

H. M. ABERNETHY.
RAILWAY SWITCH MACHINE.
APPLICATION FILED APR. 14, 1908.

959,039.

Patented May 24, 1910.

3 SHEETS—SHEET 1.

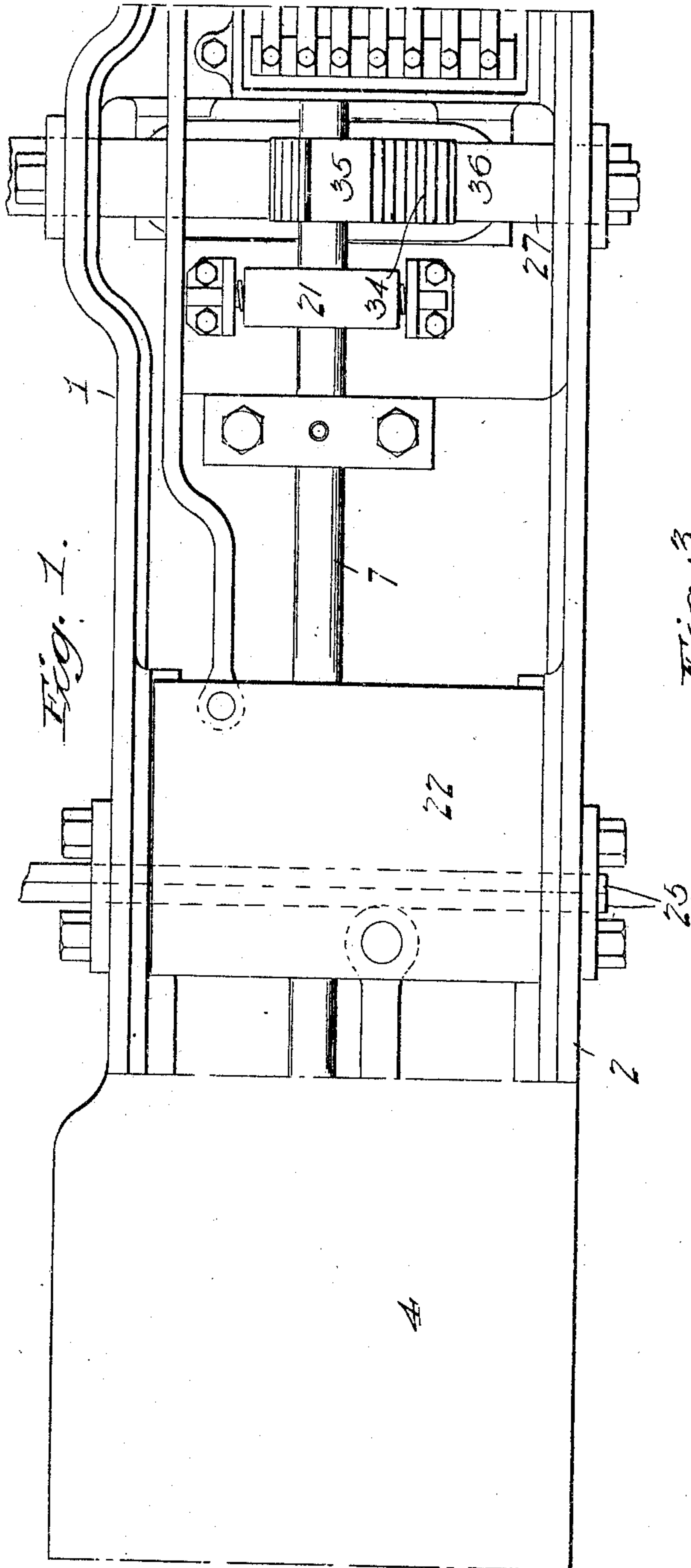


Fig. 1.

