

J. C. PAST.

Self Adjusting Switch.

No. 8,128.

Patented June 3, 1851.

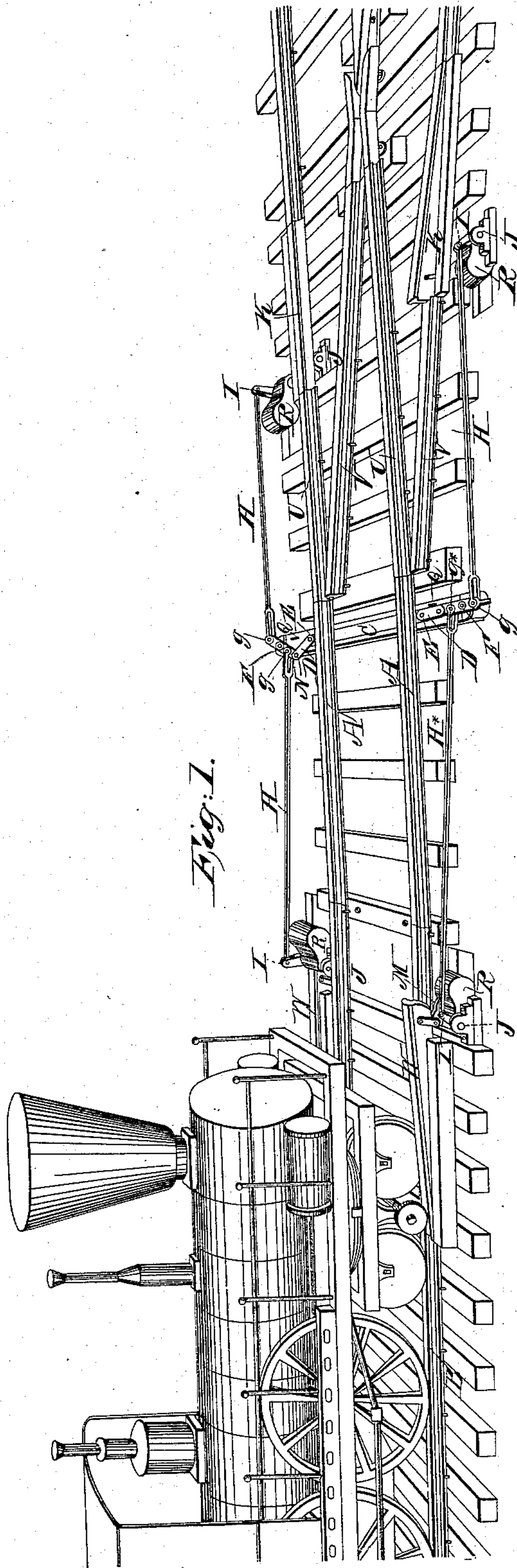


Fig. 1.

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Fig: 5.

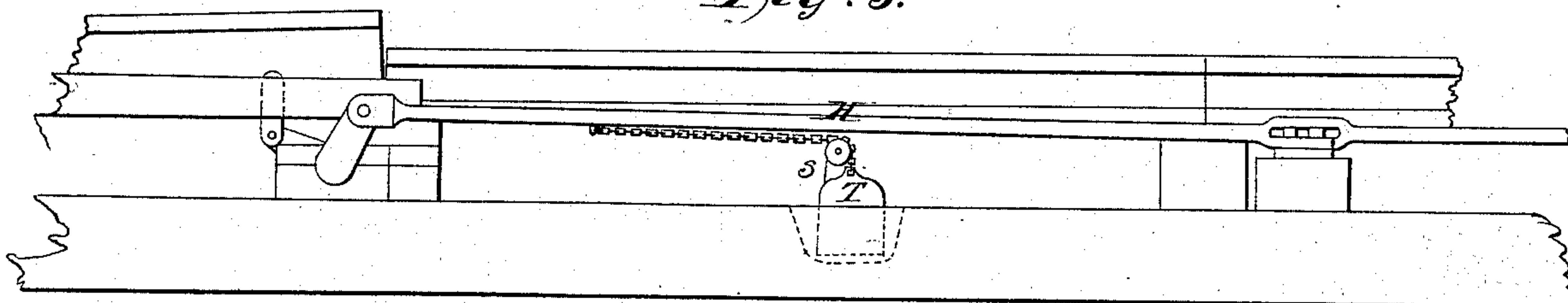


Fig: 2.

