

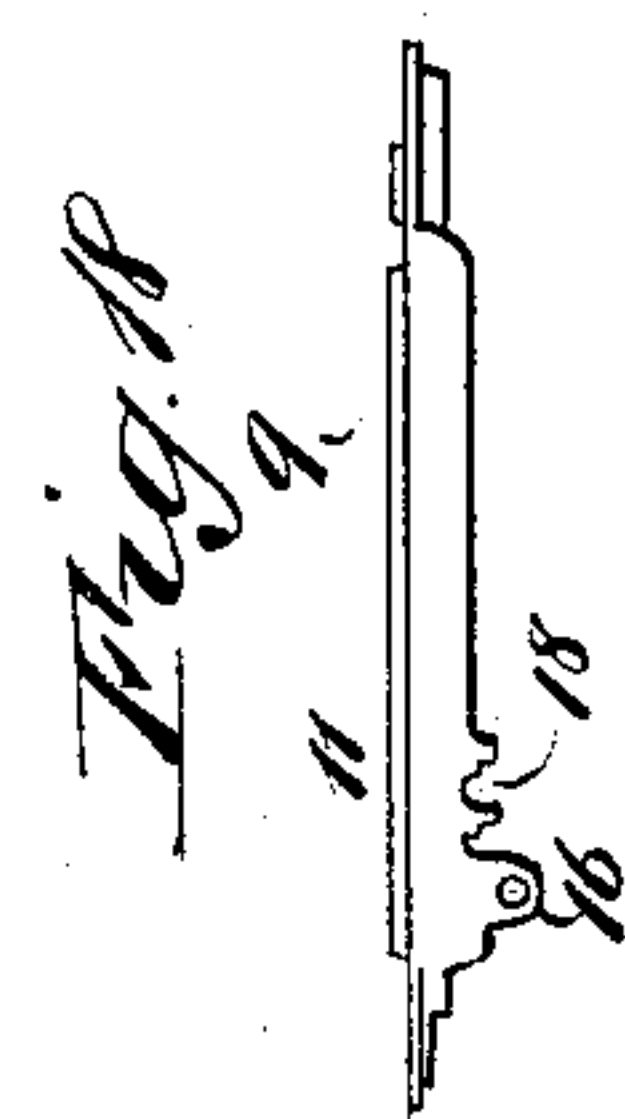
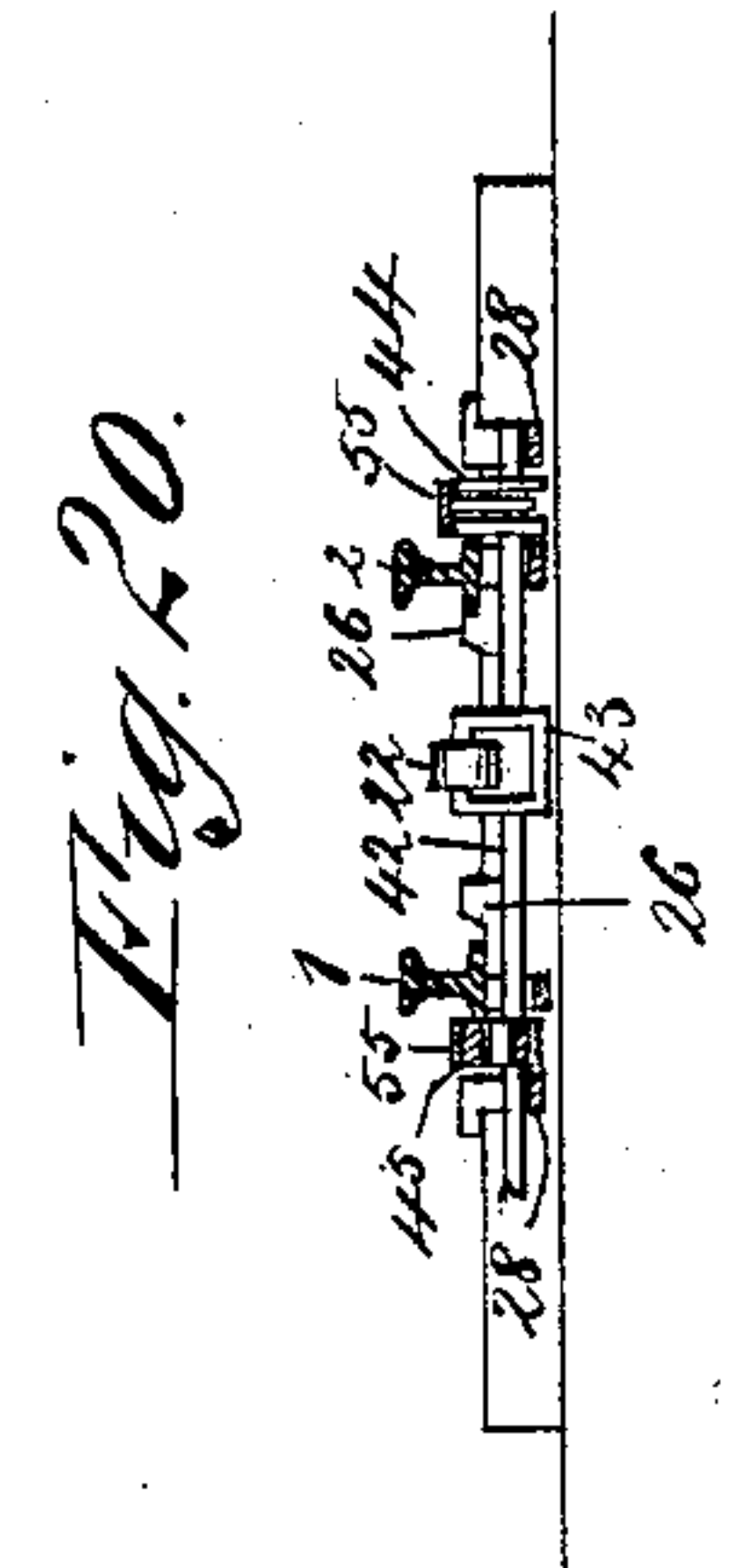