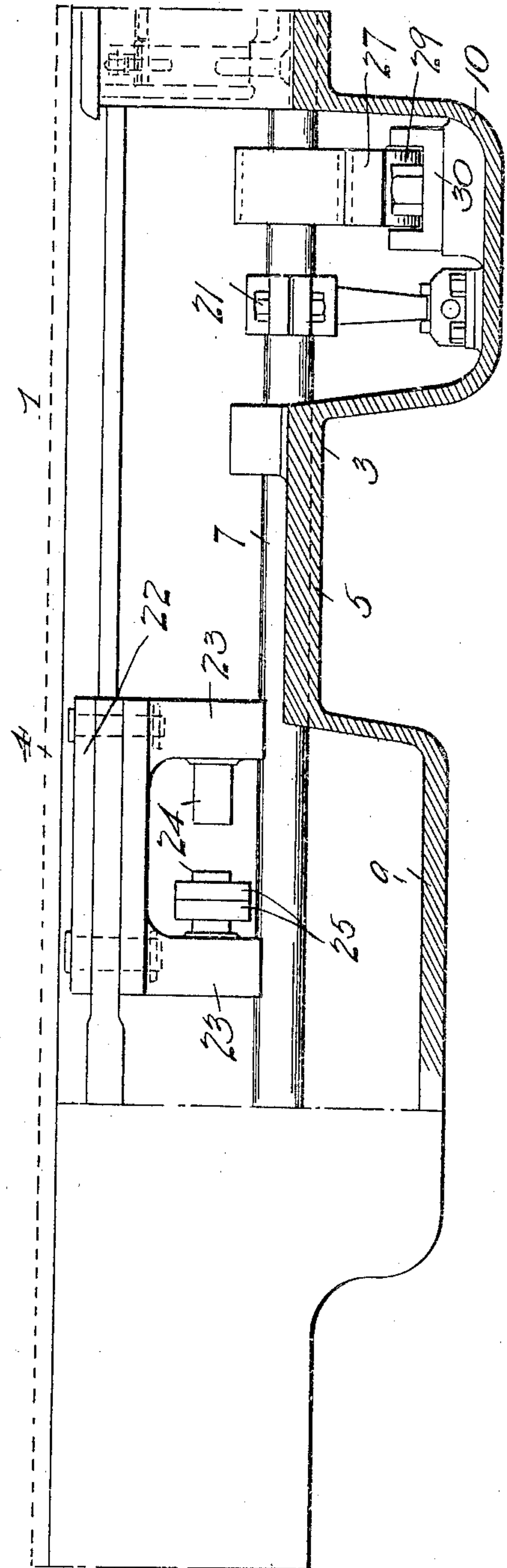


Fig. 3.

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5.

