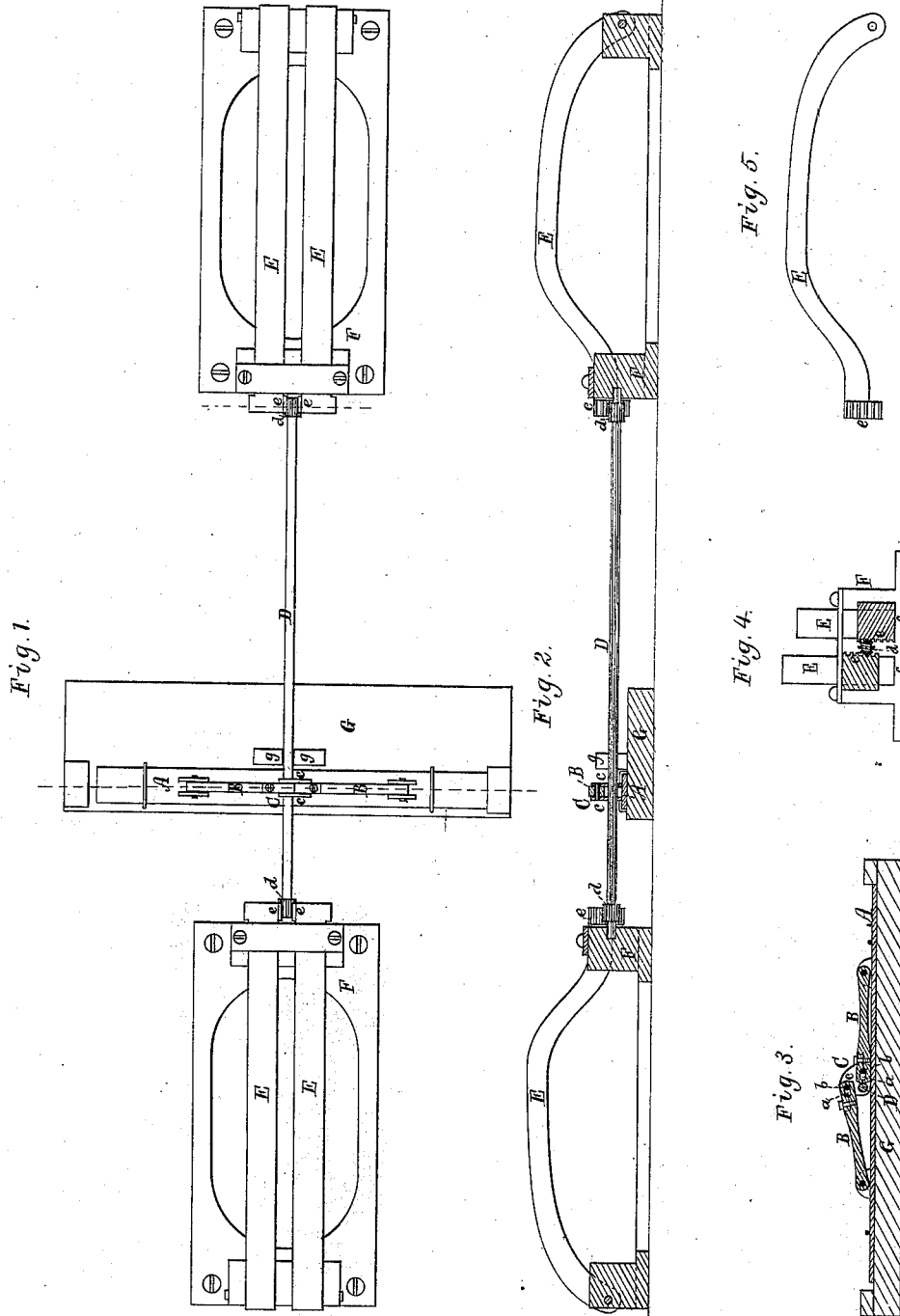


J. A. HEYL.
Mechanism for Operating Railway-Switches.
No. 219,095. Patented Sept. 2, 1879.

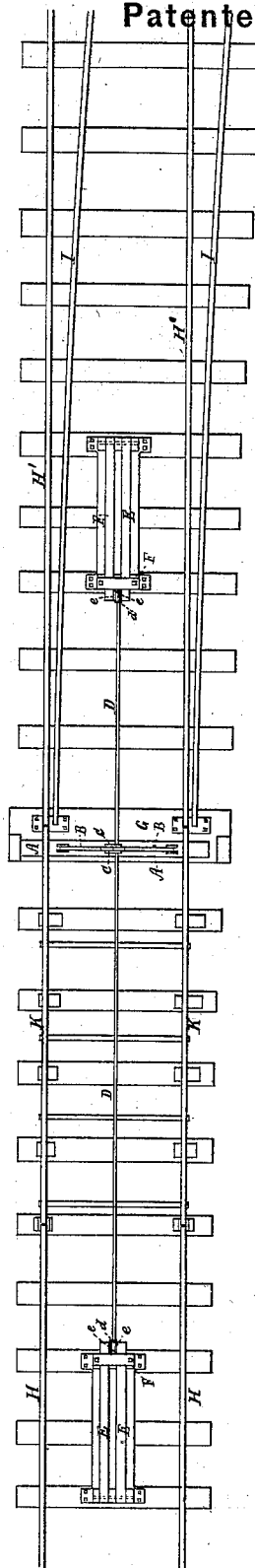


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Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN A. HEYL, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MECHANISMS FOR OPERATING RAILWAY-SWITCHES.