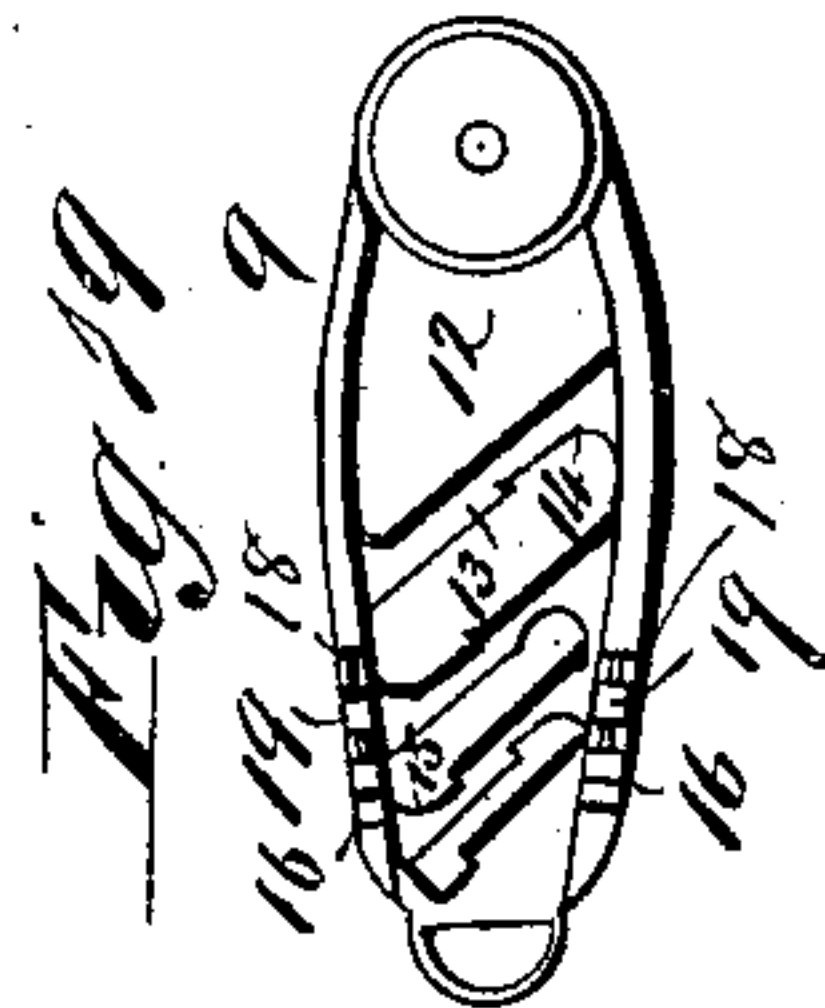
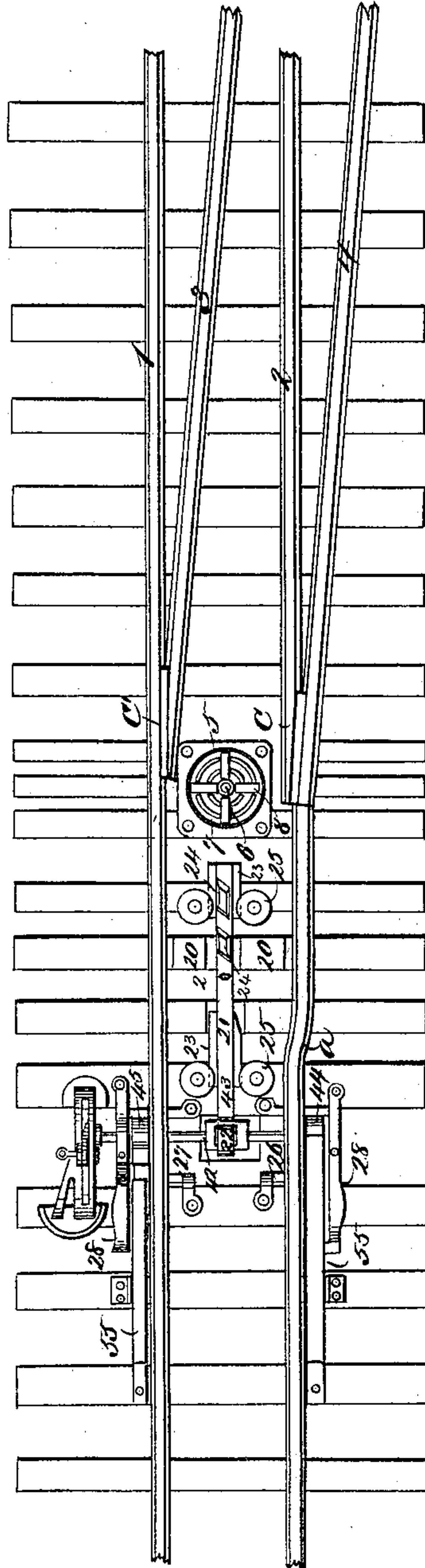