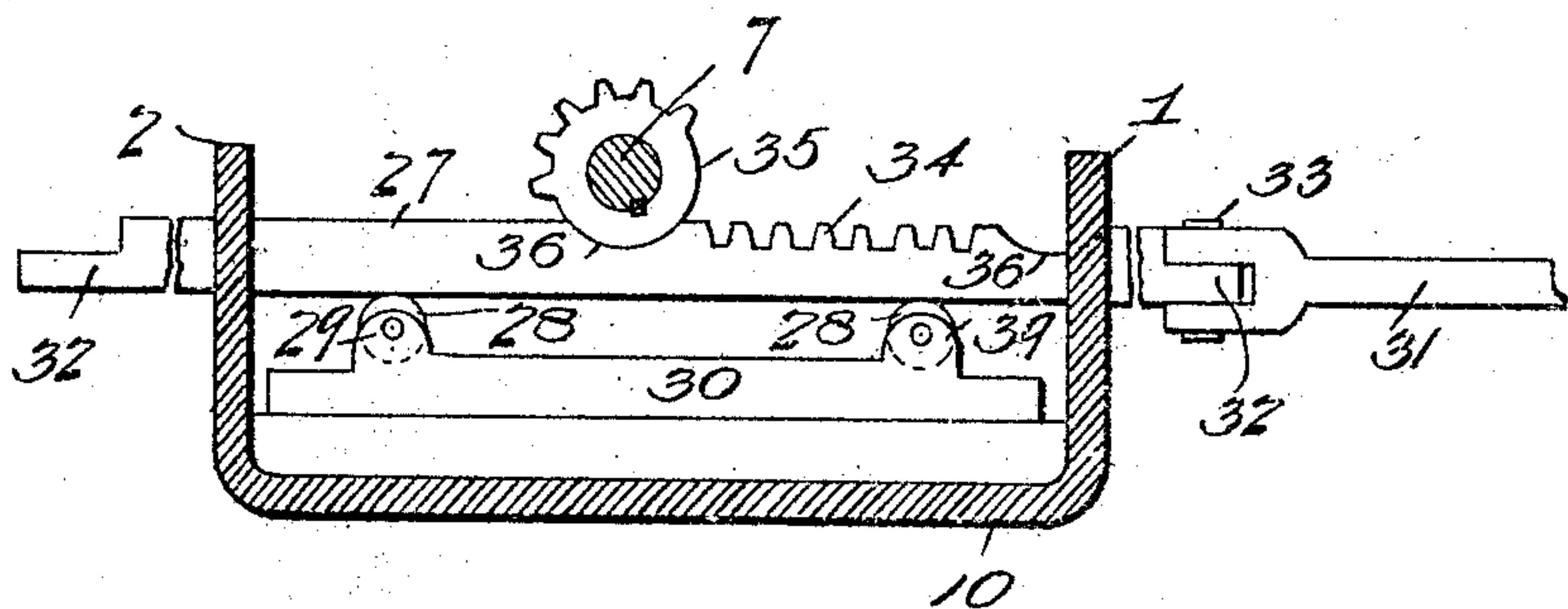


Fig. 6.

