

No. 760,054.

PATENTED MAY 17, 1904.

W. S. BOYD, 3D.
RAILWAY SWITCH.
APPLICATION FILED JUNE 11, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

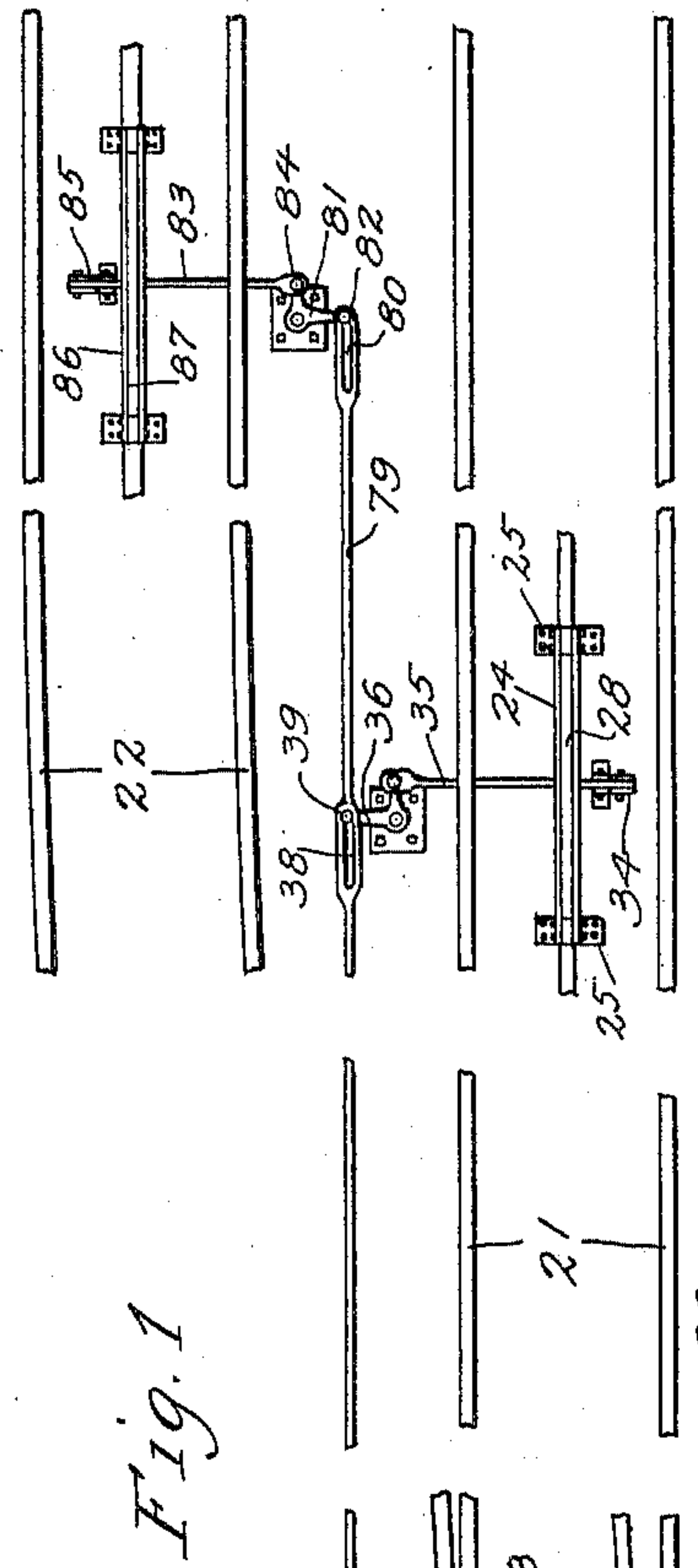


Fig. 1

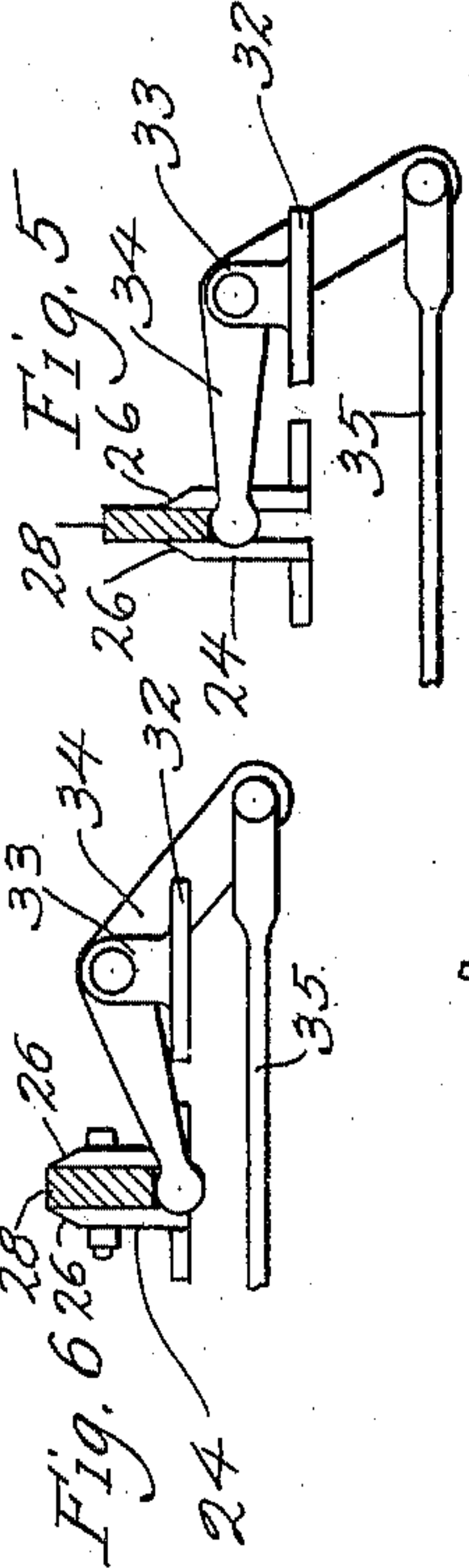


Fig. 2