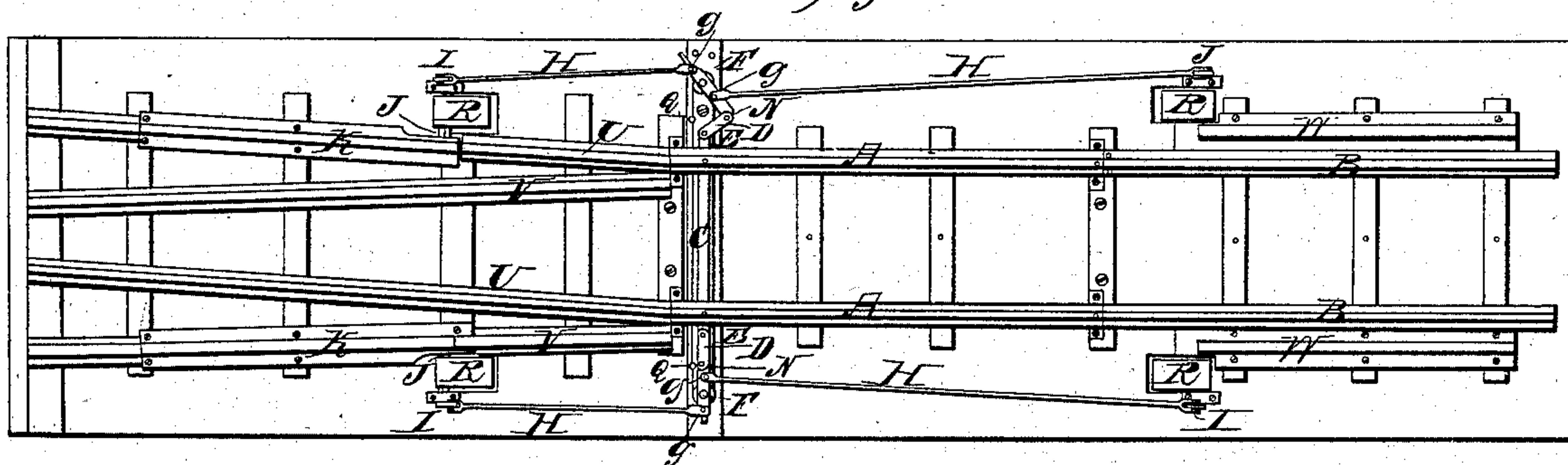
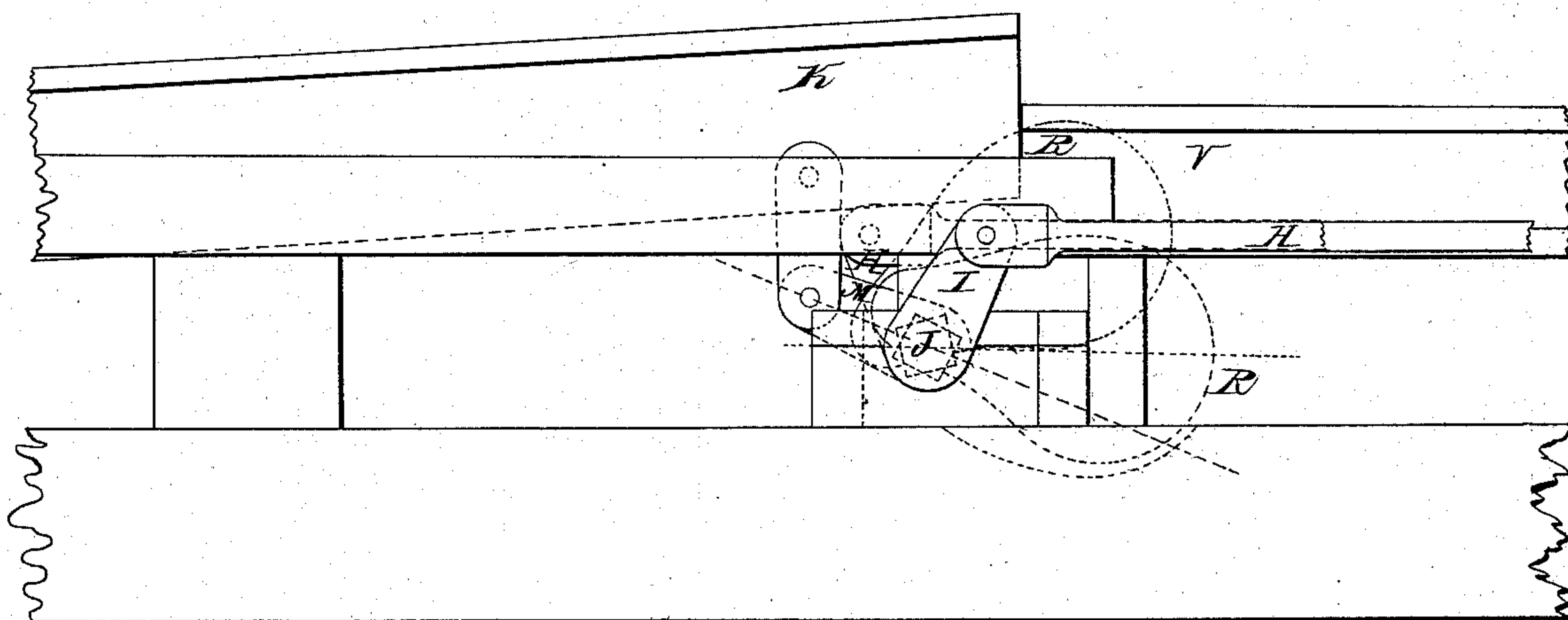


