

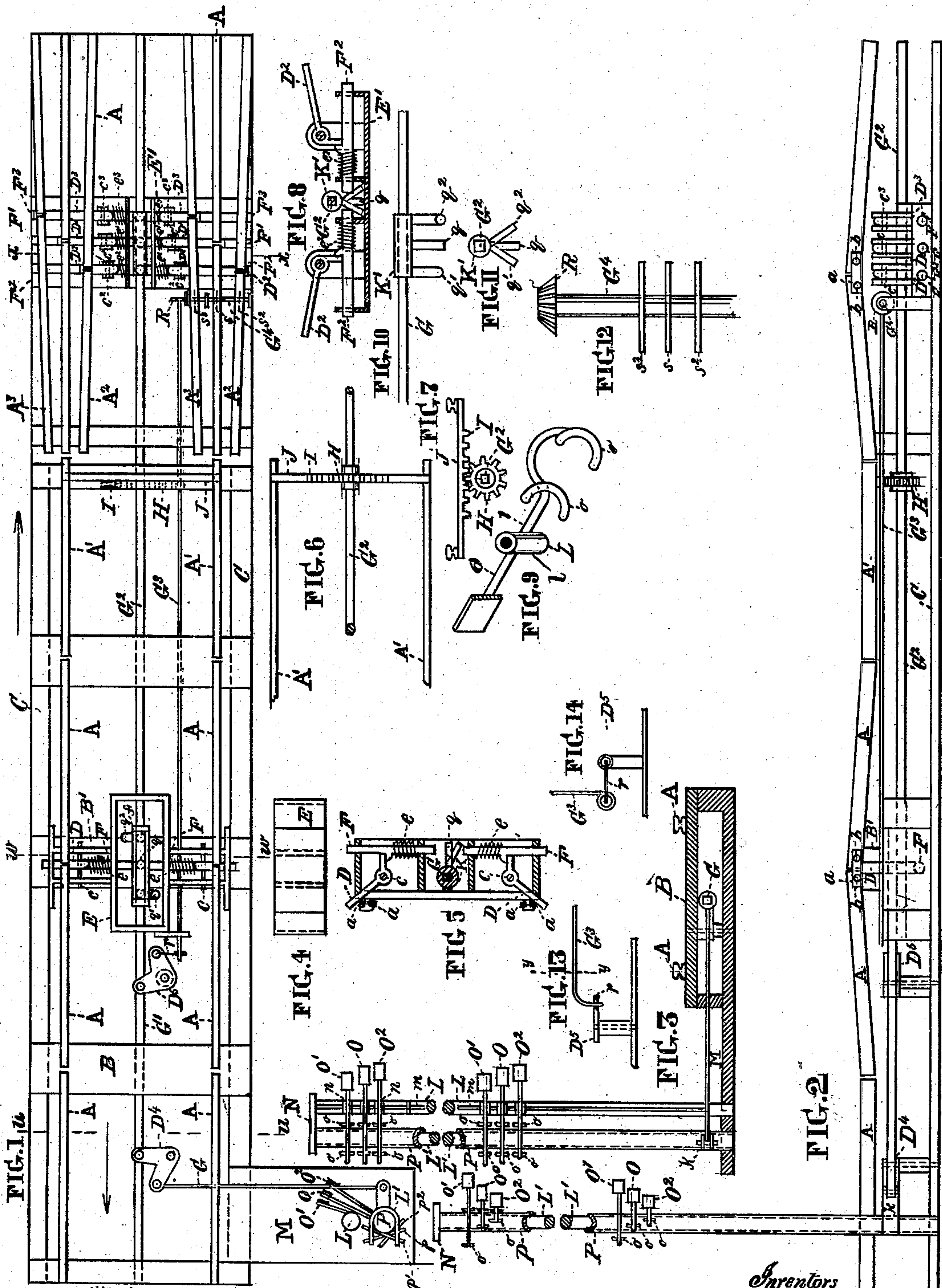
(No Model.)

2 Sheets—Sheet 1.

M. MARSHALL & H. J. McDEVITT.
RAILROAD SWITCH.

No. 258,090.