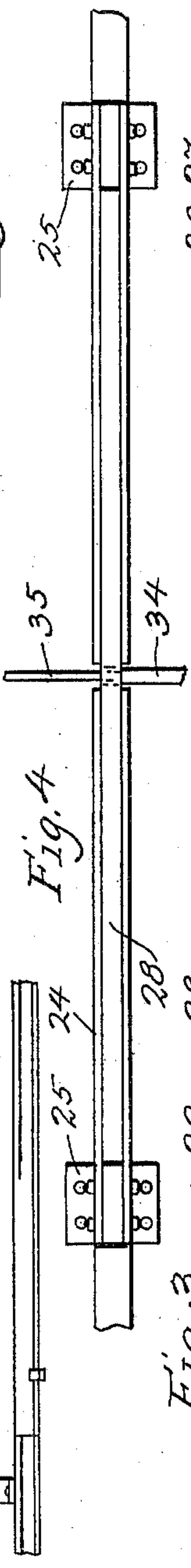


Fig. 3

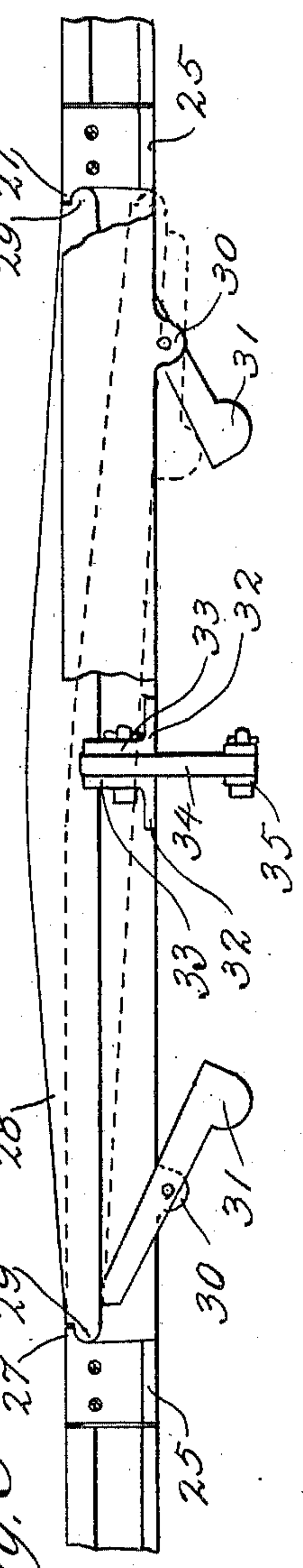


Fig. 4

Witnesses
B. N. Piene
H. C. Burgers

Inventor
William S. Boyd 3rd
by
Knight Bros
Attys.

No. 760,054.

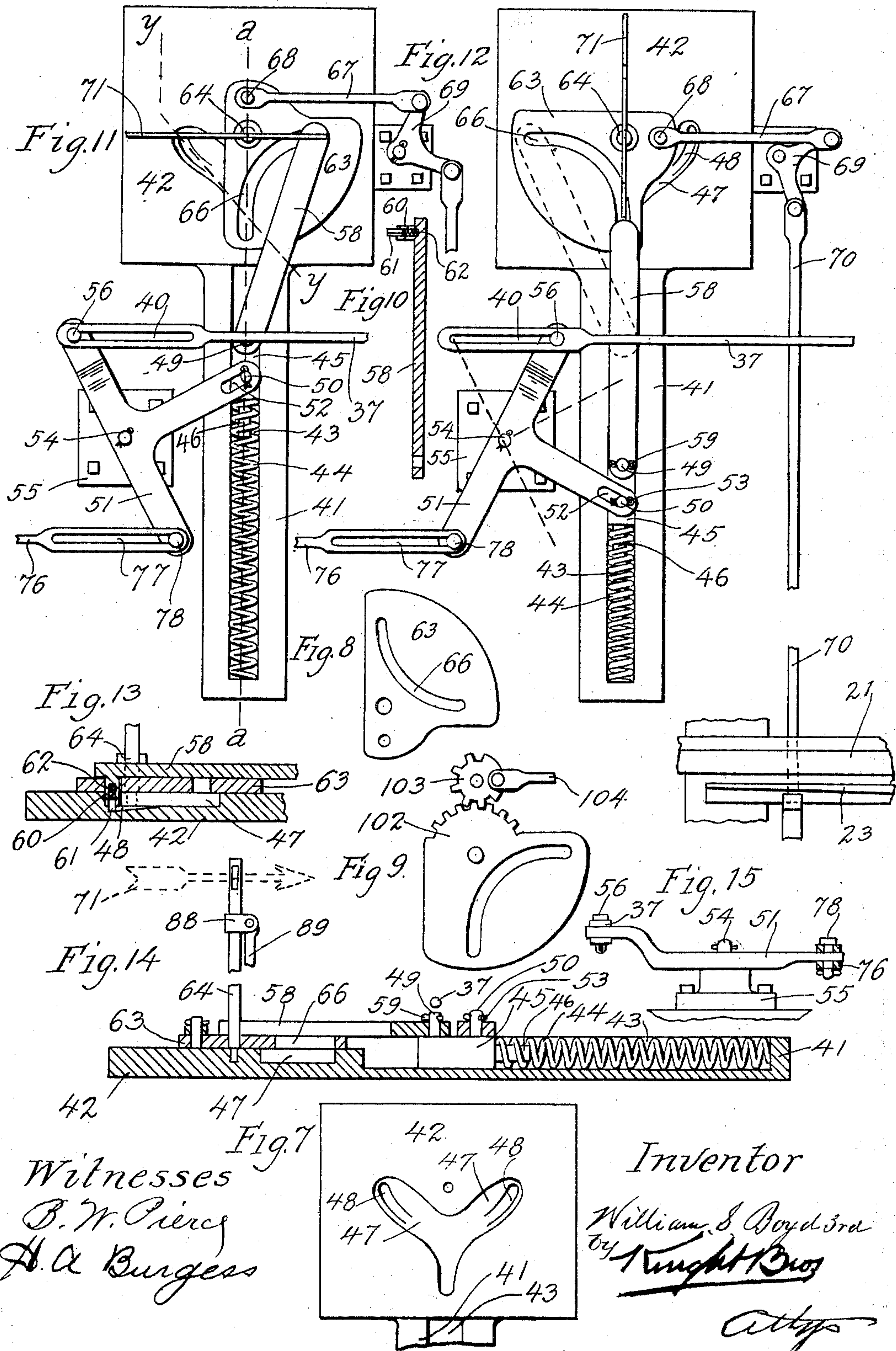
PATENTED MAY 17, 1904.

