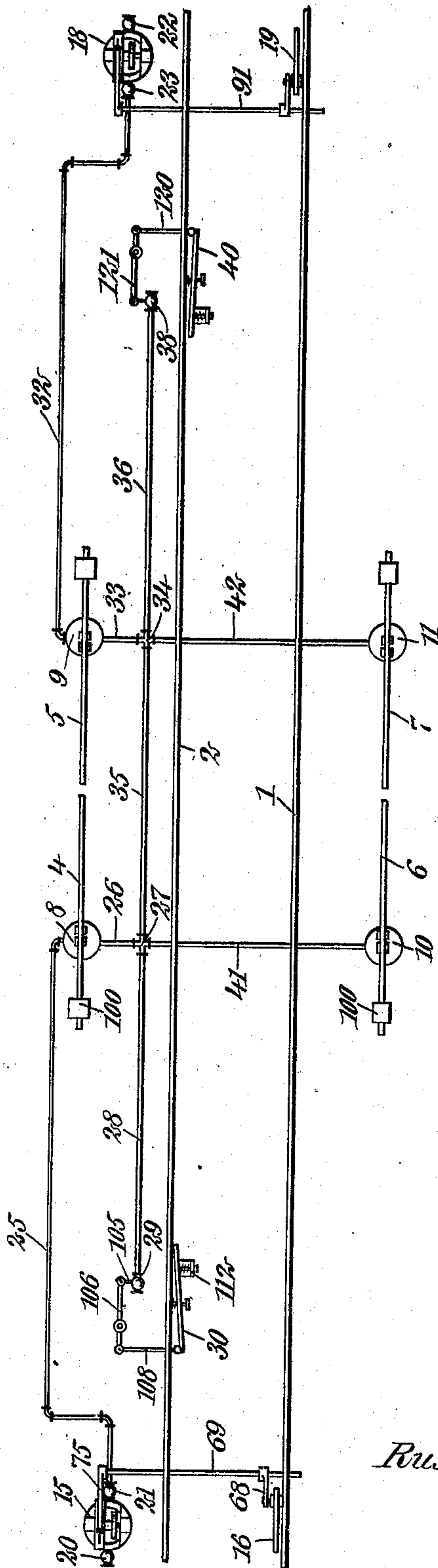


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RAILWAY GATE.

Patented June 8, 1909.