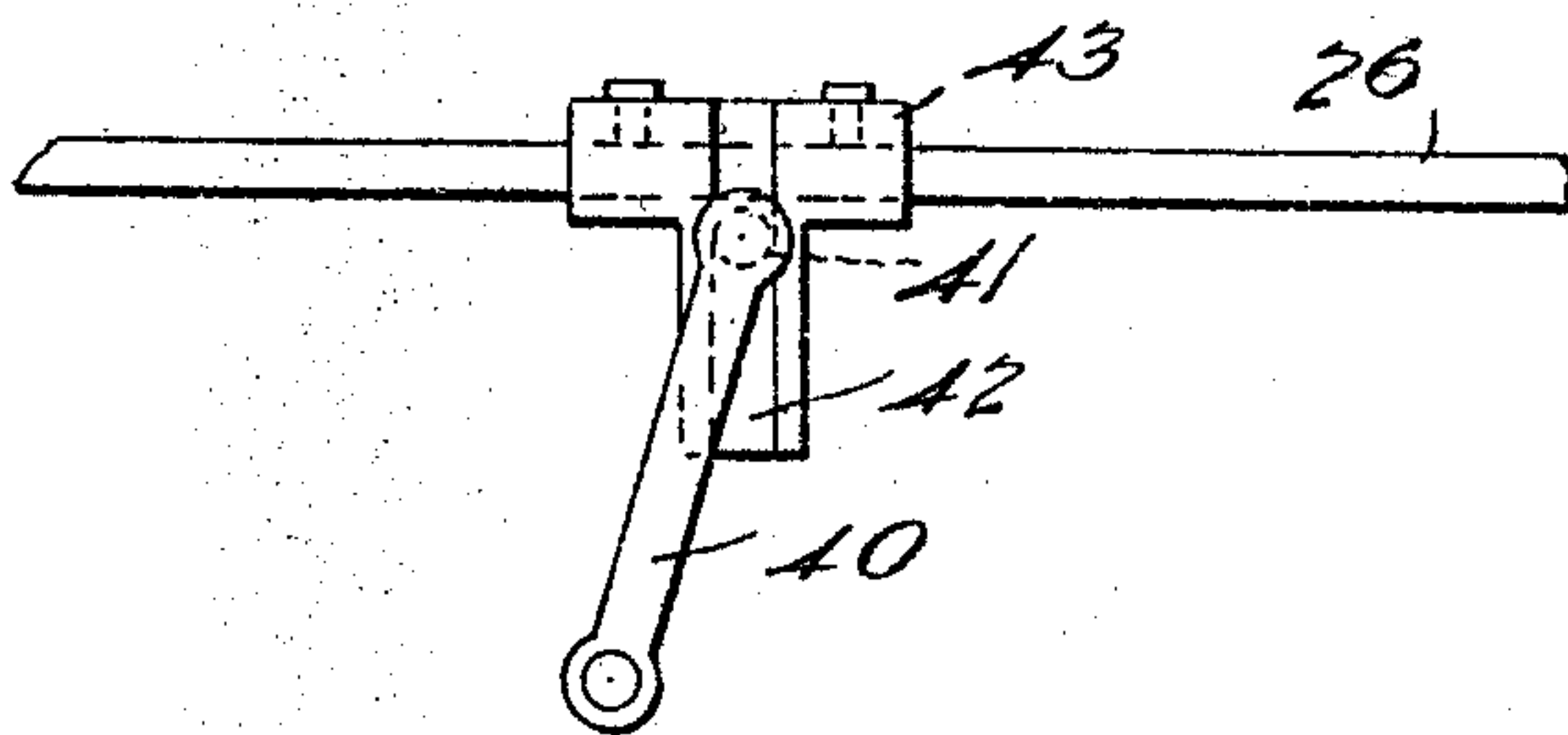
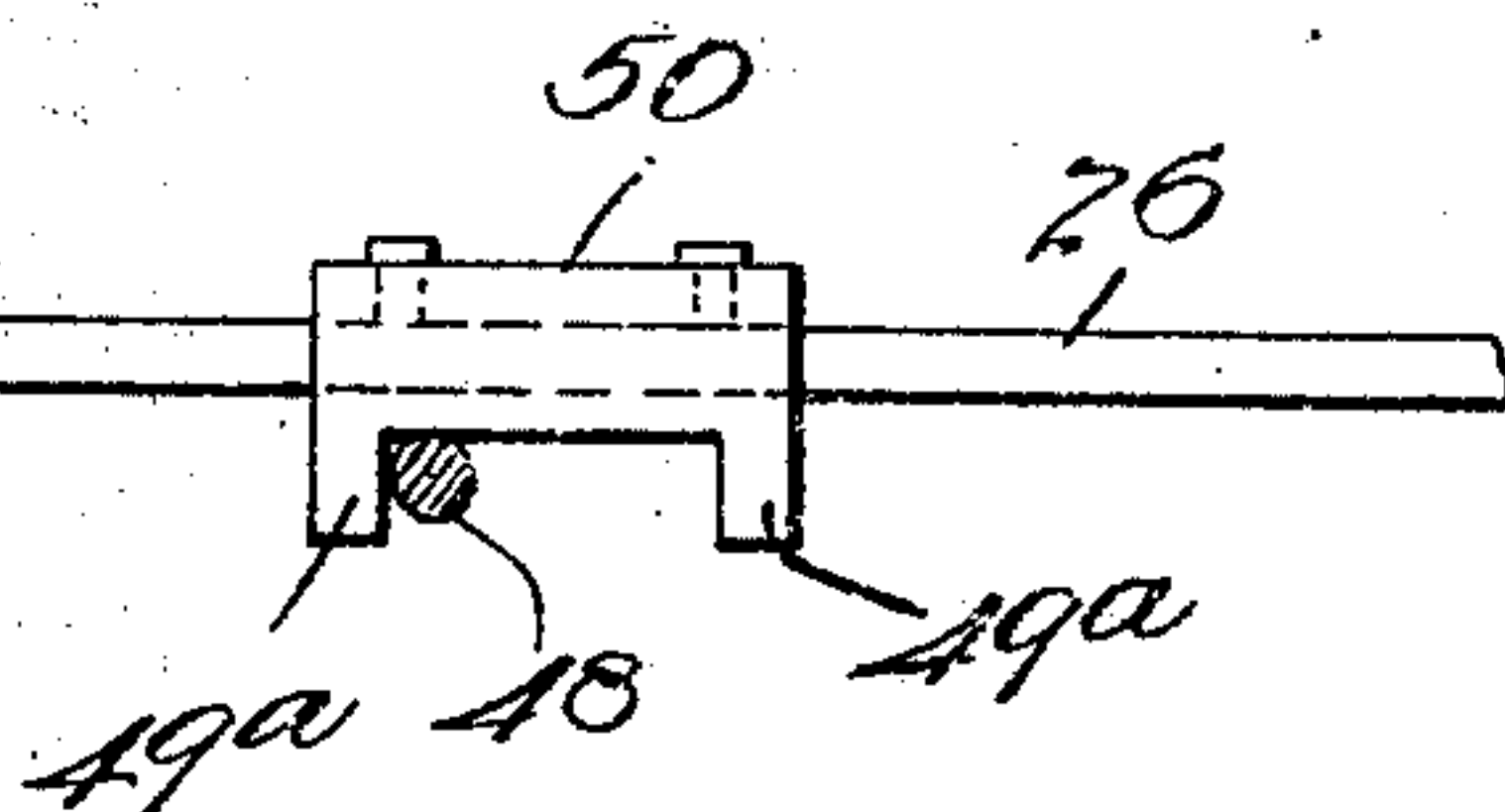


Fig. 7.