W. S. BOYD, 3D.
RAILWAY SWITCH.

APPLICATION FILED JUNE 11, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses
B. W. Pierce
H. A. Burgess

Inventor
William S. Boyd 3rd
by *T. H. Boyd*
Atty

No. 760,054.

PATENTED MAY 17, 1904.

W. S. BOYD, 3D.
RAILWAY SWITCH.

APPLICATION FILED JUNE 11, 1903.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 18

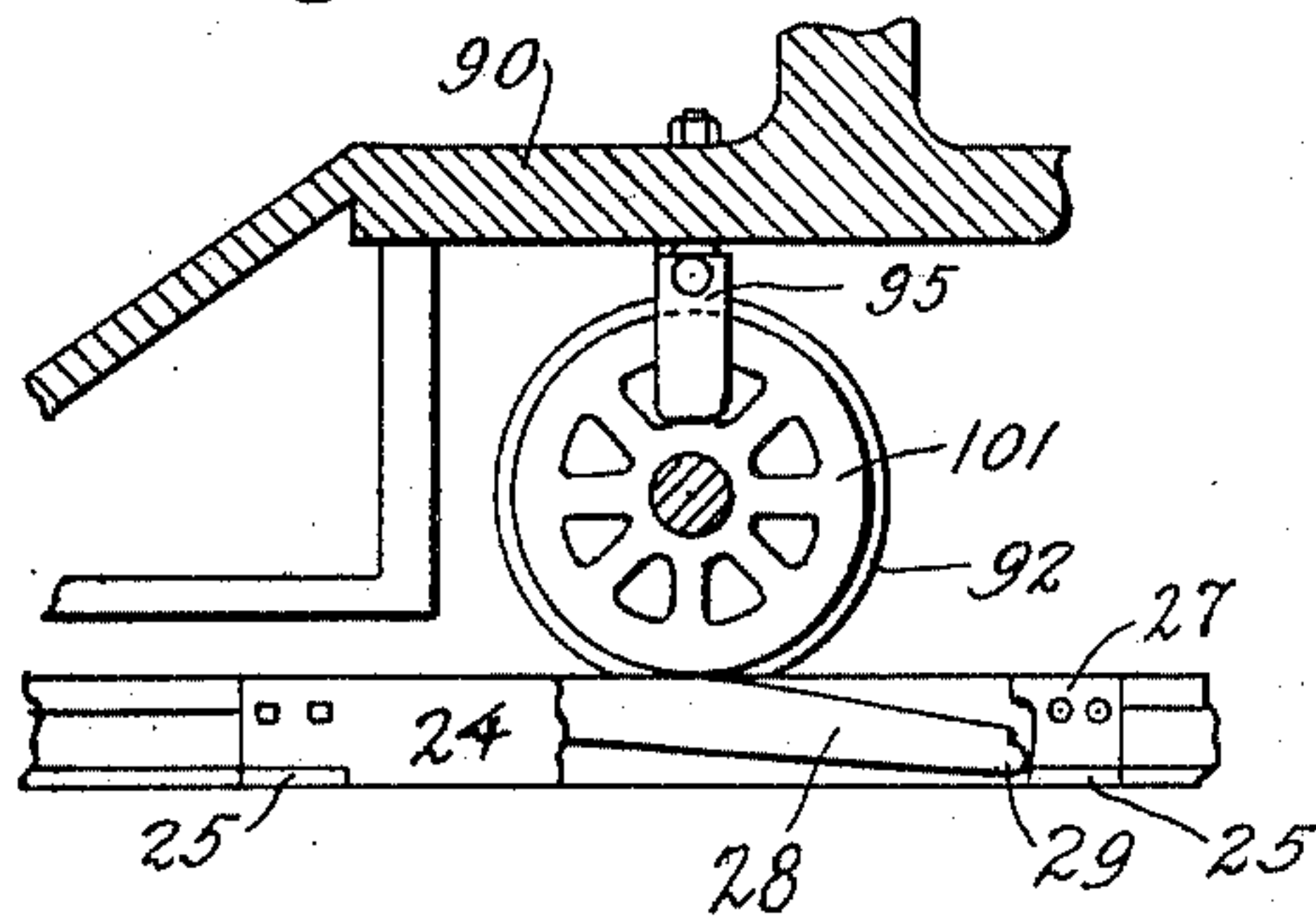


Fig. 17

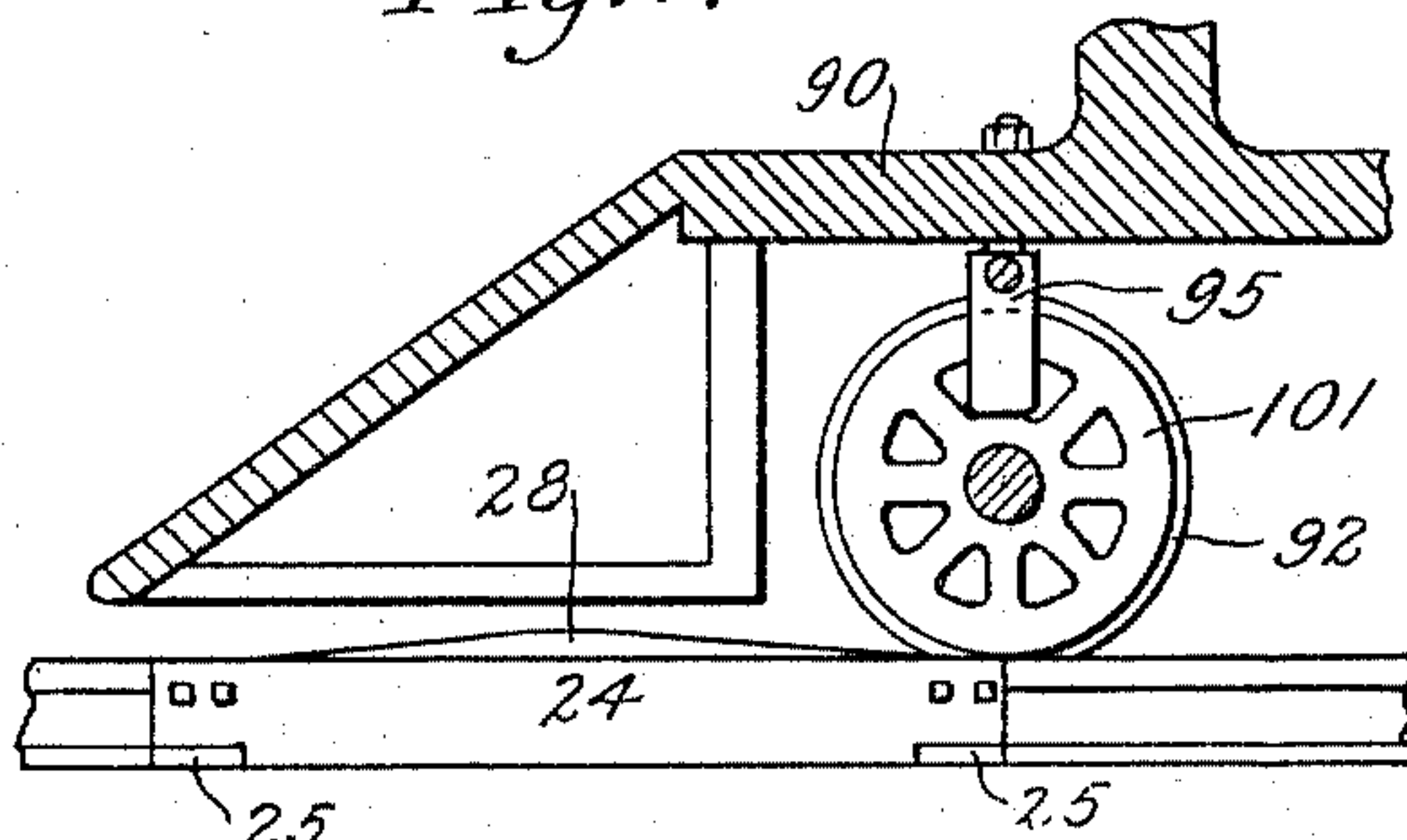


Fig. 16

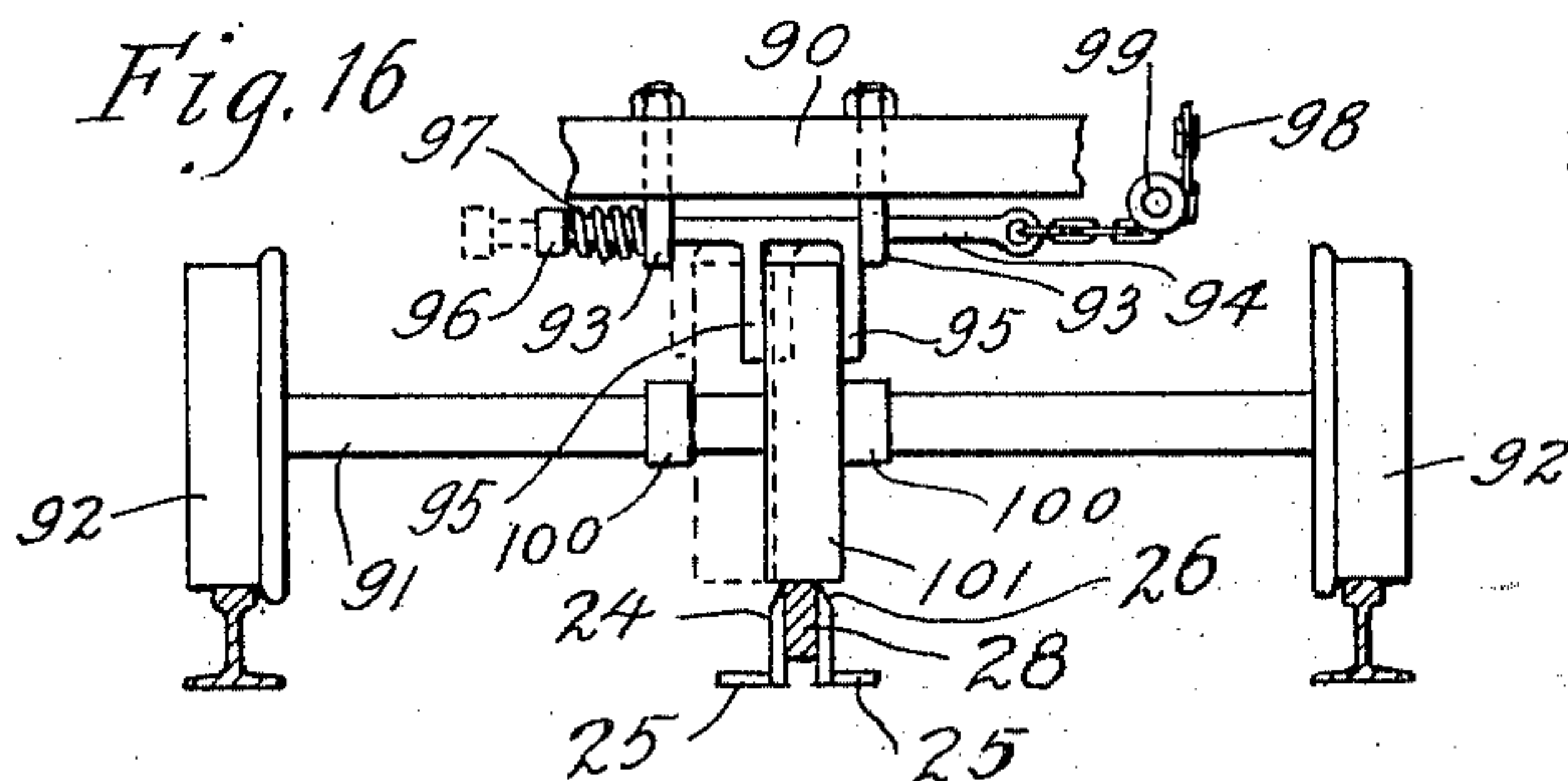


Fig. 19

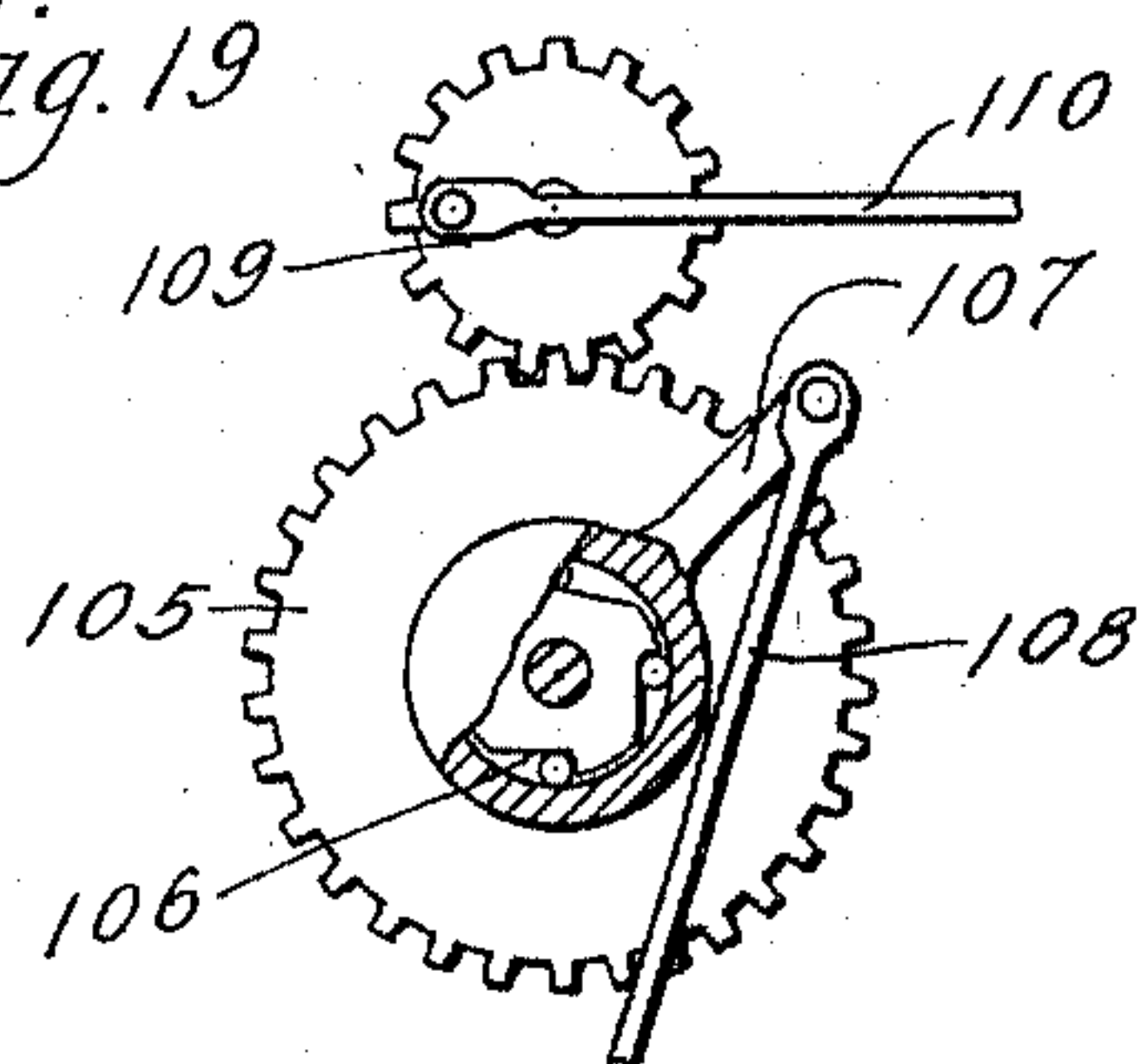
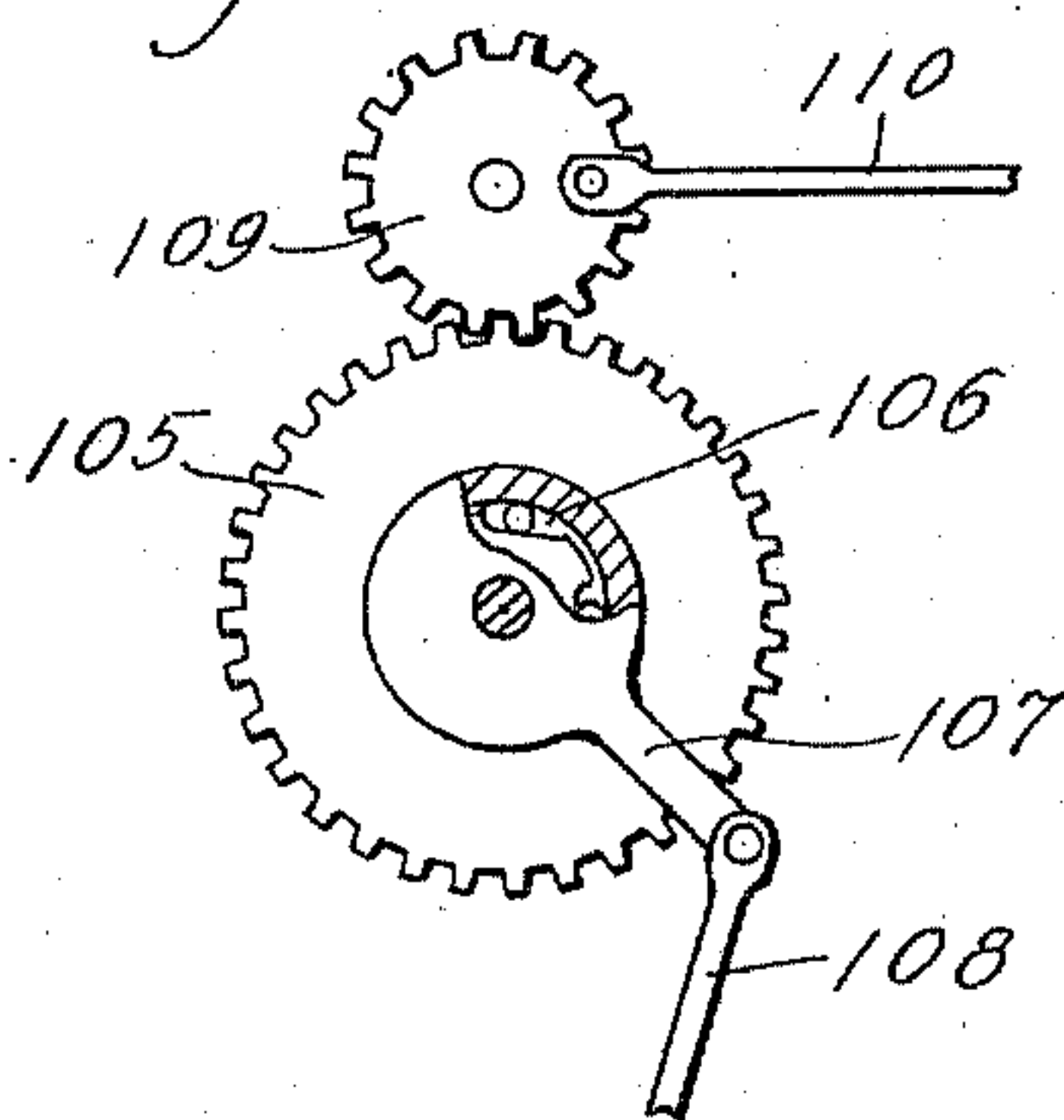


Fig. 20



Witnesses
B. W. Pierce
H. A. Burgess