8 SHEETS--SHEET 1.



Johna Beuphron
Wm. J. Sperr

Russell Spurlock

BY *Mum Lo*

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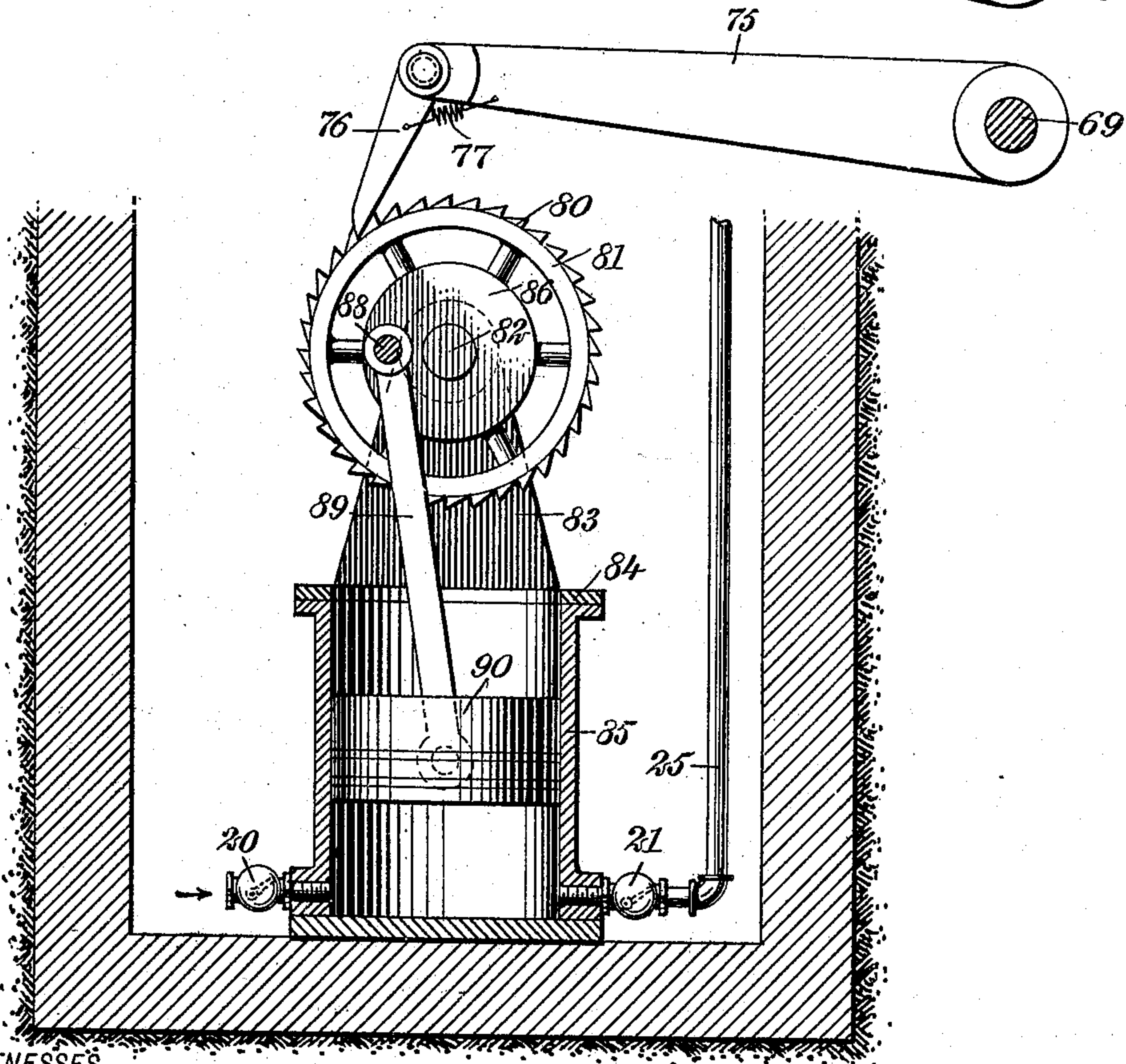
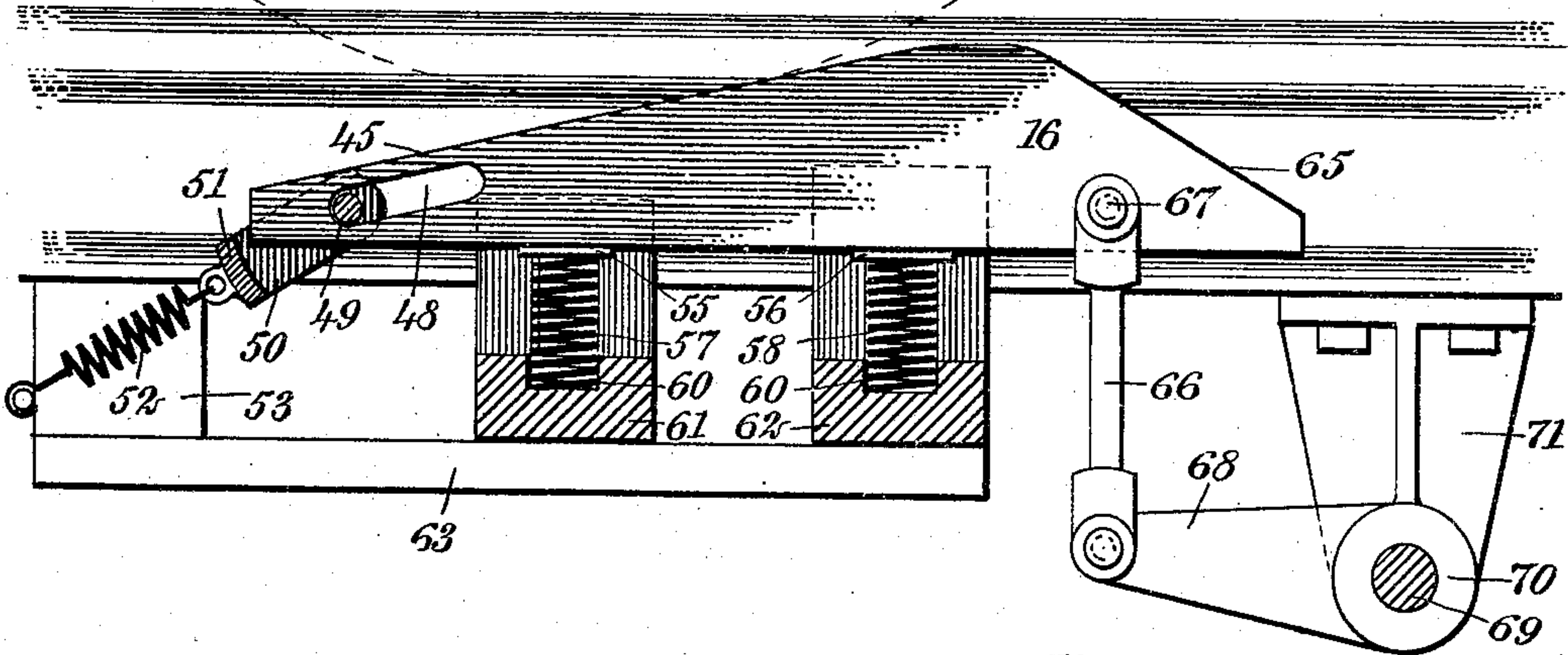
R. SPURLOCK.
RAILWAY GATE.
APPLICATION FILED NOV. 17, 1908.