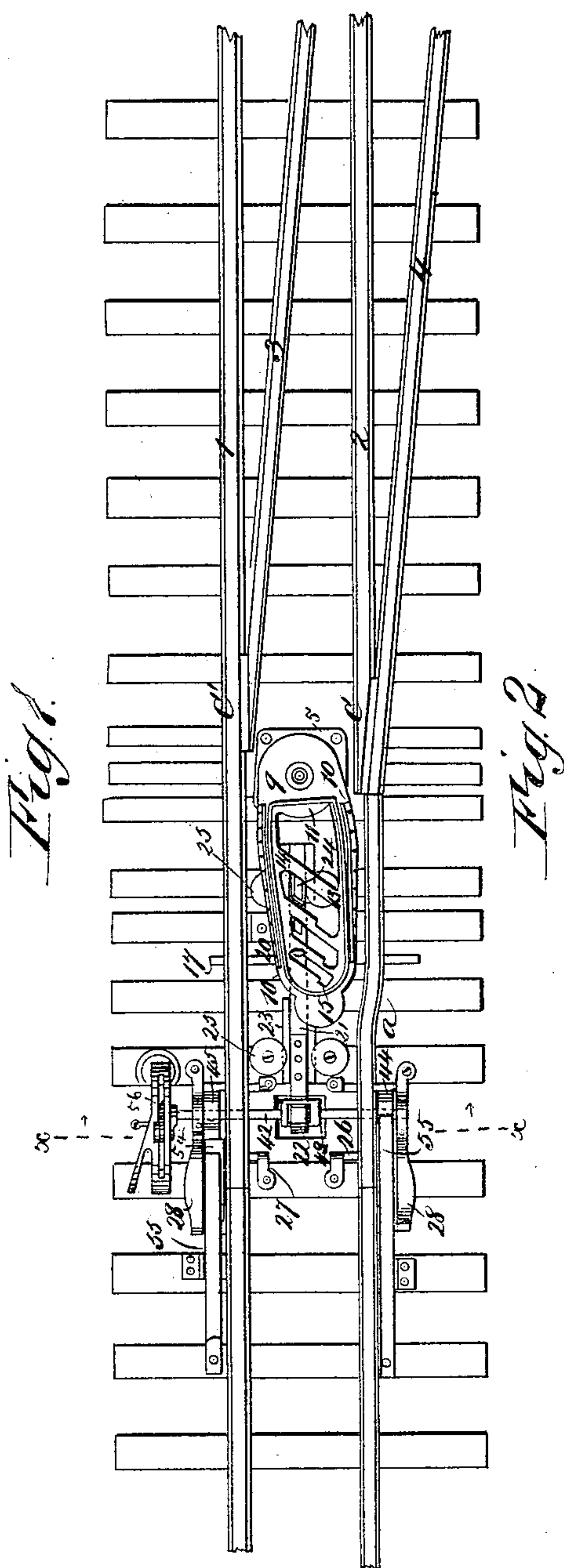
(No Model.)