Patented May 16, 1882.



Witnesses
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(No Model.)

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FIG. 15

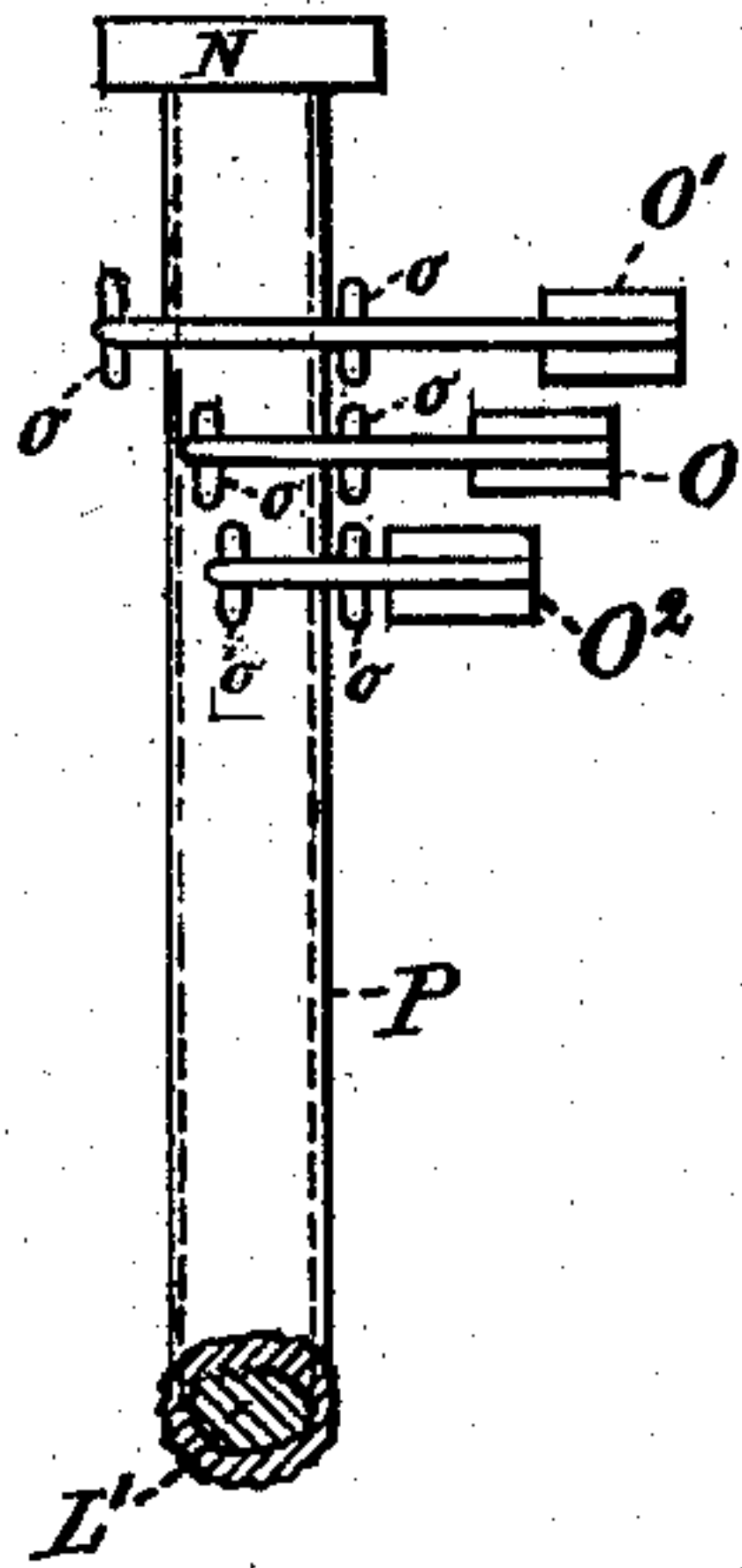


FIG. 16