924,290.

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3 SHEETS—SHEET 2.

Fig. 2



WITNESSES

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Fig. 3

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3 SHEETS—SHEET 3.

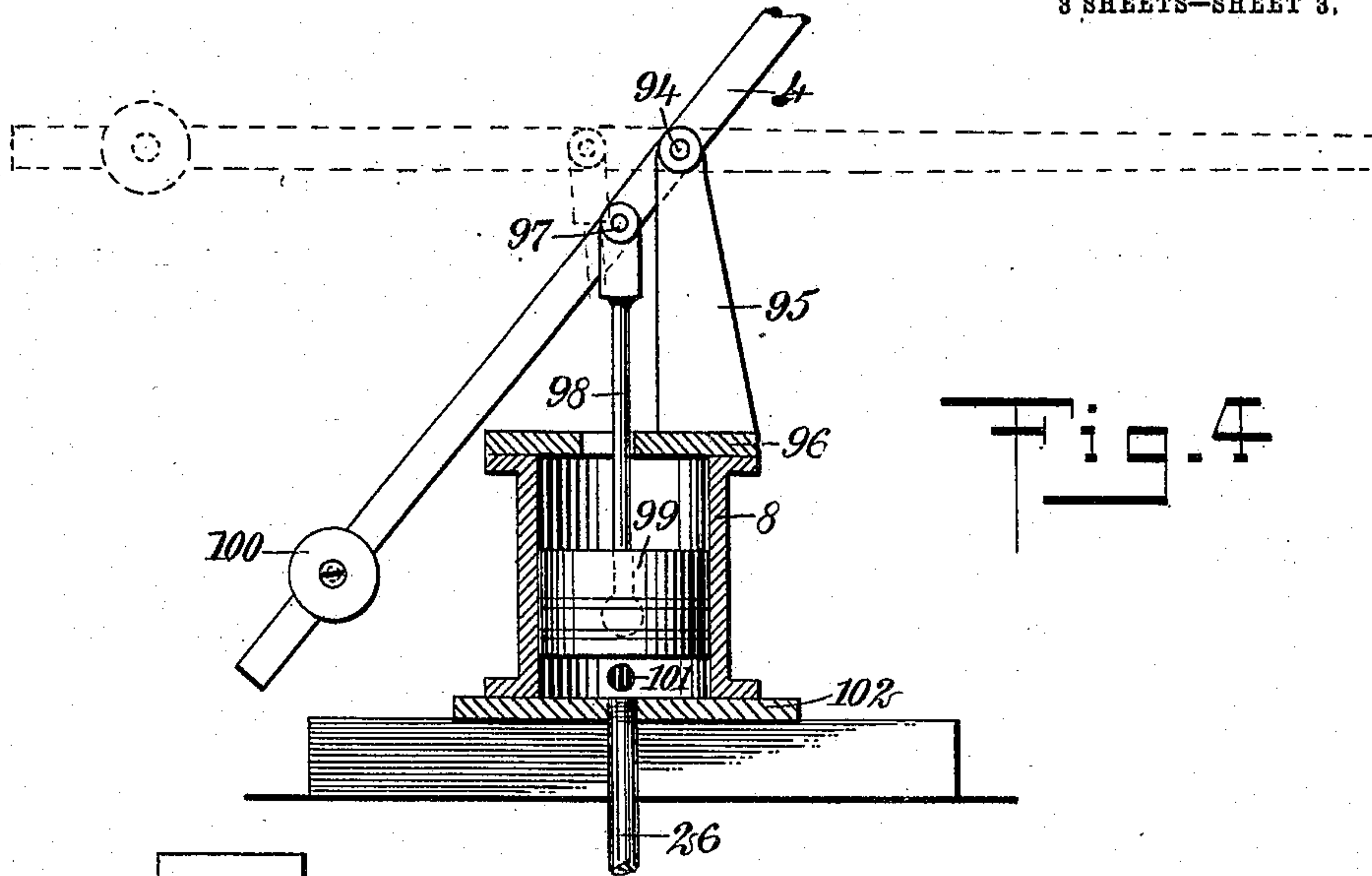


Fig. 4

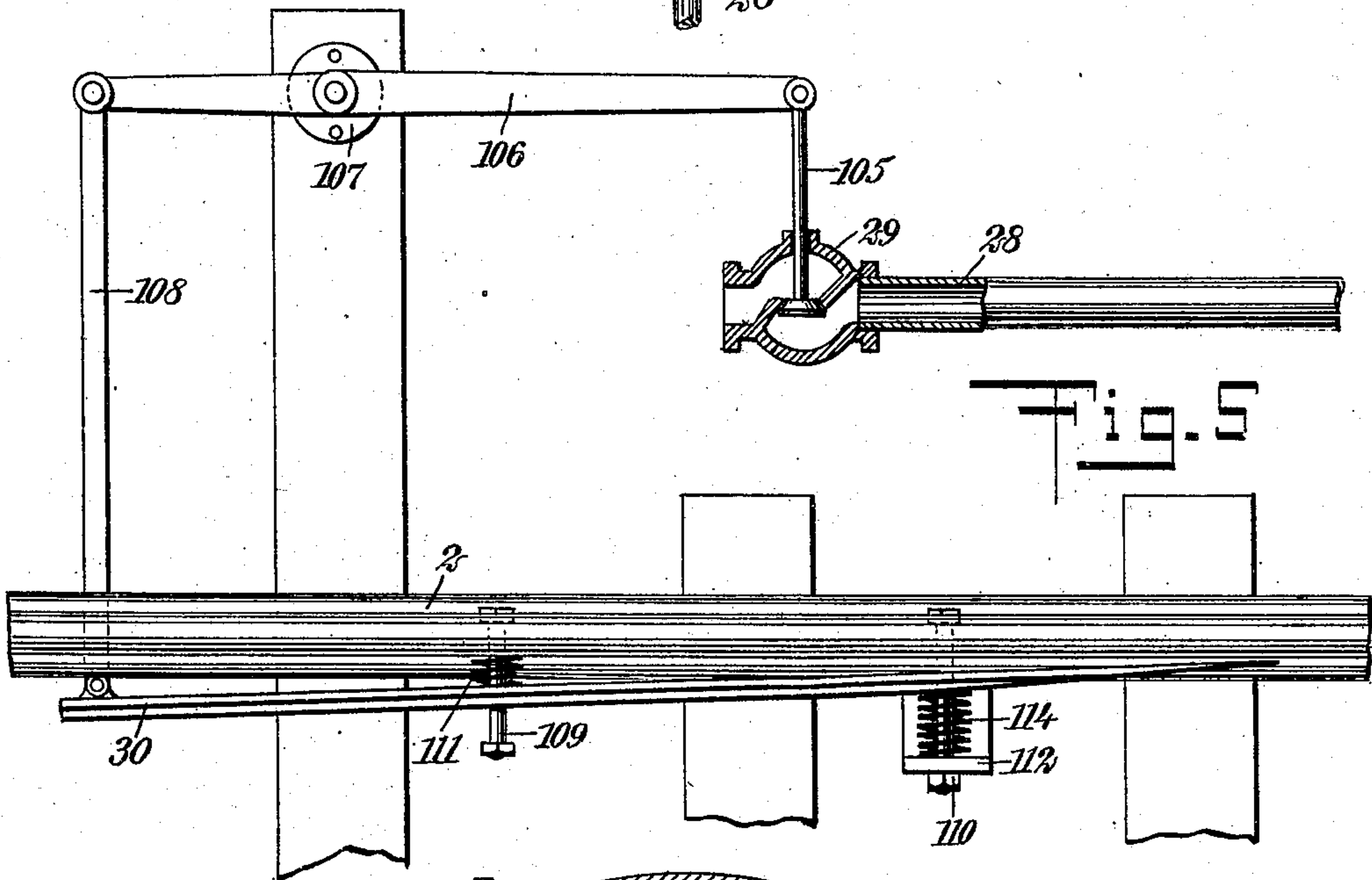


Fig. 5

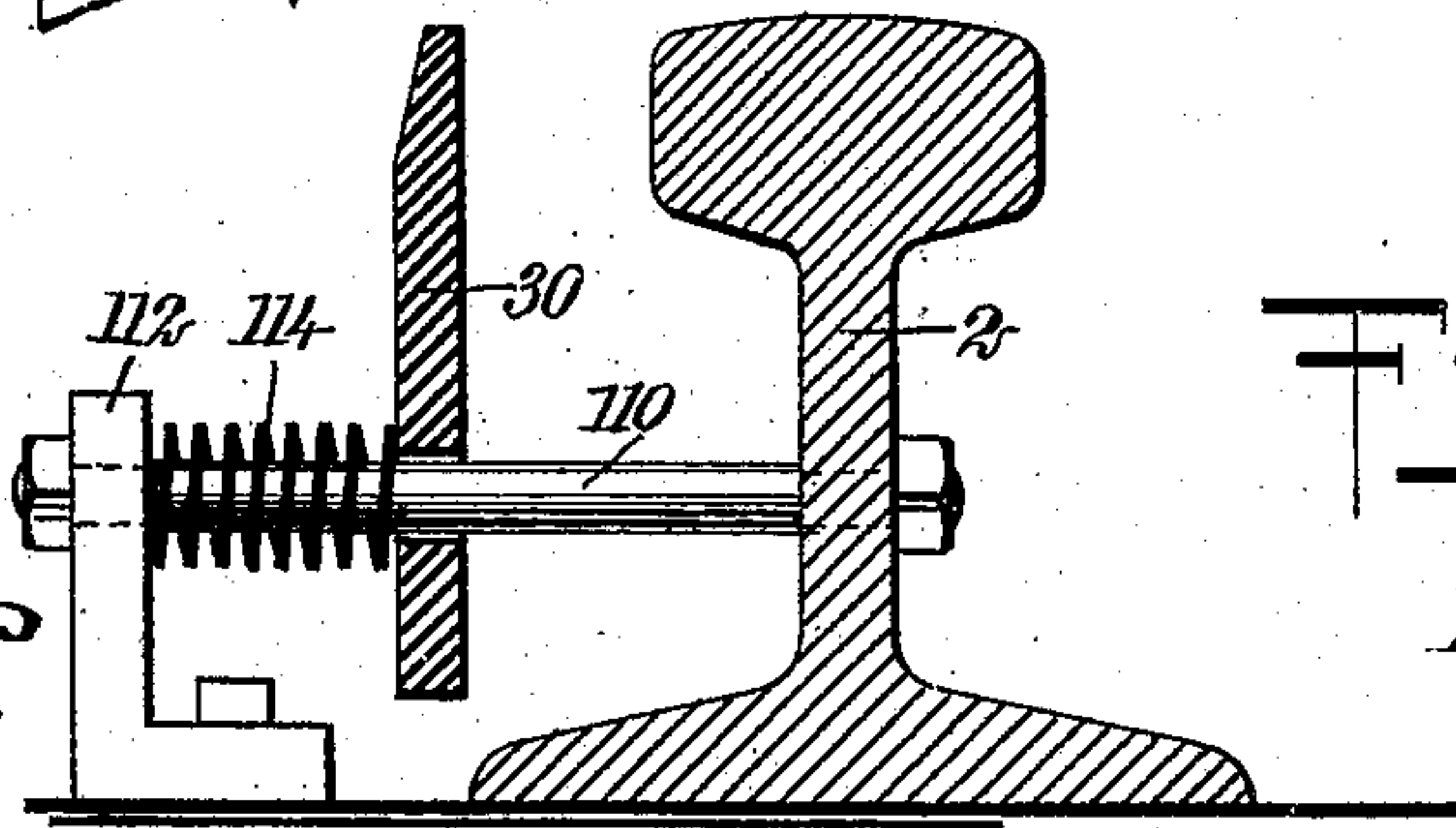


Fig. 6

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UNITED STATES PATENT OFFICE.

RUSSELL SPURLOCK, OF VALLEY VIEW, KENTUCKY.

RAILWAY-GATE.

No. 924,290.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed November 17, 1908. Serial No. 463,009.

To all whom it may concern:

Be it known that I, RUSSELL SPURLOCK, a citizen of the United States, and a resident of Valley View, in the county of Madison and State of Kentucky, have invented a new and Improved Railway-Gate, of which the following is a full, clear, and exact description.

This invention relates to railroad gates adapted to be operated automatically by the passage of a train.

One object is to provide an improved means for automatically operating the gate pneumatically by the passage of a car or train along a given stretch of track.

A further object is to provide means for automatically lowering the gate when the train reaches a given point in the track, and means for automatically raising said gate when the train reaches a second given point in said track while continuing in the same direction.