3 Sheets—Sheet 1.

J. S. MEYERS.
RAILROAD SWITCH.

No. 389,315.

Patented Sept. 11, 1888.



WITNESSES:

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ATTORNEYS.

(No Model.)

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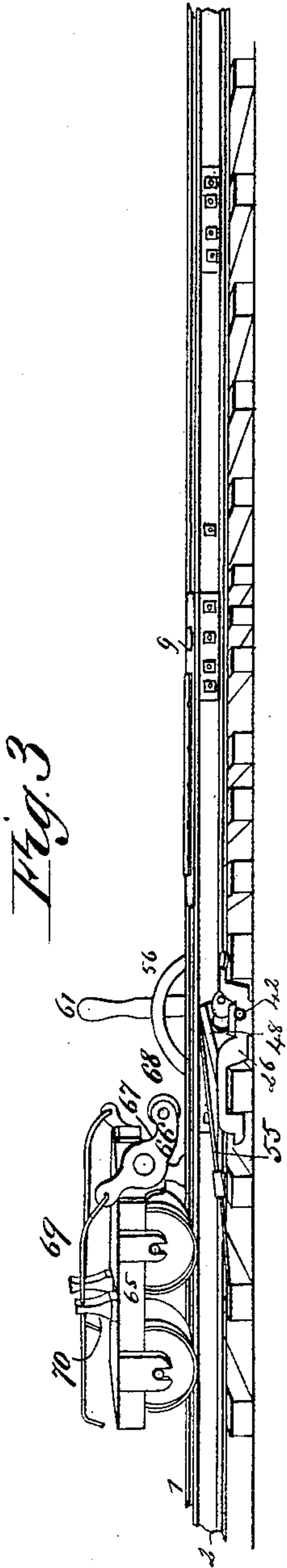


