

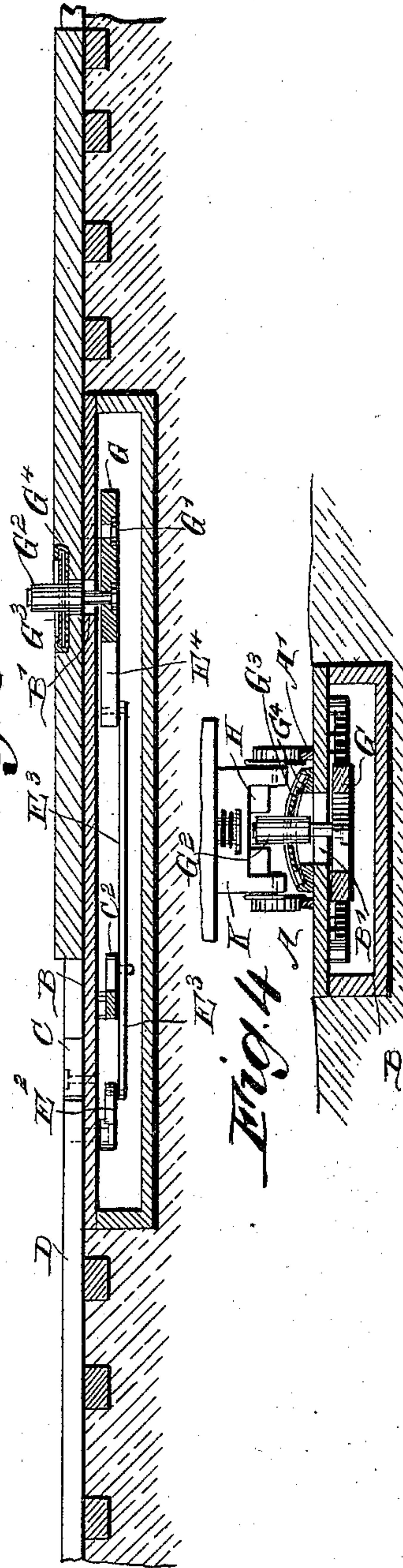
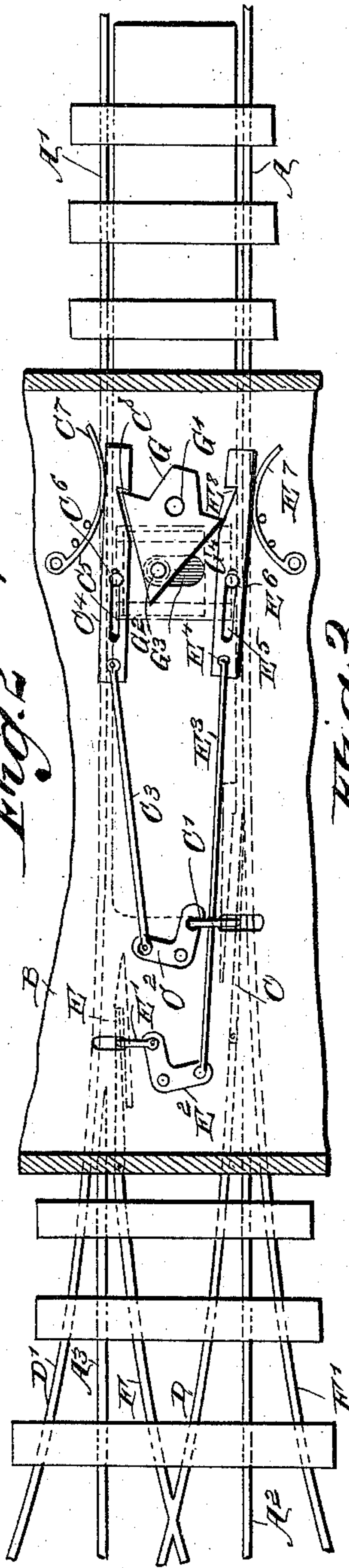