A still further object is to provide means for automatically lowering the gate when the train reaches a given point while traveling in one direction, and means for raising said gate when the train reverses its direction and passes a second given point.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a diagrammatic plan view, showing the track, gates and operating mechanism; Fig. 2 is a vertical sectional view, partly in elevation, of one of the plates connected to operate an air pump; Fig. 3 is a vertical sectional view, showing an air pump and a connection to the driving shaft; Fig. 4 is a vertical section, showing one gate arm and the cylinder for operating the same; Fig. 5 is a partial plan view of one of the release valves and the plate for operating the same, together with a section of the track rail; and Fig. 6 is a vertical section through one of the track rails and the plate shown in Fig. 5.

As shown in Fig. 1, the track comprises rails, 1 and 2. Extending parallel to said track are gates, 4, 5, 6 and 7, pivotally mounted upon cylinders, 8, 9, 10 and 11 respec-

tively. An air pump 15 is located at a convenient point near the track, and is adapted to be operated by the passage of a car wheel over a plate 16, located adjacent to the rail 1, as will be hereinafter explained. A similar air pump 18 is located on the opposite side of the gates, and is also adapted to be operated by a similar plate 19, located adjacent the rail 1.

The air pump 15 is provided with an inlet check valve 20 and an outlet check valve 21. The air pump 18 is provided with an inlet check valve 22 and an outlet check valve 23. A pipe 25 connects the cylinder 8 with the check valve 21. A pipe 26 connects the cylinder 8 with a cross connection 27. Said cross connection is connected by means of a pipe 28 to a release valve 29. The release valve 29 is adapted to be operated by suitable connections from a plate 30 adjacent the inner side of the rail 2, as will be hereinafter explained.

A pipe 32 connects the cylinder 9 with the check valve 23 on the pump 18, a pipe 33 connects the cylinder 9 with a cross connection 34, and a pipe 35 connects the two cross connections 27 and 34. A pipe 36 connects the cross connection 34 with a release valve 38, which is adapted to be operated similarly to the release valve 29, by connections leading to a plate 40, similar to the plate 30, but oppositely inclined with relation to the rail 2.

A pipe 41 connects the cross connection 27 with the cylinder 10, and a pipe 42 connects the cross connection 34 with the cylinder 11.

The plate 16 is provided with a gradually inclined face 45, with which the flange 46 of a car wheel is adapted to come in contact when the wheel is moved toward the right, as viewed in Figs. 1 and 2. The plate 16 has an inclined slot 48 near one end, through which a bolt 49 passes, said bolt being held in ears 50 of a yoke 51. A spring 52 is connected at one end to the yoke 51, and at its other end is fastened to one of the ties 53 used for supporting the track rail. The plate 16 rests upon plates 55 and 56, which are supported by springs 57 and 58 respectively, resting at their lower ends in sockets 60 formed in supporting brackets 61 and 62 mounted upon a plate 63.