Fig. 3

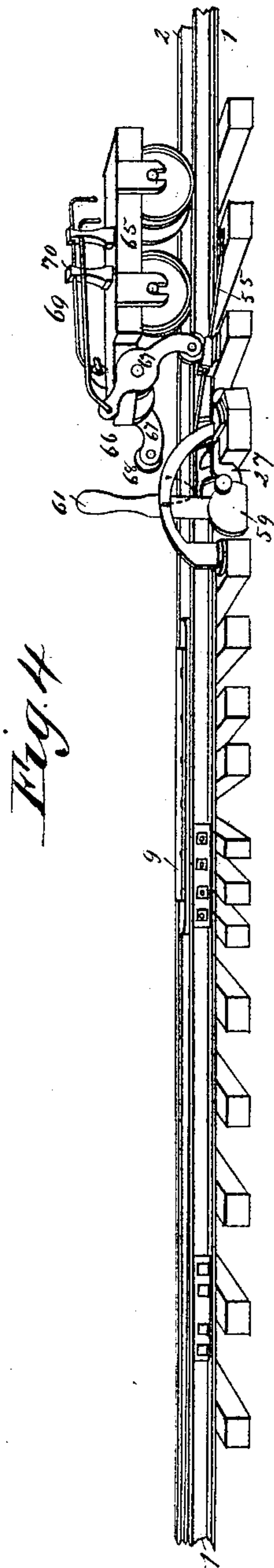


Fig. 4

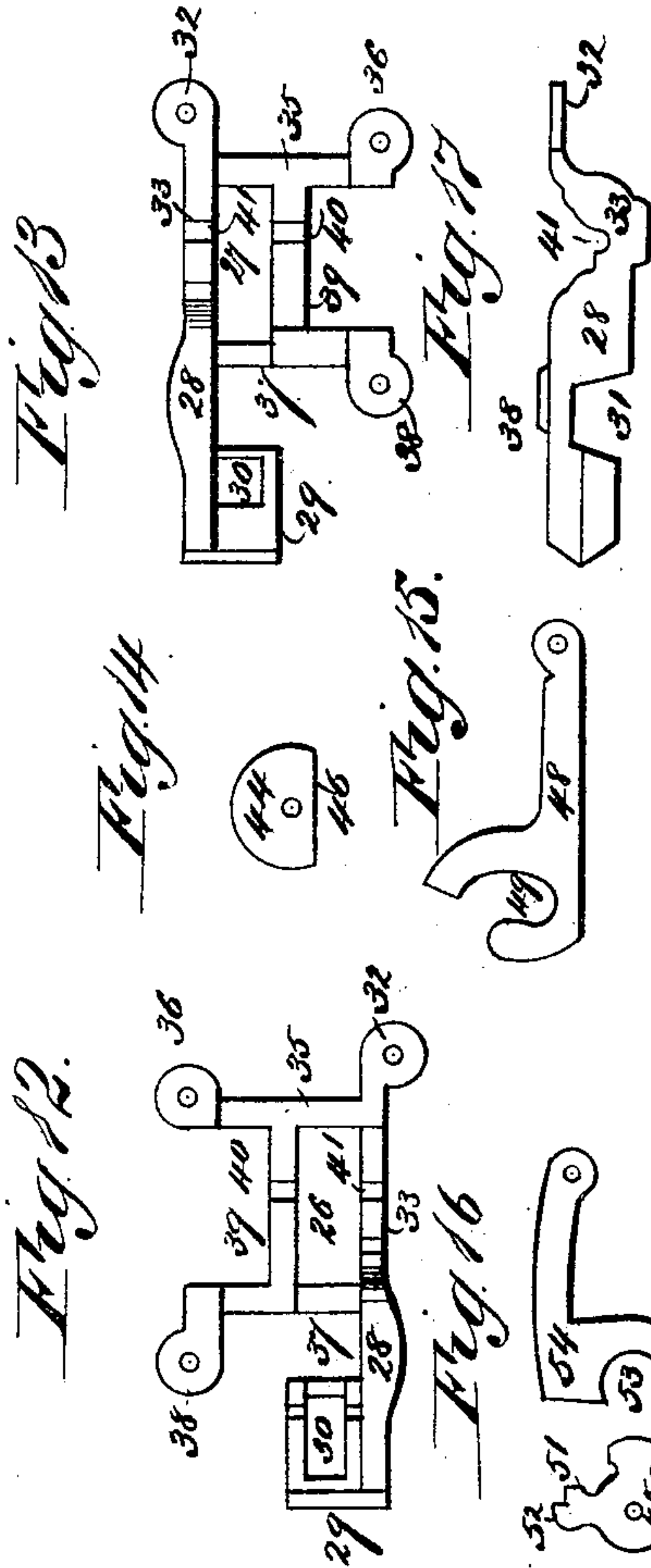


Fig. 12

Fig. 14

Fig. 13

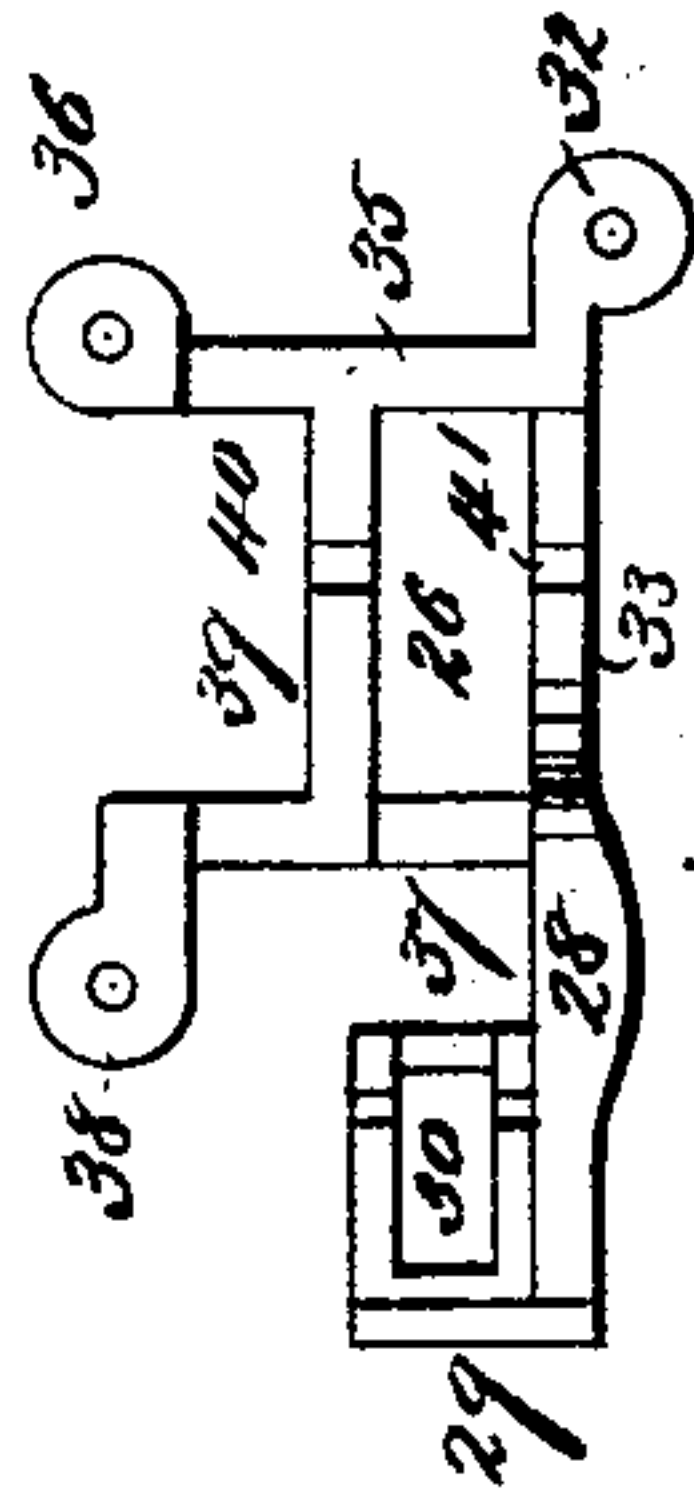


Fig. 16

Fig. 15

Fig. 17



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3 Sheets—Sheet 3.

RAILROAD SWITCH.

Patented Sept. 11, 1888.

Fig 5.