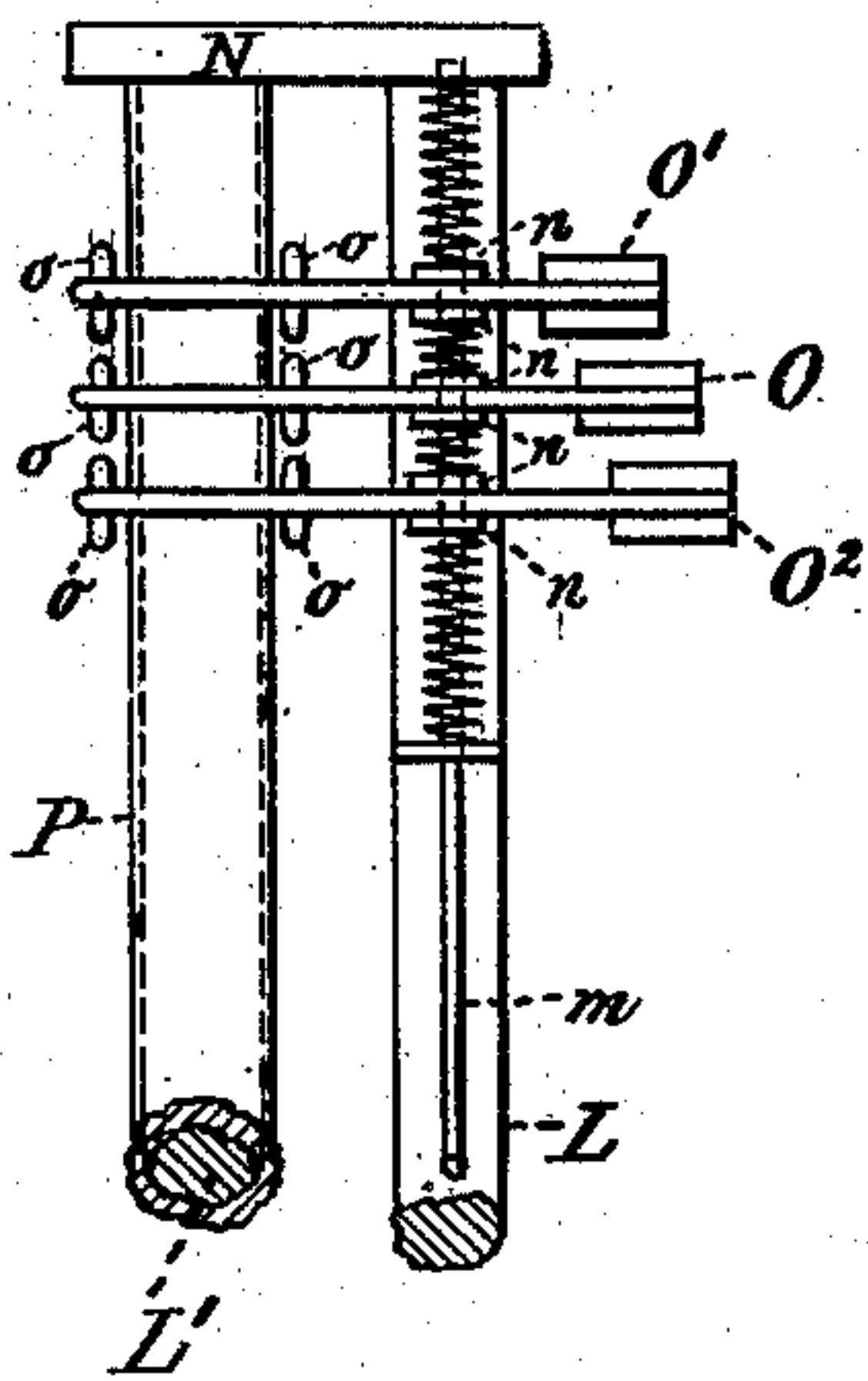


FIG. 17

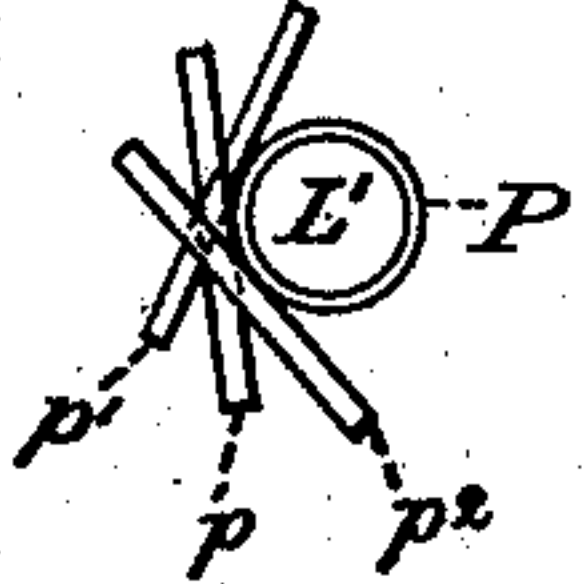


FIG. 19

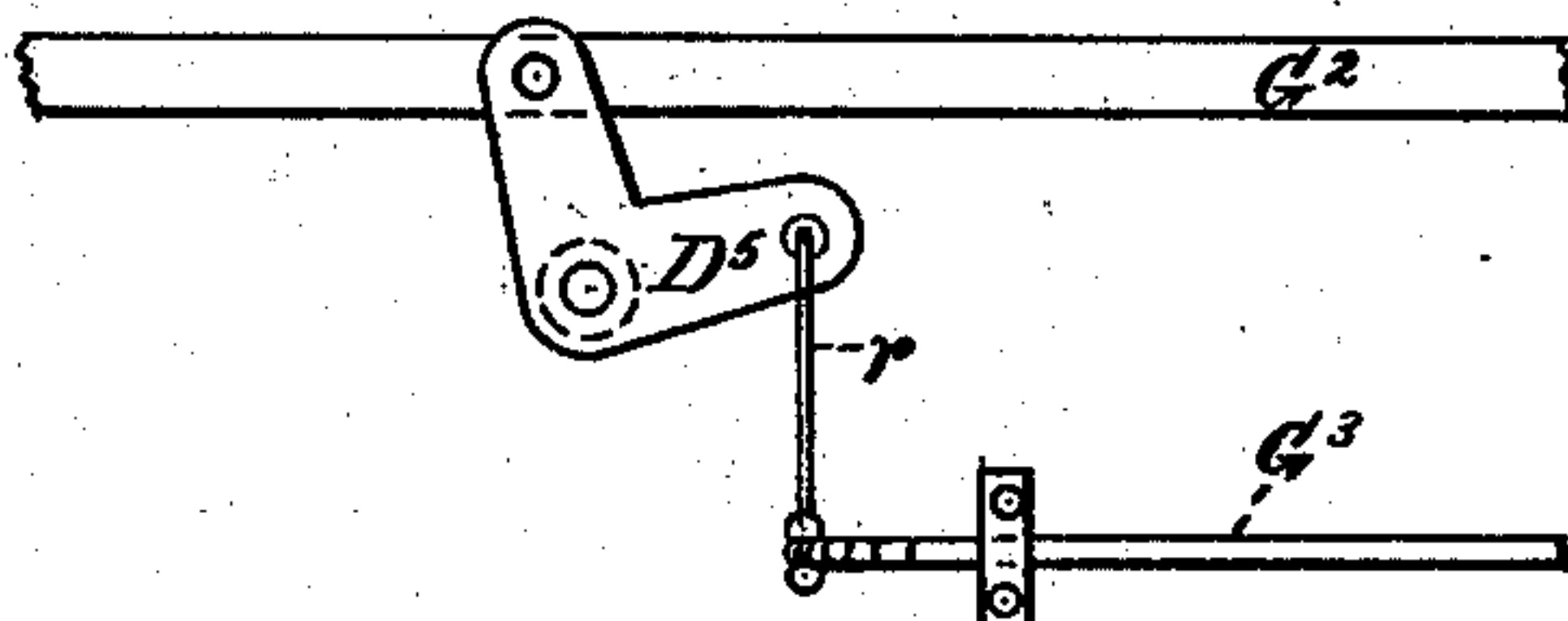