It will be noted that when the flange 46 engages the face 45 as the wheel travels toward the right, as viewed in Fig. 2, the plate 16 will be forced downwardly to compress the springs 57 and 58.

The plate 16 is provided on its right-hand end with an abrupt inclined face 65. A link 66 is pivotally supported about a pin 67 at its upper end, said pin passing through the plate 16. The lower end of the link 66 is pivotally connected to the outer end of a crank arm 68, which is fastened to a shaft 69 journaled in a bearing 70 upon the lower end of a bracket 71, which may be bolted to the under side of one of the track rails.

It will be noted that when the plate 16 is forced downwardly, as described above, the crank arm 68 will be oscillated by the link 66. When the wheel moves toward the left and comes in contact with the surface 65, the plate 16 will be merely pushed longitudinally, and the link 66 will be tilted slowly without oscillating the crank arm 68. As soon as the wheel has passed the plate 16 it assumes the position shown in Fig. 2 by means of the springs 57 and 58.

A crank arm 75 is also secured to the shaft 69, and is provided at its outer end with a pawl 76 pivoted thereto. A spring 77 is secured to the arm 75 and also to the pawl 76, in order to maintain the latter in proper relation with the teeth 80 formed upon a ratchet wheel 81 mounted upon a shaft 82, which is journaled in bearings 83 secured to the upper end 84 of a cylinder 85. The ratchet wheel 81 is formed with a disk 86 having a wrist pin 88 mounted thereon. A link 89 is mounted to rotate about said wrist pin 88, and is connected at its lower end to a piston 90 traveling within a cylinder 85. The inward check valve 20 is connected to the cylinder 85 at its lower end, and the outward check valve 21 is also connected to said cylinder and to the pipe 25. The description of the air pump having the cylinder 85 will suffice for the air pumps designated by 15 and 18 in the diagrammatic view.

In the construction above set forth, it will be seen that when a car wheel passes over the plate 16, traveling toward the right as viewed in Figs. 1 and 2, the plate 16 is depressed, and the shaft 69 oscillated, thereby oscillating the arm 76 and giving a partial rotation to the ratchet wheel 81 by means of the pawl 76. This compresses the air in the cylinder 85 which is conducted through the pipe 25 to the cylinder 8.

When the wheel is traveling toward the left and comes in contact with the plate 19, a shaft 91 connected therewith will be oscillated in a similar manner, to operate the pump 18. When the wheel travels over the plate 19 toward the right said plate will be merely moved longitudinally, as above described, with respect to the plate 16, without affecting the air pump 18.

The gate 4 is pivoted at 94 to a bracket 95 mounted upon a plate 96 forming the upper end of the cylinder 8. The gate 4 is piv-

otally connected at 97 to a link 98, which is secured at its lower end to a piston 99 traveling within the cylinder 8. A weight 100 may be adjustably mounted upon the lower end of the gate 4, as well as the gates 5, 6 and 7, in order to aid in raising said gates. The pipe 25 connects with a hole 101 formed in the side of the cylinder 8, and the pipe 26 connects with the cylinder 8 through a plate 102 forming the bottom of said cylinder.

In order to release the air from the cylinders which operate to lower the gates, I provide the release valves 29 and 38. The stem 105 of the release valve 29 is pivotally connected to one end of a lever 106, which lever is fulcrumed upon a suitable support 107 mounted upon one of the ties used for supporting the track rails 1 and 2. The other end of the lever 106 is connected by means of a link 108 to the plate 30. Said plate 30 is mounted to slide upon bolts 109 and 110. Said bolts are provided with shoulders, and are clamped in position against the web of the rail 2 by means of nuts. A spring 111 is mounted about the bolt 109 and extends between the inner face of the plate 30 and the opposite face of the web of the rail 2. The bolt 110 is supported at one end in a bracket 112, and is surrounded by a spring 114 bearing against the outer face of the plate 30 and the inner face of the bracket 112.