Fig: 3.



Fig: 4.



UNITED STATES PATENT OFFICE.

JOHN C. PAST, OF WHITE HAVEN, PENNSYLVANIA.

SELF ADJUSTING AND LOCKING SWITCH FOR RAILROADS.

Specification of Letters Patent No. 8,128, dated June 3, 1851.

To all whom it may concern:

Be it known that I, JOHN C. PAST, of White Haven, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Self-Adjusting Switches for Railroads; and I do hereby declare the following is a full and exact description thereof, reference being had to the accompanying drawings and the letters marked thereon forming a part of this specification, and in which Figure 1 is a perspective view of a rail road and locomotive, representing one of the forms in which my improvements may be applied, and is not intended so much to represent an exact view of the improvements, as a general view of the action of the whole combination, Fig. 2 is a top view or plan of the road, in which the position of the various parts is correctly delineated, Fig. 3 is a side elevation showing the relative position of the counterpoise weights, and Fig. 4 an enlarged view of the counterpoise weights, a section of the movable rails or treadles and the relative position of the arms of the rock shafts and the counterpoise weights. Fig. 5 is another arrangement which may be used in place of the one hereinafter described.

The nature of my invention consists in providing certain counterpoise weights or counterbalances (or their equivalents) upon the rock shafts on which the movable rails or treadles act, in combination with toggle levers, arranged with the other parts of the contrivance as hereinafter described, so that a secure lock to the switch, when moved into the desired position, is established and maintained, thereby rendering it not liable to be displaced by the oscillation or jarring of the cars, and a switch is produced which can be operated or shifted with certainty by the weight of the cars. The object accomplished by the counterpoise weights is the forcing of the toggle levers a little over the center and against the stops Q Q in which position they form the lock upon the switch, for after the cars have passed over the treadles or movable rails, if it were not for the counterpoise weights there would be a spring or reaction which would throw the toggle lever out of position and destroy the whole security of the machine, by render-

ing the switch liable to displacement by the oscillation of the cars.

The switch A and the tracks B U and V are made in the usual manner but I have found from experiment that it is the best manner of constructing my self adjusting switches to connect the rod C of the switch at each end to a toggle lever of the form exhibited at D, D, which toggle levers turn upon their fulcrums F F freely, said fulcrums being securely attached to the main bed timber or tie, in such positions as just to admit of the switch moving the proper distance while the toggle is moving from a right line into the angular position it assumes when the other toggle is in line.