Specification forming part of Letters Patent No. **219,095**, dated September 2, 1879; application filed May 22, 1879.

To all whom it may concern:

Be it known that I, JOHN A. HEYL, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Mechanism for Operating the Switch of a Railway; and do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a longitudinal section, and Figs. 3 and 4 are transverse sections, of mechanism embodying my invention.

The plane of section of Fig. 3 is through the quadrantal or sectoral toggle, while that of Fig. 4 is through one pair of the depressor-racks and their intervening pinion, to be hereinafter described.

The nature of invention is defined in the claim or claims following the accompanying description.

The mechanism to be described is intended to be suitably arranged in a railway-track, and with respect to a switch thereof, to effect the movements of such switch from the main track to the turn-out, or the reverse, as may be required.

The two switch-rails are to be pivoted to the two longer toggles, or to a slide extending underneath and pivoted to them, such slide being shown at A, and the said toggles at B B, in Figs. 1 and 2. At their inner ends these toggles are bored or slotted, as shown at *a a*, to receive joint-pins *b b*, by which they are jointed to an intermediate quadrantal or sectoral toggle, C, which, at or near its center, is fixed on a long shaft, D. This quadrantal or sectoral toggle is composed of two metallic sectors, *c c*, of a circle, arranged at a proper distance apart to receive the toggles B B.

The shaft D, supported at its ends, and also between such, if necessary, by suitable bearings, has fixed on it, near its extremities, two small pinions or gears, *d d*, each of which engages with two toothed racks, *e e*, formed respectively on a pair of depressors, E E, which, in this case, are arched arms, arranged in and pivoted to a frame or carrier, F, in manner as shown.

Fig. 5 is an inner-side view of one of the depressors with its rack. There is to each gear a pair of such depressors, the two pairs, with

their carriers, being arranged in manner as represented. When one depressor of a pair is down upon its seat *f* the other will be raised or off its seat. In other words, when the quadrantal or sectoral toggle is resting upon the slide-plate below it one depressor of each pair of depressors will be down upon its seat and the other will be off its seat.

Close to the toggles the plank or base G, upon which the slide A is supported, is furnished with bearings or standards *g g*, disposed with respect to the shaft D in manner as shown, and serving to support it against lateral strain of the toggles.

Furthermore, it will be seen that when the sectoral toggle is resting on the slide the axis of such toggle and those of the joints of the depressed straight toggle will be in, or about in, a horizontal plane, whereby the slide will be locked, so as not to be accidentally moved in manner to move the switch out of engagement with the rails in alignment with which it may be.

The described mechanism for actuating a switch is intended to be put in operation by the conductor or engineer of a train or engine thereof while such may be passing over one pair of the depressors. To do this he is to depress from his engine or carriage a wheel or some proper substitute, which, while moving along upon one of the raised depressors of the pair, is to be caused to force such depressor downward, the fellow depressor being correspondingly and simultaneously elevated. This will cause the switch to be moved into alignment with the main track or the turn-out, as occasion may require.

In order for the engineer to know whether the switch may be right for him to pass it, it may have a target of the ordinary kind applied to it. Should he perceive by the target the switch to be properly set for the carriage or train to pass over it, he, of course, will not move down the switch-actuator; but should the target indicate it necessary to move the switch, such may be effected, as described.

It will be observed that, with the quadrantal or sectoral toggle, I am enabled, with but a quarter-revolution of the shaft, to effect either movement of the switch, whereas, were I to have a bell-crank in the place of the quadrantal

toggle the shaft would have to be revolved a half-revolution to effect such movement, and, as a consequence, a depressor to operate such crank would require to be depressed twice the distance it would when the quadrantal toggle is used. The advantage of the quadrantal or sectoral toggle over a crank will thus be apparent.

Fig. 6 of the accompanying drawings shows the above-described mechanism as arranged with respect to the switch and the main and turn-out tracks of a railway. In this figure H H and H' H' are the main-track rails, I I the turn-out rails, and K K the switch, the mechanism for operating the latter being indicated by letters, as in Fig. 1.

I claim as my invention as follows, viz:

1. The combination of the two pairs of racked

depressors, the shaft and its gears, and the quadrantal or sectoral and straight toggles, arranged and applied to each other substantially as set forth.

2. The combination of the two pairs of racked depressors, the shaft and its gears, the quadrantal or sectoral and straight toggles, and the slide, all arranged and applied substantially as set forth.

3. The combination of the stationary bearing or standards *g g*, with the shaft and its gears, the three toggles, and the two pairs of racked depressors, arranged and applied essentially as explained.

JOHN A. HEYL.

Witnesses:

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