The right-hand end of the plate 30 may be beveled, as shown in Figs. 5 and 6, in order that the flange of a car wheel may come in contact therewith gradually. It will be noted that when the car wheel is moving toward the right, as viewed in Figs. 1 and 5, the flange of the wheel will come between the track rail 2 and the adjacent face of the plate 30, thereby merely pushing the right-hand end of said plate away from the rail 2 without affecting the link 108 and the lever and release valve connected therewith.

When the car wheel is traveling toward the left, its flange comes in contact with the beveled face of the plate 30, and said plate is forced against the rail 2. This motion is transferred to the link 108, and the lever 106 is tilted to open the valve 29, thereby releasing the air within the pipe 28. It will be understood that the plate 40 and the release valve 38 are duplicates of the plate 30 and the valve 29, except that the plate 40 is so positioned with respect to the rail 2 as to operate when the wheel is moving in an opposite direction from that set forth with respect to the plate 30.

If desired, the air pumps may be located in pits formed beside the track, as indicated in Fig. 3.

The operation of the device is as follows:—When a car wheel moves over the plate 16 when traveling toward the right, in Fig. 1, the shaft 69 is oscillated and operates

to move the piston within the air pump 15. This compresses the air which is conveyed to the cylinder 8 and from thence to the cylinders 9, 10 and 11. The air under pressure entering the cylinders 8, 9, 10 and 11, operates to raise their respective pistons, and thereby lowers the gates 4, 5, 6 and 7. As the wheel progresses toward the right and passes over the plate 30, it has no effect on said plate, as already explained. When the wheel reaches the plate 40, the right-hand end of said plate is forced inwardly against the track rail 2, and by means of a link 120 and the lever 121, similar to the link 108 and the lever 106, the valve 38 is opened, as already explained above in relation to the valve 29. This allows the exhaustion of the air from the cylinders 8, 9, 10 and 11, whereupon, through the aid of the counter-weights 100, secured to the gate arms, said arms are raised into the position shown in Fig. 4. When the wheel comes in contact with the plate 19, while moving toward the right, said plate is merely moved longitudinally without affecting the air pump 18 connected therewith. If, after the wheels have passed the plate 30 in going toward the right, it becomes necessary to reverse the direction of the train, the wheels come in contact with the plate 30 to force said plate against the rail 2, and by means of the link 108 and the lever 106, the release valve 29 is opened. Thus the gates are raised, leaving the roadway clear.

It will be understood that the air pumps and the release valves, together with the mechanisms for operating the same, will be located at proper intervals and distances apart along the track to allow the proper manipulation of the trains.

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

1. In a device of the class described, a vertical plate arranged alongside of the rail, the upper edge of the plate being inclined gradually downwardly at one end and abruptly at the other end, means for supporting the plate to permit it to yield downwardly and to slide longitudinally in the direction of the gradually inclined end, gate

operating mechanism, and means operated by the downward movement of the plate for actuating said mechanism.

2. In a device of the class described, a plurality of gates, fluid pressure operated means for opening and closing the gates, a pump on each side of the gate for supplying fluid to said means to open the gates, means for operating each of said pumps, means for exhausting the fluid on each side of the gates and nearer thereto than the pumps, and means whereby the passage of a car in one direction will operate the pump on one side of the gate and the exhausting means on the other, and whereby the passage of a car in the opposite direction will not affect said means.

3. In a device of the class described, a plurality of gates, fluid pressure operated means for opening and closing the gates, a pump on each side of the gate for supplying fluid to said means to open the gates, means for operating each of said pumps, means for exhausting the fluid on each side of the gates and nearer thereto than the pumps, and means whereby the passage of a car will operate the pump on one side of the gate and the exhausting means on the other.

4. In a device of the class described, a plurality of gates, fluid pressure operated means for closing each of the gates, a pump on each side of the gate, a connection between said pump and each of said fluid pressure operated means, means in the path of a moving car for operating each of said pumps, means in the path of the moving car for simultaneously exhausting all of said fluid pressure operating means, and means whereby the passage of the car in one direction will operate the pump on one side of the gate and the exhaust on the other, and whereby the passage of the car in the opposite direction will not affect said means.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RUSSELL SPURLOCK.

Witnesses:

J. L. SOWERS,
W. E. CHASE.