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UNITED STATES PATENT OFFICE.

HARRY M. ABERNETHY, OF CLEVELAND, OHIO.

RAILWAY-SWITCH MACHINE.

959,039.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed April 14, 1908. Serial No. 427,076.

To all whom it may concern:

Be it known that I, HARRY M. ABERNETHY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Railway-Switch Machines, of which the following is a specification.

This invention relates to railway switch machines, and one of its objects is, to provide a switch machine adapted to be located at the side of a railway track adjacent thereto, having a casing adapted to fit snugly between the ends of the railway ties, thus utilizing the spaces between the ties and reducing to the minimum the height of the casing and its projection above the level of the rails.

The invention also includes the relative arrangement within said casing of the various mechanisms required for the operation of the signals, and the novel construction of certain elements of said mechanism.

The construction of the improvement will be fully described hereinafter in connection with the accompanying drawings, which form a part of this specification, and its novel features will be set forth in the appended claims.

In the drawings—Figure 1 is a top plan view of a portion of a switch machine embodying the invention broken away at one end. Fig. 2 is a similar view of the other portion of a switch machine embodying the invention broken away through the motor casing at one end of the machine. Fig. 3 is a side elevation partly in section showing that portion of the machine shown by Fig. 1. Fig. 4 is a similar view showing that portion of the machine shown by Fig. 2. Fig. 5 is a transverse section through the casing of the machine showing the switch operating bar and its connections. Fig. 6 is a detail of the crank connection of the selector circuit employed, and Fig. 7 is a detail of the guide used in connection with a circuit closer.

The box or casing of the machine consists of sides 1 and 2 and a bottom 3 formed with a plurality of transverse depressions serving as compartments to contain the switch operating mechanism. The box is also provided with a water-tight top or cover 4 shown in dotted lines in Figs. 3 and 4. The elevated portions 5 of the bottom 3 are re-

cessed as indicated by dotted lines in Fig. 3 to accommodate longitudinal shafts 6 and 7.

I have shown the bottom 3 of the box provided with four compartments designated respectively by the numerals 9, 10, 11 and 12. To one end 13 of the box is secured a motor casing 14 adapted to contain an electric motor the shaft 15 of which is provided with a bearing 16 on the inner side of the end wall 13 of the box and is secured to one end of the shaft 6 by a universal joint 17. The opposite end of the shaft 6 carries a clutch member 18 cooperating with another clutch member 19 carried by the shaft 7, which latter is supported in suitable bearings 20 and 21 and revolves within the recesses formed in the bottom 3.

Above the compartment 9 of the box is arranged a switch-rod locking device comprising a plate 22 having depending parallel flanges 23 from opposite ends of which project pins 24, adapted to enter an opening formed in a rod or rods 25 connected to the switch point. The construction of this locking device constitutes the subject matter of a separate application for Letters Patent and is not therefore specifically claimed herein. The plate 22 is connected to one end of a bar 26 extending longitudinally of the box adjacent to one side thereof.

Within the compartment 10 of the box or casing and extending through openings in the sides thereof is a rack-bar 27 supported upon rollers 28 mounted on journals 29 having bearings in a block or casting 30. To one end of the rack-bar 27 is pivotally secured a switch operating bar 31, bifurcated or forked to embrace a lug 32 projecting from the rack-bar 27. The forks of the bar 31 and the lug 32 are formed with registering openings to receive a pin 33. Both ends of the rack-bar are provided with lugs 32, so that the switch-operating bar may be attached to either end of said rack-bar to provide either a right or left hand connection to the switch-point.