FIG. 18

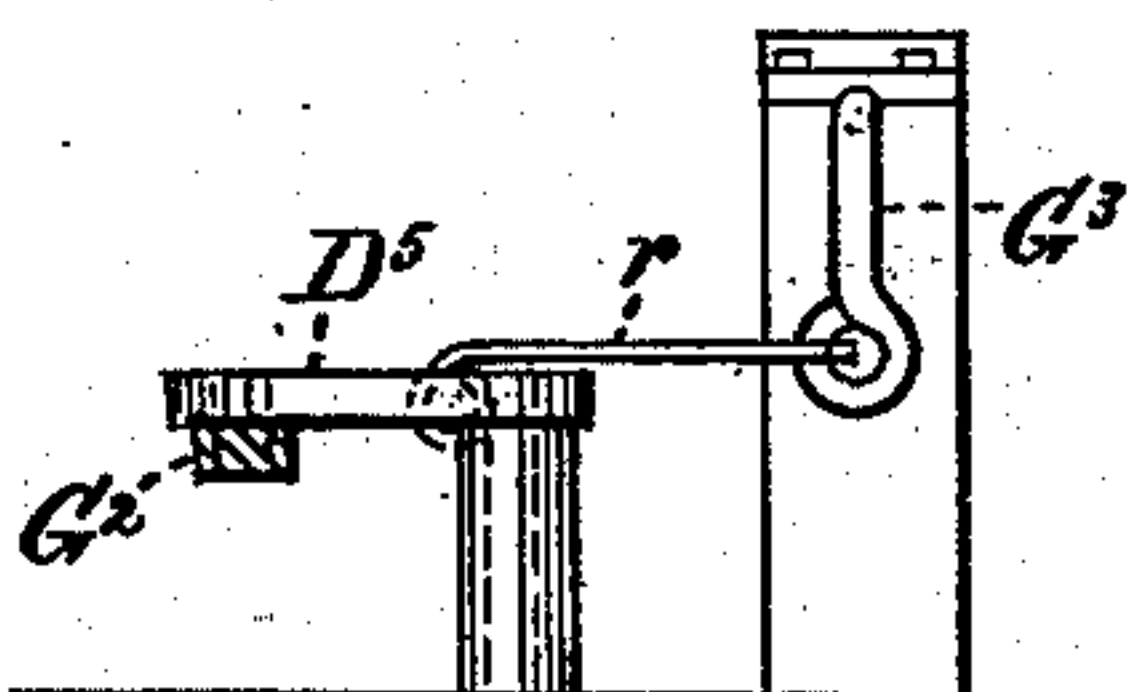
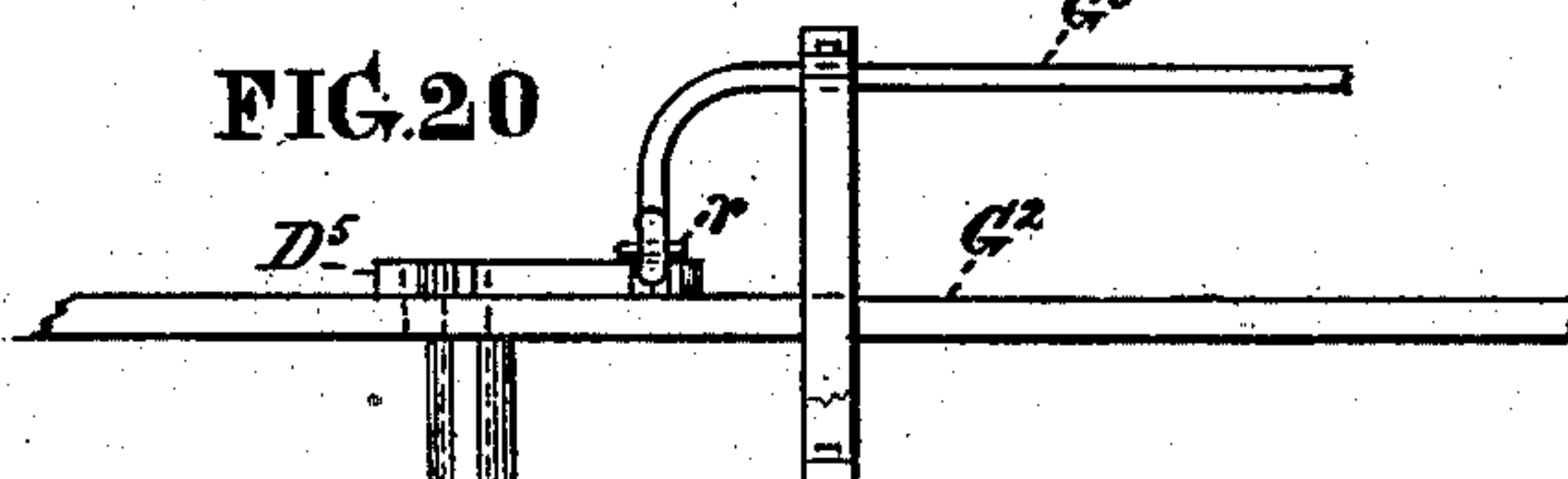