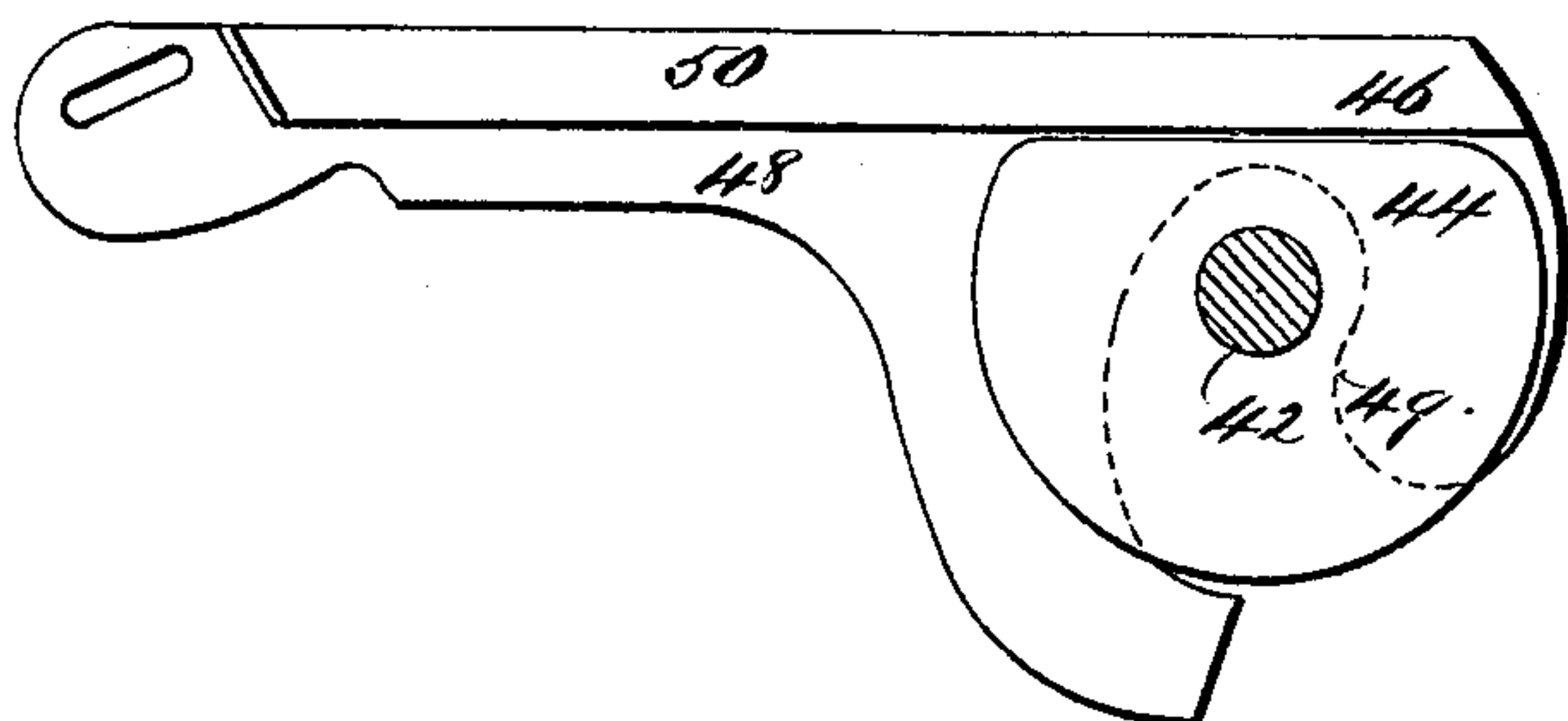


Fig. 7

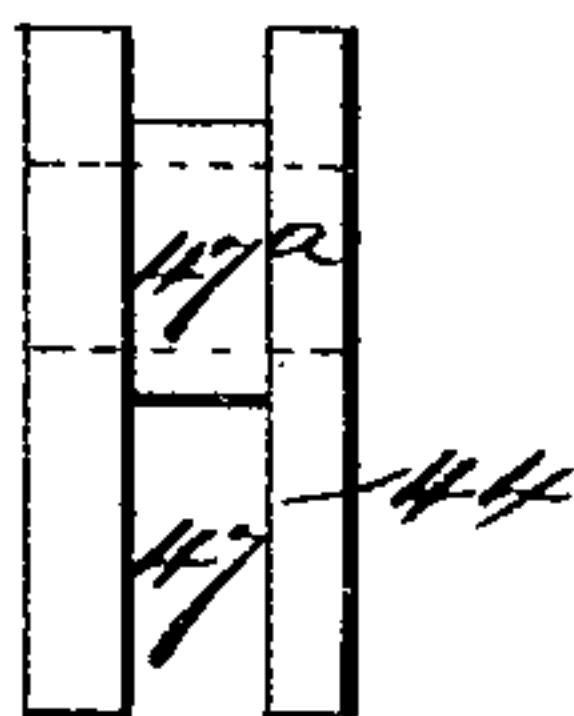


Fig 6