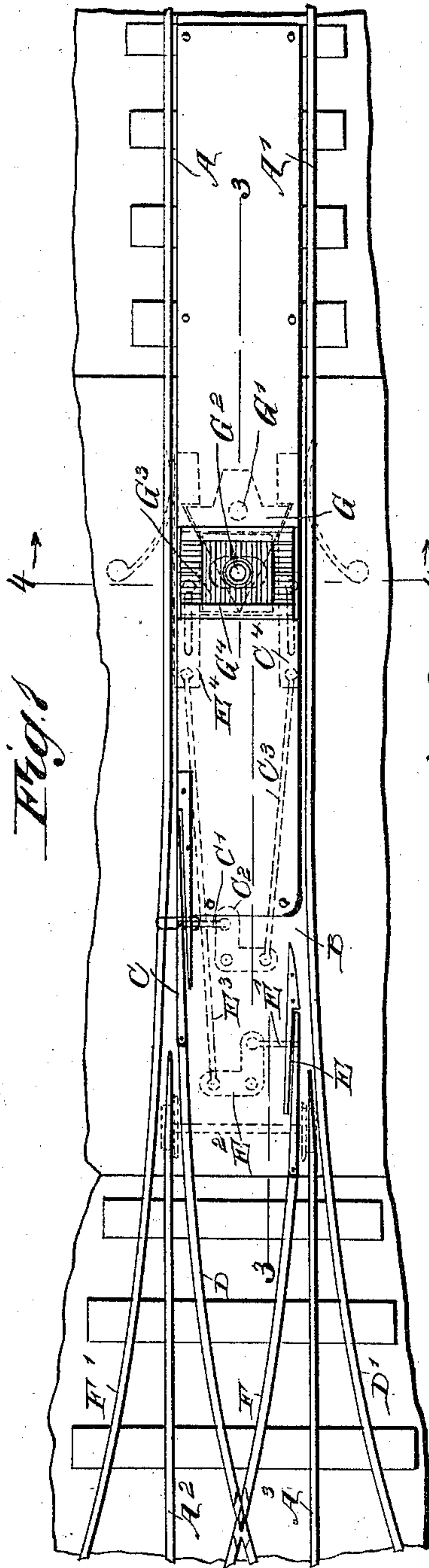
(No Model.)