FIG. 20



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UNITED STATES PATENT OFFICE.

MARTIN MARSHALL AND HUGH J. McDEVITT, OF PHILADELPHIA, PA.

RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 258,090, dated May 16, 1882.

Application filed September 24, 1881. (No model.)

To all whom it may concern:

Be it known that we, MARTIN MARSHALL and HUGH J. McDEVITT, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Operating Railroad-Switches, of which the following is a specification.

The nature of our invention consists in the combination of inclined rails with the switch and intermediate devices, hereinafter described, whereby the weight of the train over the inclined rails causes them to descend and operate the switch to bring it into connection with either of a number of tracks at the junction, the devices being set by other devices (fully explained hereinafter) by means of key-levers when the train is running over the main track provided with said inclined rails toward the switch, the key-levers being under the control of either the brakeman, engineer, or a person on top of the train, at pleasure. When the train is running in the opposite direction the switch is automatically set by the weight of the train in passing over similar inclined rails of any one of the junction-tracks operating intermediate devices, as hereinafter fully described.

In the accompanying drawings, making a part of this specification, Figure 1 is a plan view of a main track and a switch connected with other tracks. Fig. 2 is a side elevation of the same. Fig. 3 is a cross-section at the line *u u* of Fig. 1. Fig. 4 is a side view of the stationary frame E. Fig. 5 is a vertical section thereof, and parts attached, at the line *w w*. Fig. 6 is a bottom view of the switch-rails A' and parts attached. Fig. 7 is an end elevation of the same. Fig. 8 is an elevation, on an enlarged scale, of the frame E', and parts attached, at the line *x x* of Fig. 1. Fig. 9 is a perspective view, on an enlarged scale, of one of the key-levers, O. Fig. 10 is a side elevation of the three-pronged key K and part of the rod G² connected. Fig. 11 is an end view of the same. Fig. 12 is a plan view, on an enlarged scale, of the rod G⁴, having a wheel, B. Fig. 13 is a side view of the rod G in connection with the bell-crank lever D⁵ by means of the horizontal link *r*. Fig. 14 is an elevation at the line *y y* of Fig. 13. Fig. 15, Sheet No. 2, is a side ele-

vation of the tube P, levers O, O', and O², on an enlarged scale. Fig. 16 is a view of the same at right angles thereto, having the post L in combination therewith. Fig. 17 is a top view of the post L', tube P, and rods *p*, *p'*, and *p*². Figs. 18, 19, and 20 are respectively end, top, and side views of the lever D⁵, rods G², G³, and link *r*, in combination.

Like letters of reference in all the figures indicate the same parts.

In the drawings we have represented the switch in line with the main track, and have shown two tracks and siding by way of illustration; but it will readily appear that a like combination may be made with any other desirable number of roads or sidings in the same manner. The main track has rails A connected with cross-ties B and string-pieces C, in the usual manner, except some of the rails that are adapted to rise and fall, as hereinafter described, which are connected in a modified manner.