Inventor
William S. Boyd 3rd
by Knight Bros
Attys

UNITED STATES PATENT OFFICE.

WILLIAM S. BOYD, 3d, OF LOS ANGELES, CALIFORNIA.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 760,054, dated May 17, 1904.

Application filed June 11, 1903. Serial No. 161,035. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. BOYD, 3d, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification.

In the drawings, Figure 1 is a top plan view of a railroad track, siding, and switch rails with my improved mechanism for operating the same. Fig. 2 is a side elevation of Fig. 1, parts being broken away. Fig. 3 is a side elevation of the compression-lever, box, and case. Fig. 4 is a top plan view of Fig. 3. Fig. 5 is a transverse sectional view on the line *x x*, Fig. 3, showing the normal position of the compression-lever and bell-crank lever. Fig. 6 is a view similar to Fig. 5, showing the parts in position with the compression-lever depressed. Fig. 7 is a top plan view of the bed-plate. Figs. 8 and 9 are detail views. Fig. 10 is a longitudinal vertical sectional view of the operating lever or arm. Fig. 11 is a top plan view of the bed-plate with operating mechanism attached thereto. Fig. 12 is a similar view to Fig. 11, showing position of the parts after the switch has been thrown for a siding. Fig. 13 is a sectional view on the line *y y*, Fig. 11, when the operating-arm is in the position shown by dotted lines in Fig. 12. Fig. 14 is a longitudinal vertical section on the line *a a*, Fig. 11. Fig. 15 is a rear elevation of the three-armed actuating-lever. Fig. 16 is a front elevation of front truck-wheels and axle of a locomotive-engine with a portion of the frame broken away and operating mechanism depending therefrom. Fig. 17 is a side elevation of the same. Fig. 18 is a side elevation of Fig. 16 with parts shown in dotted-line position of Fig. 16. Figs. 19 and 20 are detailed views of slight modifications.