2 Sheets—Sheet 1.

R. E. BRACKELSBERG & L. GRAFF.
SWITCH AND SWITCH SHIFTER.

No. 535,666.

Patented Mar. 12, 1895.



WITNESSES:

J. M. Andle
Thos. G. Poston

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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

R. E. BRACKELSBERG & L. GRAFF.
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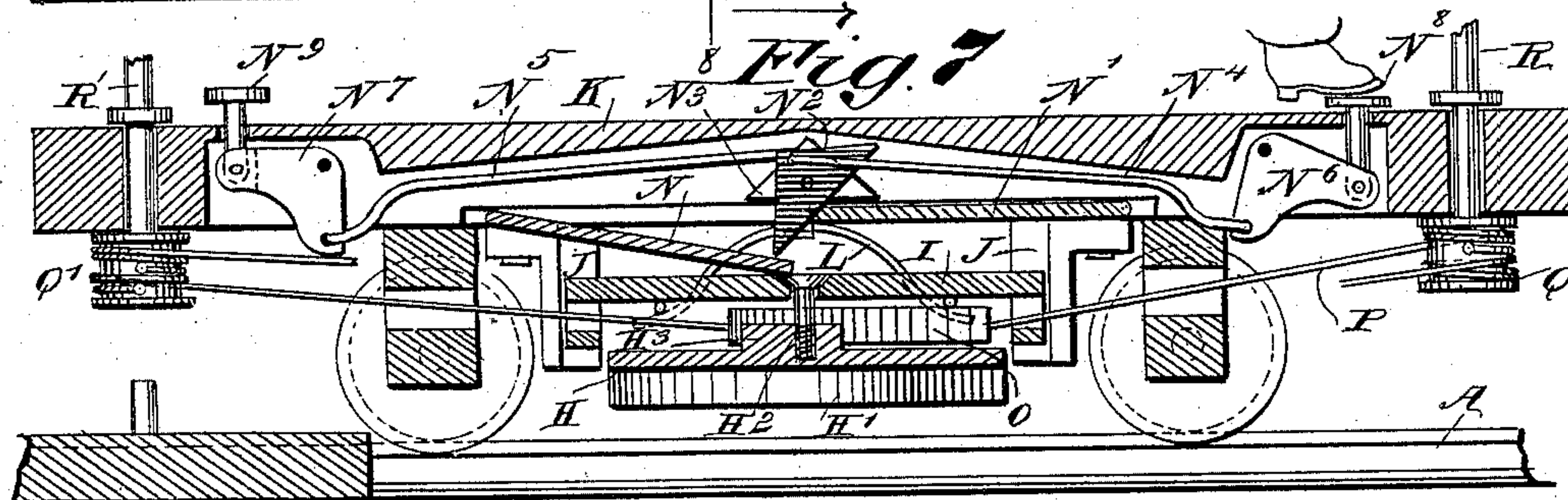
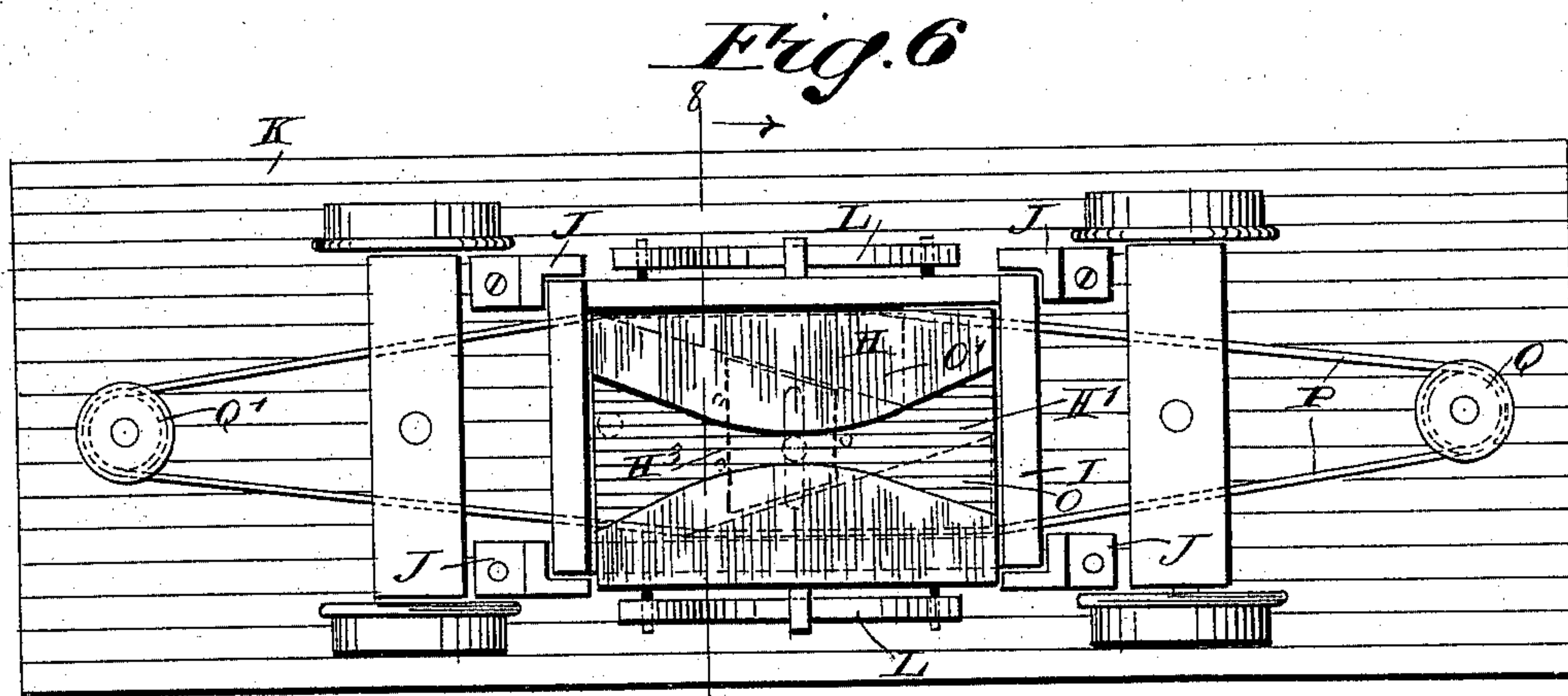
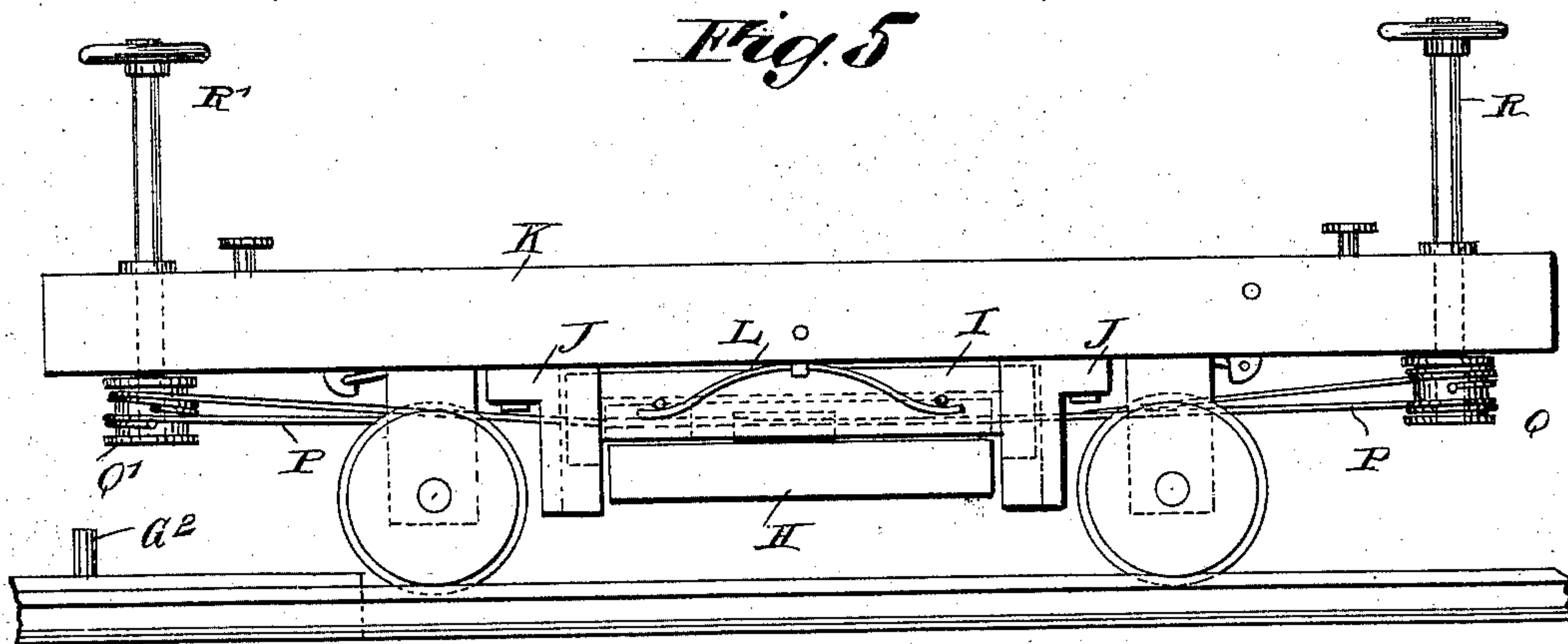