At the point *x*, at each side of the main track, the contiguous ends of two rails are jointed to the cross bar or tie B' by means of the straps *a* and pivots *b*, Fig. 2, so as to admit of these rails being brought to an inclined position by means of the horizontal arms of bell-crank levers D D, Fig. 5, connected by means of the fulcrum-pins *c c* with the stationary frame E, which is provided with horizontal rods F F, having lugs *d*, that are pressed upon the vertical legs of said levers by means of the springs *e*, which surround the rods. There are similarly-jointed rails A beyond the switch-rails A', forming a continuation of the main track, connected with the frame E' by means of levers D' D', fulcrum-pins *c'*, rods F', and springs *e'*, and the two connecting-tracks, having jointed rails A² and A³, are connected with said frame E' in the same manner, the one, A², by means of the levers D², fulcrum-pins *c*², rods F², and springs *e*², and the rails A³ by levers D³ D³, fulcrum-pins *c*³ *c*³, rods F³, and springs *e*³. A key, K', on the rod G² is combined with these parts.

For operating the switch when the train is running in the direction of the arrows there is a connection made with the horizontal rod G at right angles to the track, and the longitudinal rod G' by means of the bell-crank lever

D⁴, and the said rod G' with the longitudinal rod G² by means of the sockets *f* of the rod G' sliding freely on the rod G², so as to admit of the longitudinal movement of the rod G' without interfering with the longitudinal position of the rod G². The latter rod is provided with a toothed wheel, H, which gears into the rack I on the under side of the cross-bar J, which connects the outer ends of the switch-rails A' A', so that by a partial turn of the rod G² the switch-rails may be brought into connection with either the sectional rails A of the main track or the rails A² or A³ of the side or branch tracks. The accurate setting of the switch is determined by means of the three-pronged key K, which has a square socket connected with the shaft G² and between the sockets *f* of the rod G', so that either prong may be brought into line and between the horizontal arms F F, which are actuated by the bell-crank levers D D, as may be required, for a partial turn of the rod G² for setting the switch-rails, the said device being moved longitudinally on the rod G², on which it slides, by the action of the bell-crank lever D⁴ on the rod G'.

L and L' are stationary vertical rods, connected at their lower ends with the bed-plate M and at their upper ends with the cap-plate N to give permanency thereto. With these rods are connected two series of lever-keys, O, O', and O², the lower set to be operated by the brakeman on one of the platforms of the train or by the engineer, and the upper set, in case of necessity, when the lower set of keys are not operated, by a man on top of the train.

Surrounding the rod L' is a tube, P, which is adapted to turn partially thereon, and at the lower end of the tube there is an arm, *k*, which is jointed to the outer end of the horizontal rod G, as shown in Figs. 1, 2, and 3. The key-levers O, O', and O² are connected by means of their hubs *l* with the vertical rod *m*, which passes through the lugs *n* on one side of rod L and acts as a fulcrum for each set of levers. These levers are curved at their outer ends, and have curved cross-rods *o o* on their outer ends, which are adapted to bear upon the cross-rods *p*, *p'*, and *p²*, connected permanently to the tube P to bring the latter accurately to certain positions, the outer ends of the levers having their curves of such form as to avoid touching the tube. The cross-rod *p* of the tube is so arranged that when the lever O has turned the tube P far enough to bring both curved rods *o o* to bear against the cross-rod *p* of the tube, and thereby prevent its further movement, the arm *k* of the tube has moved the rod G far enough to give the proper movement to the bell-crank D⁴ to give such longitudinal movement to the rod G' as to carry the key K into such position that its prong *q* shall be in line with the rods F F in the frame E. The said prong, when so arranged for further action, is to one side of the vertical plane of the rods G' and G², so