The upper edge of the rack-bar is formed with teeth 34 adapted to be engaged by the teeth of a mutilated gear 35, keyed to the shaft 7. The upper edge of the rack-bar is also provided on opposite sides of its teeth with semi-circular seats or recesses 36 to receive the smooth portion of the gear 35, thus affording a lock for the switch-operating bar, which is supplemental to the locking

device above described. The rack-bar is moved by the engagement therewith of the teeth of the mutilated gear when the shaft 7 is revolved.

5 Upon the bottom 3 between the compartments 10 and 11 is supported the selector mechanism of the machine, consisting of oppositely-disposed contact fingers 37 and an oscillating bridge 38 mounted upon a shaft 10 39 to one end of which is secured a crank 40 provided with a pin 41 guided within a groove 42, formed upon a T-shaped bracket 43 secured to the bar 26. Within the compartment 11 of the box is a friction clutch 15 18, controlled by differential gearing 45, the construction of which constitutes no part of the present invention. Upon the box bottom between the compartments 11 and 12 is supported a circuit controller connected to 20 the signal interlocking machine (not shown) and comprising contact fingers 46 and an oscillating bridge 47 mounted upon a shaft 48, one end 49 of which is extended to project between parallel flanges 49^a depending 25 from a plate 50 secured to the bar 26.

The numerals 51 and 52 designate oppositely-disposed solenoids arranged at either side of the circuit controller and connected by a link connection 53. Each of the solenoids is provided with a spring-controlled armature 54, mounted upon rods 55 supported by bracket bearings 56.

35 The construction as above described provides a compact machine occupying but little space and in which all of the various mechanisms required for operating and locking a switch are controlled from a single motor shaft.

40 Except as hereinafter claimed the specific construction of the elements of the machine is not material to the present invention which comprises the box casing, the relative arrangement of the several mechanisms, and the features of construction set forth in the 45 claims.

Having thus described my invention what I desire to secure by Letters Patent and claim is:—

50 1. A box or casing for railway switch machines, comprising sides, and a bottom provided with a plurality of depressions adapted to fit between railway ties and serving as compartments to contain mechanism.

55 2. A railway switch machine, comprising a box or casing having a bottom formed with a plurality of depending compartments, mechanism within said compartments, and a longitudinal shaft supported in bearings within the casing.

60 3. A railway switch machine, comprising a box or casing having a bottom formed with a plurality of depending compartments, each containing mechanism, a shaft disposed longitudinally of said box, and a motor casing at one end of said box.

4. A railway switch machine, comprising a box or casing having a bottom formed with transverse depressions serving as compartments, mechanism within said compartments, and mechanism supported upon the bottom 70 of the box between said compartments, and a revoluble shaft extending longitudinally of said box.

5. A railway switch machine, comprising a box or casing having a bottom provided 75 with transverse depending compartments, switch-rod locking mechanism arranged adjacent to one of said compartments, switch-bar operating mechanism within another of said compartments, clutch mechanism within 80 another of said compartments, electrical selector devices, and a circuit controller supported upon the box bottom, a longitudinally-disposed shaft, and a motor for revolving said shaft.

6. In a railway switch machine, a box or casing provided with transverse depending compartments, a revoluble shaft disposed longitudinally within said box, and a switch-bar operating device adapted to be moved by 90 said shaft.

7. In a railway switch machine, a box or casing, a revoluble shaft disposed longitudinally within said box, a mutilated gear secured upon said shaft and a rack bar 95 adapted to be engaged by said gear.

8. In a railway switch machine, a box or casing, a revoluble shaft disposed longitudinally within said box, a mutilated gear secured upon said shaft and a rack bar 100 adapted to be engaged by said gear and provided with depressions or seats on opposite sides of its rack teeth.

9. In a railway switch machine, a box or casing, a sliding plate supported within said 105 box, a bar secured to said plate, a selector having an oscillating bridge, and means for moving said bridge by the movement of said bar.

10. In a railway switch machine, a box or 110 casing, a sliding plate supported within said box, a bar secured to said plate, a selector having an oscillating bridge, and means for moving said bridge by the movement of said bar, comprising a crank secured to the piv- 115 otal support of the bridge, a pin projecting from said crank, and a vertically grooved bracket for guiding said pin, secured to said bar.

11. In a railway switch machine, a box or 120 casing, a sliding plate supported within said box, a bar secured to said plate, a circuit controller having an oscillating bridge, and means carried by said bar for operating said bridge.

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