Fig. 9.



WITNESSES:

J. McAuley
Thos. G. Heston

Fig. 8.

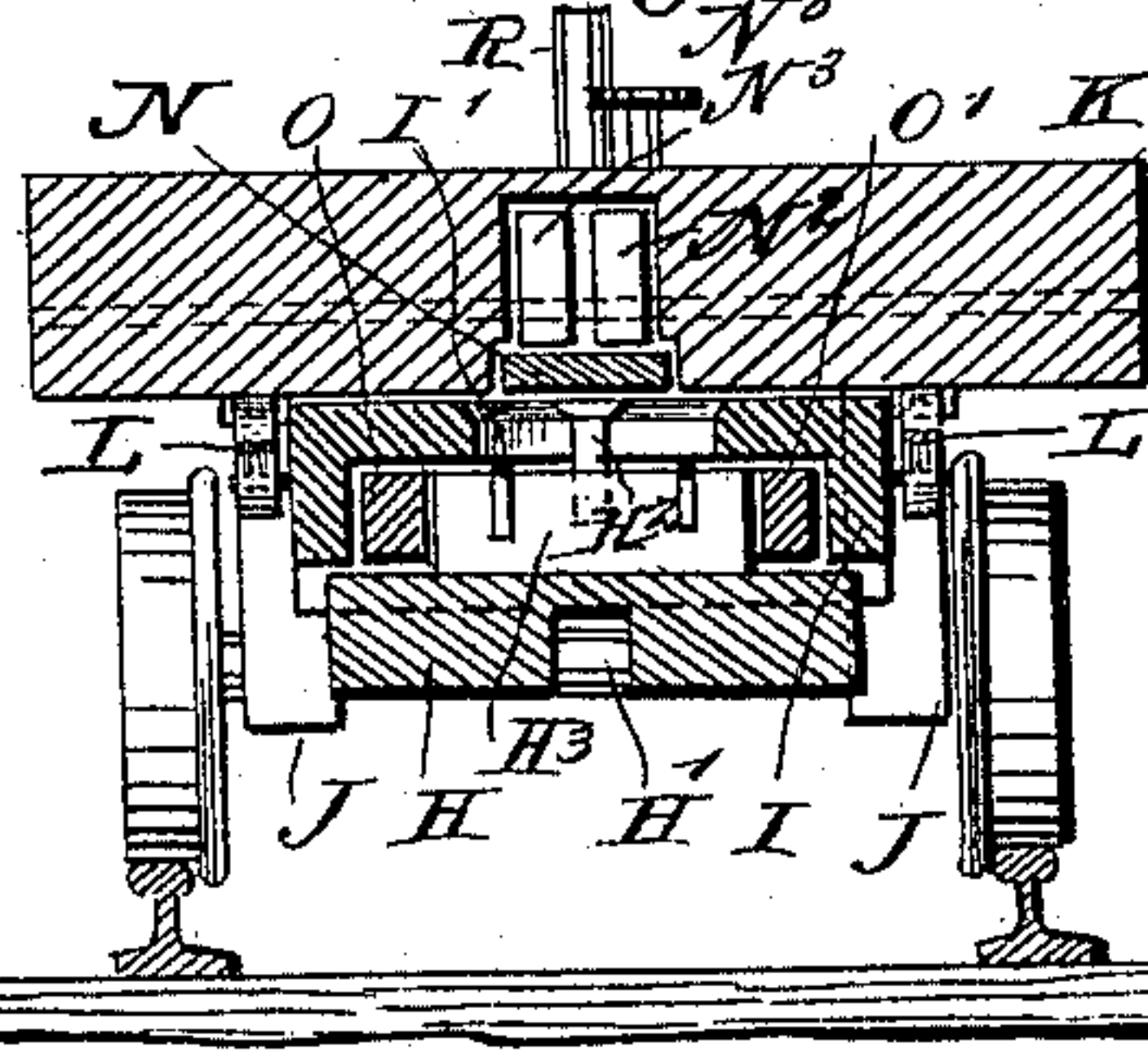
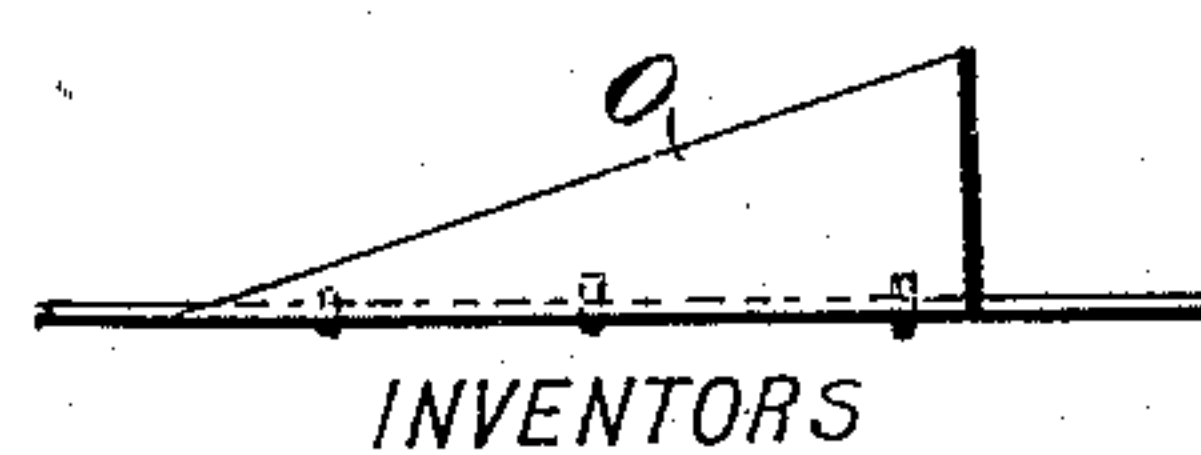


Fig. 10.



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UNITED STATES PATENT OFFICE.

ROBERT EDWARD BRACKELSBURG AND LEWIS GRAFF, OF MANKATO,
MINNESOTA.

SWITCH AND SWITCH-SHIFTER.