21 represents the main-track rails, 22 the siding-rails, and 23 the switch-rails.

24 is a box having flanges 25 at its respective ends provided with bolt-holes, whereby said box may be fastened to the ties of the railroad centrally between the rails, said box being open at the top and bottom, the top of the box being sloped downwardly, as at 26,

and being provided with inwardly-projecting lugs or rivets 27 at its ends, as more clearly shown in Fig. 3.

28 is a compression-lever having a flat or curved bottom, while its top is sloped toward the ends from the center, the ends of the lever having lugs 29 projecting therefrom and adapted to engage the lugs 27 of the box, whereby said lever is prevented from raising entirely outside of the box.

30 represents lugs depending from the lower edges of the box, at each end thereof, between which are pivoted weighted levers 31, the upper end of which is in engagement with the lower face of the compression-lever 28.

32 is a bracket secured to a railroad-tie between the tracks to one side of the center of the box 24 and provided with upwardly-extending arms 33, between which is pivoted a bell-crank lever 34, having an end which projects within a slot formed in the side box 24 and is positioned underneath the compression-lever 28, the lower end of said crank-lever being connected to a rod 35, which rod in turn is connected to a bell-crank lever 36, positioned to one side of the trackway.

37 is a rod having an elongated slot 38, within which projects a pin 39 integral with one arm of the bell-crank lever 36, one end of the rod 37 being provided with an elongated slot 40.

41 is an elongated frame having an enlarged rectangular end bed-plate 42, (see Figs. 11, 12, 13, and 14,) said frame being provided with an elongated slot 43, in which is located a recoil-spring 44 and a sliding or follower block 45, said block having a pin 46 projecting within the coil-spring 44. The base-plate 42 is provided with a three-way groove 47, the upper grooves being each provided with a counter-sink 48, gradually increasing in depth toward the upper end of the groove in which it is located.

The block 45 is provided with upwardly-projecting studs 49 and 50.

51 is a T-shaped lever, one arm of which is provided with an elongated slot 52, in which the pin 50 of the block 45 is secured, said arm being held in engagement with the stud 50 by means of the cotter-pin 53 and the lever being

pivoted at 54 to a suitable plate 55, positioned outside of the trackway. One of the arms of the T-shaped lever 51 is provided with a pin 56, which is suitably secured loosely within the elongated slot 40 of the rod 37.

58 is an operating-arm, one end of which is pivotally secured to the stud 49 by means of the cotter-pin 59 of the follower-block 45, the other end of said arm being provided with a depending sleeve 60, within which is secured a pin 61, mounted upon a coil-spring 62, said coil-spring being seated within the sleeve 60.

63 is a plate keyed to a rod 64, which is suitably journaled in the bed-plate 42 and in a standard 65. This plate is provided with an elongated circular groove 66, through which the sleeve 60 and pin 61 on the operating-arm 58 project, the pin 61 sliding upon the bottom of the three-way groove 47.

67 is a pitman, one end of which is pivoted at 68 to the plate 63, its other end being pivoted to a bell-crank lever 69, suitably pivoted to one side of the base-plate 42 or fastened to a fixed block. 70 is another pitman connected to the switch-rails 23 at one end and at the other end to the bell-crank lever 69.

71 is an arrow or other suitable indicator fixed to the upper end of the rod 64.

72 is a box, 73 a compression-lever, and 74 a rod, of the same construction as that shown in Figs. 3, 4, 5, 6, the rod 74 being connected to a bell-crank lever 75, the other end of said bell-crank lever being connected, by means of the rod 76, to the T-shaped lever 51, the rod 76 having an elongated slot 77, in which the pin 78 of the T-shaped lever is adapted to move.

79 is a rod integral with the rod 37 and projecting beyond the elongated slot 38, said rod 79 having an elongated slot 80.

81 is a bell-crank lever having a pin 82 secured and operating in the elongated slot 80.

83 is a rod pivoted to the pin 84 of the bell-crank lever 81, said rod being connected to a bell-crank lever 85, which is similar to the bell-crank lever 34. (Shown in Figs. 3, 5, and 6.)

86 is a box, and 87 a compression-lever, similar to the box and compression-lever shown in Figs. 3, 4, 5, 6, the bell-crank lever 85 being in engagement with the compression-lever 87, as shown in Figs. 5 and 6.

It will be seen that I have positioned a compression-lever and box with operating mechanism in different places—that is to say, one or more within the main trackway on each side of the switching-point and one or more in the side track.

88 is a clip rigidly secured upon the rod 64, to which is secured suitable operating-handle 89, so as to operate the switch by hand independently of above-described device.

Referring to Figs. 16, 17, and 18, 90 is a suitable truck having an axle 91 and track-wheels 92. 93 represents eyebolts secured to

the platform of the truck, in which is mounted a rod 94, having depending fingers 95, parallel with each other, said rod having a head 96, between which and one of the eyebolts 93 is secured a coil-spring 97, positioned around the rod 94. 98 is an operating-chain passing around a roller 99 and connected to one end of the rod 94, the other end of the chain extending within the cab of the locomotive-engine. 100 represents collars spaced apart and keyed to the axle 91. 101 is an operating-wheel having a broad periphery and loosely journaled upon the axle 91 between the collars 100. It will be seen from Fig. 16 that the fingers 95 straddle the operating-wheel 101.