that when the inclined rails A of the track are brought to their horizontal position by the weight of the passing train the contiguous leg of the lever D on that side of the track by pressing inward the rod F until said prong has reached its perpendicular position, (seen in Fig. 5,) is held between the inner end of the rods F F until the rails are relieved of the weight of the train. By this action on the prong *q* the key turns the rod G² far enough around on its axis to move the outer end of the switch by the action of the gear-wheel H upon the rack I to the proper position to come into line with the rails A of the continuation of the main track. As the train passes on off the inclined rails at the point *x* the springs *ee* on the horizontal rods F F, in forcing said rods outward from the center of the track, operate the levers D, inclining their horizontal arms upward, and thus raise the rails A to their inclined position. If the switch is required to be brought into connection with the track having rails A², the lever O' is operated in like manner, thereby bringing the prong *q'* into line with the rods F F, and the weight of the train, in passing over the inclined rails A, produces a like movement upon the intermediate parts connected with the switch, and thereby brings it into connection with said rails A²; or when it is required to bring the switch into connection with the track having rails A³ the lever O² is operated, whereby the prong *q²* is brought into line with the rods F F, and a like operation is effected to bring the switch into connection with the rails A³. When a train is running in the opposite direction over either of the tracks the levers D' D', D² D², and D³ D³ are operated in the same manner, respectively, by the weight of the train, whereby the key K', in the same manner as the key K, is moved as above described, as the rods F', F², and F³ respectively press the prongs *q*, *q'*, and *q²* to a vertical position, and the prongs of this key being arranged in the same lateral position as the same prongs of the key K, in being brought to this position respectively, the switch, by the action of the gear-wheel H, is brought into connection with track at the junction the train is running on.

For setting the key K to correspond with the position of the key K' as brought by the action of the train in running from either track, there is a combination of the longitudinal rod G³ with the rod G' at one end and with the rod G⁴ at its other end, it being connected with the rod G³ by means of link *r* and bell-crank lever D⁵, and with the rod G⁴ by means of the miter-wheels R R. The rod G⁴ is provided with cross-rods *s*, *s'*, and *s²*, arranged crosswise with and permanently confined to said rod beneath one of each rails A, A², and A³, respectively, and at such angles that the weight of the train in giving descent to these inclined rails in bringing them to their normal position shall turn the rod G⁴ in the proper direction to give the right longitudinal movement to the

rod G' for setting the key K in the same position as the key K' has just been set by the means above described for running the train from the siding onto the main track and in the opposite direction to that indicated by the arrows. This is a very important point, as both keys are set by the same means when the trains run in the direction of the arrows, as fully hereinbefore described; and hence if the keys were in different positions the switch could not be properly set to any of the junction-tracks.

We claim as our invention—

1. The combination of the hinged rails A with the switch-rails A', having a rack, I, by means of the intermediate levers, D, rods F, springs e, and rod G', having a toothed wheel, H, whereby the said rails A, when caused to descend from their inclined to their normal horizontal position by the weight of a train passing over them, shall so move the said intermediates as to operate the switch-rails A', substantially as described.

2. One or more levers, O, constructed substantially as described, and so arranged as to be in reach of the brakeman of a passing train, in combination with the tube P, or equivalent device, having a rod or rods, p, and arm k for setting switch-keys, substantially as described.

3. The key-levers O, in combination with the vertical rods or posts L L' and tube P, substantially as described, the levers being arranged in such proximity to the railroad as to be operated by an employé on a passing train, substantially as and for the purpose set forth.

4. The combination of the vertical rod or post L, provided with levers O, O', and O², and rod or post L', having a tube, P, provided with cross-rods p, p', and p², and an arm, k, with the rod G, bell-crank lever D⁴, and rod G', having a three-pronged key, K, substantially as described, and for the purpose set forth.

5. The combination of the bell-crank levers D D, rods F F, and springs e e, with the key K and jointed inclined rails A, substantially in the manner and for the purpose set forth.

6. The combination of the longitudinal rod G², having a gear-wheel, H, with the rod G', having a key, K, and a switch having rails A' A' and toothed rack I, substantially in the manner and for the purpose above set forth.

7. The combination of the bell-crank levers D', D², and D³, rods F', F², and F³, and springs e', e², and e³, with the rod G², having a key, K², and the inclined rails A, A², and A³, substantially as described, for operating the switch when the train is passing from the connected track onto the main track.

8. The combination of the rod G³ with the rod G', having a key, K, and the rod G⁴, having rods s, s', and s², substantially in the manner and for the purpose set forth.

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