SPECIFICATION forming part of Letters Patent No. 535,666, dated March 12, 1895.

Application filed June 30, 1894. Serial No. 516,172. (No model.)

To all whom it may concern:

Be it known that we, ROBERT EDWARD BRACKELSBURG and LEWIS GRAFF, both of Mankato, in the county of Blue Earth and State of Minnesota, have invented a new and Improved Switch and Switch-Shifter, of which the following is a full, clear, and exact description.

The invention relates to switches for street railways, and its object is to provide a new and improved switch and switch shifter, which is comparatively simple and durable in construction and arranged to automatically shift the switch from the car at the time the latter approaches the switch, to cause the car to travel in the desired direction on any one of the branch tracks or the main track.

The invention consists of a frame adapted to be lowered on a car, and a shifting block fitted to slide transversely on the said frame and adapted to engage the switch mechanism to shift the latter.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the switch. Fig. 2 is an inverted plan view of the same, with parts in section. Fig. 3 is a sectional side elevation of the same on the line 3—3 of Fig. 1. Fig. 4 is a transverse section of the same on the line 4—4 of Fig. 1. Fig. 5 is a side elevation of the car provided with the switch shifter. Fig. 6 is an inverted plan view of the same. Fig. 7 is a sectional side elevation of the same. Fig. 8 is a transverse section of the same on the line 8—8 of Fig. 6. Fig. 9 is a plan view of the transverse block; and Fig. 10 is a plan view of one of the wedges for transversely shifting the block.

The switch, as illustrated in Figs. 1, 2, 3 and 4 is arranged at the junction of the branches with the main track rails A, A', connecting, at the switch platform or box B, by a pivoted switch rail C with the branch track rails D, D', and by a pivoted switch rail E with the other branch tracks F, F'. The switch rails

C and E are pivotally connected by downwardly extending arms C' and E' with bell crank levers C² and E² respectively, fulcrumed in the switch box or platform B, as plainly illustrated in Fig. 2. The bell crank levers C² and E² are pivotally connected by links C³ and E³ respectively, with the arms C⁴ and E⁴ respectively, formed with longitudinally extending slots C⁵ and E⁵ respectively, engaged by pins C⁶, E⁶, respectively, attached to the under side of the top of the box B, as will be readily understood by reference to Fig. 2. Springs C⁷ and E⁷ press on the outer sides of the said arms C⁴ and E⁴ respectively, to force their inner wedge-shaped notches C⁸ and E⁸ respectively in contact with a double wedge G pivoted at G' in the box B.

On the point of the double wedge G is secured an upwardly extending pin G², passing through a slot in the top of the box B to the top of the track between rails A, A', so that part of the pin projects above the track to be engaged by the switch shifter, as hereinafter more fully described. The pin G² carries a cover plate G³, fitted to slide transversely in a suitable bearing G⁴ arranged between the track rails A, A', so that the slot B' in the top of the box B, is always covered up to prevent snow and ice, grit, &c., from passing to the switching mechanism in the box B. Now, when the pin G² is shifted transversely a springing motion is given to the wedge G, whereby either of the arms C⁴ or E⁴ is actuated to cause a shifting of the switch rails C or E respectively, to open or close the main track A, A' to either of the branches D, D' or F, F'. When the pin G² stands in the center of the slot B' as shown in Fig. 1, then both switch rails C and E are closed, and consequently the main track rails A, A², A', A³, are connected with each other for a continuous straight passage of the cars.

When the pin G² is moved to the left into the position shown in Fig. 2, then the switch rail C is opened to connect the track rails A, A', with the branch track rails D, D', and when the said pin G² is moved to the right, then the other switch rail E is actuated to connect the main track rails A, A' with the branch track rails F, F'. Now, in order to shift the pin G² in the manner described or

to leave the same in a central position at the time a car approaches and passes the switch at the box B, a block H is provided having a transverse sliding motion in a frame I fitted to slide vertically in guideways J attached to the under side of the car K, as plainly illustrated in Figs. 5 to 10. The under side of the block H is formed with a slot H' having sides which diverge from the center in a forward and rearward direction, as plainly shown in Fig. 6.