In Fig. 9 I have shown a modification wherein the plate is provided with a segmental rack 102, adapted to engage the mutilated pinion 103, to which the pitman 104 is pivoted, said pitman 104 corresponding with the pitman 67 of the construction shown in the other figures.

In Figs. 19 and 20 the gear-wheel 105 corresponds with the plate 63, which is provided with a clutch 106 and an arm 107, the arm 107 being connected to a rod 108, the rod 108 corresponding with the operating-arm 58 in the other figures. 109 is a pinion meshing with the gear-wheel 105, and 110 is a pitman pivoted to the pinion 109 and said pitman 110 corresponding with the pitman 67 in the other figures. In Fig. 20 I have shown the same construction as is shown in Fig. 19 with the parts in different position.

The operation is as follows: A train being on the main trackway may pass over the compression-lever 28 when the operating-wheel 101 is in its normal position, as shown in dotted lines in Fig. 16. If it is desired to throw the switch so as to open the siding, the engineer pulls upon the chain 98, thereupon sliding the rod 94 and by means of the fingers 95 sliding the wheel 101 into the position shown in full lines in Fig. 16, so that as the train moves along the track said operating-wheel 101 rides upon the compression-lever 28 and depresses the same, as shown in Fig. 18. The depression of the compression-lever 28 operates the bell-crank lever 34, which in turn pulls upon the rod 35 and bell-crank lever 36, thus operating the rod 37, the T-shaped lever 51, the sliding block or follower 45, and the operating-arm 58, whereupon the depending sleeve 60 and pin 61 are moved along the circular slot 66, thereby throwing the plate 63 upon its pivot, thus operating the pitman 67, the bell-crank lever 69, and the pitman 70, which is connected to the switch-rails 23, whereby said switch-rails are moved to open the switch. The depressions 48 serve to prevent the operating-arm from being guided in its backward movement by the slot 66. Instead of following the slot 66 the pintle entering the depression causes the pin 60 to follow the slot 47 down to the bottom thereof. The switch is locked by the pins 68 and 64 being on a line

or a dead-center. As soon as the operating-wheel 101 has passed beyond the compression-lever 28 the weighted levers 31 immediately throw said compression-lever 28 again into operative position, as will be readily understood.

In the claims for the sake of brevity I will sometimes refer to the floating lever and its connected parts as a "track device."

It will be noticed that the slot-plate 63 is eccentrically mounted.

While I have shown the parts in certain relation and arrangement in the drawings, I would have it understood that I do not limit myself to the particular arrangement shown, as the parts may be arranged in different manner without departing from the spirit of my invention.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a railway-switch, the combination with a frame, and inwardly-projecting lugs integral with the frame, of a floating lever mounted in said frame and provided with lugs to engage the lugs on the frame and means to restore the lever to a normal position after it has been operated.

2. In a railway-switch, the combination with a frame, of a floating lever mounted in said frame, and counterweighted levers pivoted to said frame and bearing against said lever to return the lever to normal position after it has been operated.

3. In a railway-switch, the combination with a box open at the top and bottom, lugs projecting inwardly from the ends of said box, of a floating lever within said box provided with lugs on its ends for engagement with the lugs at the ends of the box, and weighted levers pivoted to the box and engaging the floating lever.

4. In a railway-switch, the combination with a box, a floating lever positioned therein, and means to return said lever to its normal position after being operated; of a bell-crank lever and means connecting said bell-crank lever in loose engagement with said floating lever and means connecting said bell-crank lever with switch-rails.

5. In a railway-switch, the combination with a frame, of a slotted plate eccentrically pivoted to said frame, a three-way groove formed in

said frame, an operating-arm having a projection working in the slot of the plate and the three-way groove, means connecting the plate with switch-rails and means connecting the operating-arm with the track device.

6. In a railway-switch, the combination with a frame having a three-way groove formed therein, depressions formed in two of said grooves, a slotted plate pivotally secured to said frame, an operating-arm, a sleeve depending from one end of said arm and a pin resiliently mounted in said sleeve, said sleeve working in the slot of the plate and in the three-way groove, said pin adapted to engage the depressions.

7. In a railway-switch, the combination with a frame having a three-way groove formed therein, of a slotted plate pivoted thereto, an operating-arm having a projection working in the slot of said plate and the three-way groove, a T-lever pivoted to one side of said frame and a follower-block to which the operating-arm and one arm of the T-lever are connected.

8. In a railway-switch, the combination with a frame having a three-way groove, of a slotted plate pivotally mounted on said frame, an operating-arm having a projection working in the slot of said plate and in said three-way groove, a spring-mounted follower-block in said frame pivotally connected with the operating-arm, a T-lever suitably pivoted to one side of the frame, one arm of which is connected to said follower-block, means connecting the T-lever with the track device and means connecting the slotted plate with switch-rails.

9. In a railway-switch, the combination with one or more track devices located in the main trackway and one or more track devices located in the switch or siding, of a T-lever, suitable switch-rail-operating mechanism connected to said lever, a common transmitting-rod for one end of the main-track device and a switch-track device connected to one of the arms of the T-lever and a transmission-rod for the other main-track device connected to another arm of the T-lever.

The foregoing specification signed this 1st day of June, 1903.

WILLIAM S. BOYD, 3RD.

In presence of—

B. W. PIERCE,

H. A. BURGESS.