To the outer or long arms of the toggle levers D, D, are united by joints or hinges at g, g, g, g, the connecting rods H, H, H, H which extend to the arms I, I, I, I, of the rock shafts J, J, J, J, to which rock shafts the counterpoise weights are attached, the other arms M, M, M, M, are connected with the movable rails or treadles W, W, K, K, by links or connecting plates. The arms I, I, I, I, and M, M, M, M, of the rock shafts are set at right angles to each other, so that when the arm I is vertical the arm M of the same shaft will be horizontal, and the connections with the treadles and toggle levers are so arranged that the arms I, I, I, I, vibrate in and about equal on each side of a vertical line and the arms M, M, M, M, in arcs about equal on each side of a horizontal line. The counterpoise weights are attached to the rock shafts on the opposite side to the arms M, M, M, M, at an angle of about twenty degrees above a line drawn through the arm M, across the center of the rock shaft, and continued as shown in Fig. 4 by the red dot line, and are of sufficient weight to somewhat more than neutralize the tendency of the treadles to depress the arms M, M, M, M, by their gravity, the effect of the angular position of the counterpoise weights being such that they are horizontal and exercising their greatest force when the toggle lever with which they are more directly connected is nearly upon its center, or in a right line, and the power applied (upon the opposite side of the road) is insufficient to move it into its proper posi-

tion. The bearings of the rock shafts rest in pedestals securely attached to a part of the timber frame on which the whole machine rests, and to which the principal cross
5 sills of the road are united.

Since the parts connecting the treadles with the toggle levers are all similarly arranged a description of the action of one part will answer for the others also.

10 Now by a careful inspection of the arrangement of the several parts, as combined in the accompanying drawings, it will be perceived that the treadle W will press with about one-half its weight upon the arm
15 M of the rock shaft J and that this pressure if it were not counteracted by the gravity of the counterpoise weight would tend to draw, in the direction of the arrow, (Fig. 1) upon the arm I, the connecting
20 rod H* and the toggle lever D* at g^* , precisely in the same manner as when the treadle W is pressed upon by the weight of a car or locomotive, and hence would
25 tend to draw the toggle lever from its position against the stop and thus unlock the switch, because the lock depends upon the toggle resting against the stop, or in line. The object of the lock being to prevent the
30 oscillation of the cars, in passing over the switch from displacing it, as herein before stated.

To illustrate the operation of the switch we will suppose a train approaching in the direction indicated by the locomotive Fig.
35 1—when the guide wheel O runs upon the treadle W it will depress it, this again will depress the outer end of the arm M of the rock shaft, and communicate a rotary motion to the shaft; this causes the outer end
40 of the counterpoise weight to rise, and the arm I to move in the direction of the arrow, carrying with it the connecting rod H*, which by this means draws the toggle lever D* into the angular position and the
45 switch into line with the tracks V, V, and causes the toggle lever D to straighten, and here the counterpoise weight upon that side the track come into action and not only assist in lifting the treadles, but by means
50 of their pressure through the medium of the connecting rods upon the toggle D push

it against the stop Q and hold it there until pressure is applied to the treadles upon that side of the road, when the same operation
55 is repeated in an inverse direction.

The parts of the switch not hereinbefore described may be constructed as described in Letters Patent No. 1294 granted to me and dated August 21st A. D. 1839.

By having thus described what I consider 60 the best mode of constructing a self-adjusting railroad switch I do not mean to limit myself to this particular form or manner of applying my invention. On the contrary I have various modes of effecting the
65 same object. For example, a chain may be attached to the connecting rod H Fig. 5 and thence extend parallel to it, in the direction of the toggle lever, a distance equal to or greater than the motion of the rod, 70 and then fall over a pulley having its gudgeons in the upright S, to the end of which chain is attached a weight T heavy enough to retain the toggle against the stop—or a chain and weight or similar device may be
75 attached directly to the toggle lever near the angle and carried over a roller immediately behind the stop. Now as the tendency of the weights would be to throw the toggle levers too far it is necessary to pro- 80 vide some means of stopping them at the proper place, and this I effect by means of a pin Q or other like device placed in such position as to arrest the motion of the toggles as soon as they pass the center. Or the
85 toggles may be rule jointed to effect the same purpose.

Having thus fully described this form of self adjusting railroad switch, what I claim as my invention and desire to secure 90 by Letters Patent is—

The combination of the counterpoise weights R, R, R, R, or their equivalents, with the toggle levers D, D, and stops Q Q substantially as described, operating in the 95 manner and for the purpose herein substantially set forth and made known.

JOHN C. PAST.

Witnesses:

GEO. R. WEST,
H. H. YOUNG.