When the frame I is lowered and the block H is in a central position, then the car K in its forward movement, causes the projecting end of the pin G² to pass into the open forward end of the slot H', so that the pin, if in a sidewise position either at the right or left as above described, engages one of the diverging sides of the slot and is shifted to a central position at the time the center of the slot H' passes the said pin. By this operation the respective switch rail C or E is closed to permit the car to proceed straight forward on the main track rails A, A', A², A³. Now, when the block H is in either position at the left or right, then the pin G² is moved in a like direction, no matter what position it had previous to the approach of the car to the box B, so that either the switch rail C or E is opened to cause the car to travel from the main track rails to the desired branch track.

The frame I is normally held in an uppermost position by springs L attached to the under side of the car K and engaging with their free ends, pins on the said frame, as plainly shown in Figs. 5 and 6. The top of the frame I is adapted to be engaged at or near the center, by the free ends of two arms N and N' adapted to swing downward from the under side of the car as plainly shown in Fig. 7, the said arms N and N' being pressed on by pivoted triangular-shaped levers N² and N³ respectively, connected by links N⁴ and N⁵ respectively, with bell crank levers N⁶ and N⁷ respectively, fulcrumed on the under side of the car near the platform, the bell crank levers being connected with foot links N⁸ and N⁹ respectively, under the control of the feet of the operator standing on the platform at the front end of the car. Now, it will be seen that the operator by pressing either foot link N⁸ or N⁹ causes the corresponding bell crank lever N⁶ or N⁷ to swing and cause a like swinging of the triangular-lever N² or N³ to depress the respective arm N or N', and consequently force the frame I, carrying the block H, in a downward direction so as to sufficiently lower the block H to engage the pin G², as previously explained.

As soon as the operator releases the pressure on either foot link N⁸ or N⁹, the frame I moves back into its uppermost position by the action of the springs L. The block H is provided on its top with a bolt H² hung in a transversely extending slot I' formed in the frame I, see Figs. 7 and 8, and in the middle of the said block and on the top thereof is ar-

anged a wedge shaped off-set H³ adapted to be engaged on opposite sides by wedges O and O' connected with the runs of the endless rope or cord P winding on drums Q and Q' at the end of the car under the platform as plainly shown in the drawings. The pulleys or drums Q and Q' are held on staffs R and R' respectively, under the control of the operator standing on either end of the car.

It will be seen that when the operator turns either staff R or R' in one direction, then one of the wedges moves forward and the other in an opposite direction, so that a transverse sliding of the block H takes place, and when the staff R or R' is turned in the opposite direction, the said block H is moved transversely but in an opposite direction to that previously given. Thus the operator can at any time, conveniently shift the block H to right or left to set the desired switch rail C or E, as previously described, or to hold the said block in a central position and leave the switch rails C and E closed to permit the car to proceed on the straight main track.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A device of the class described, provided with a frame adapted to be raised and lowered on a car, and a shifting block for the switch rails and fitted to slide transversely on the said frame, substantially as shown and described.

2. A device of the class described, provided with a shifting block fitted to slide transversely on the under side of the car, and formed in its bottom with a groove having diverging sides, substantially as shown and described.

3. A device of the class described, comprising a shifting block adapted to engage the shifting mechanism and fitted to slide transversely on the under side of a car, a wedge-shaped projection or lug held on the said block, and wedges engaging the wedge-shaped sides of the said projection to move the block transversely, substantially as shown and described.

4. A device of the class described, comprising a shifting block adapted to engage the shifting mechanism and fitted to slide transversely on the under side of a car, a wedge-shaped projection or lug held on the said block, wedges engaging the wedge-shaped sides of the said projection, to move the block transversely, and a rope or chain carrying the said wedges and winding on pulleys to cause the wedges to travel in opposite directions to shift the block laterally, substantially as shown and described.

5. A device of the class described, comprising a frame adapted to be raised and lowered on the under side of a car, means for operating the said frame, a block fitted to slide transversely on the said frame and formed at its under side with a slot having diverging sides to engage the shifting mechanism for

the switch rails, a wedge-shaped projection on top of the said block, and wedges fitted to slide in the said frame and engaging the diverging sides of the said projection, to move
5 the block transversely, substantially as shown and described.

6. A device of the class described, comprising switch rails, bell crank levers connected with the said switch rails, pivoted arms having a longitudinal movement and connected
10 with the said bell crank levers, the said arms being spring pressed and formed at their in-

ner faces with notches and a pivoted double wedge adapted to engage the said notches in the arms and provided with a pin projecting
15 between the track rails, to be engaged by a shifter on the car, substantially as shown and described.

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LEWIS GRAFF.

Witnesses:

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Q. LEONARD.