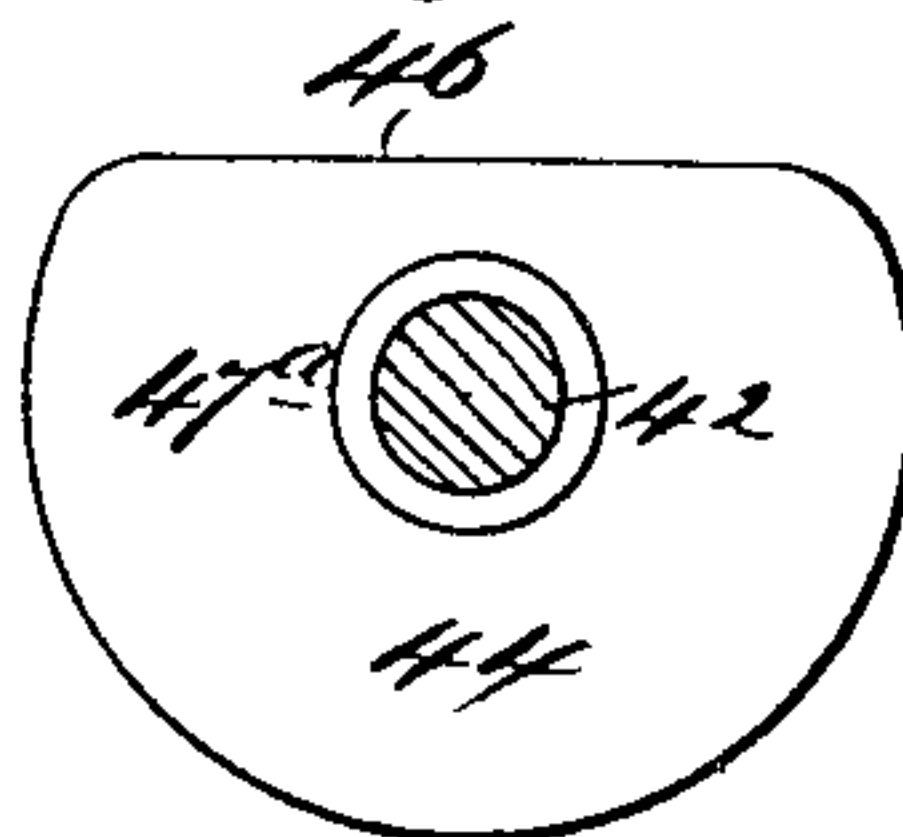


Fig 8.



Fig. 88

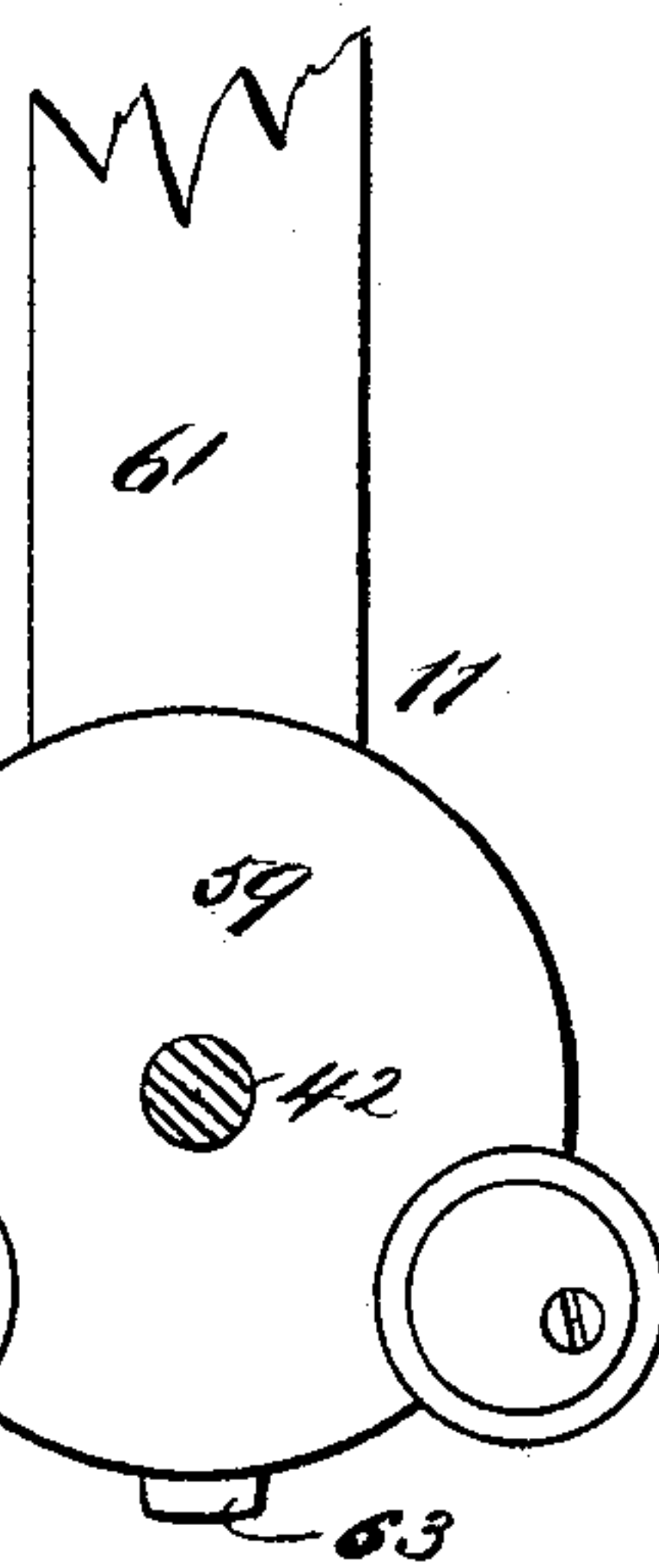


Fig. 80

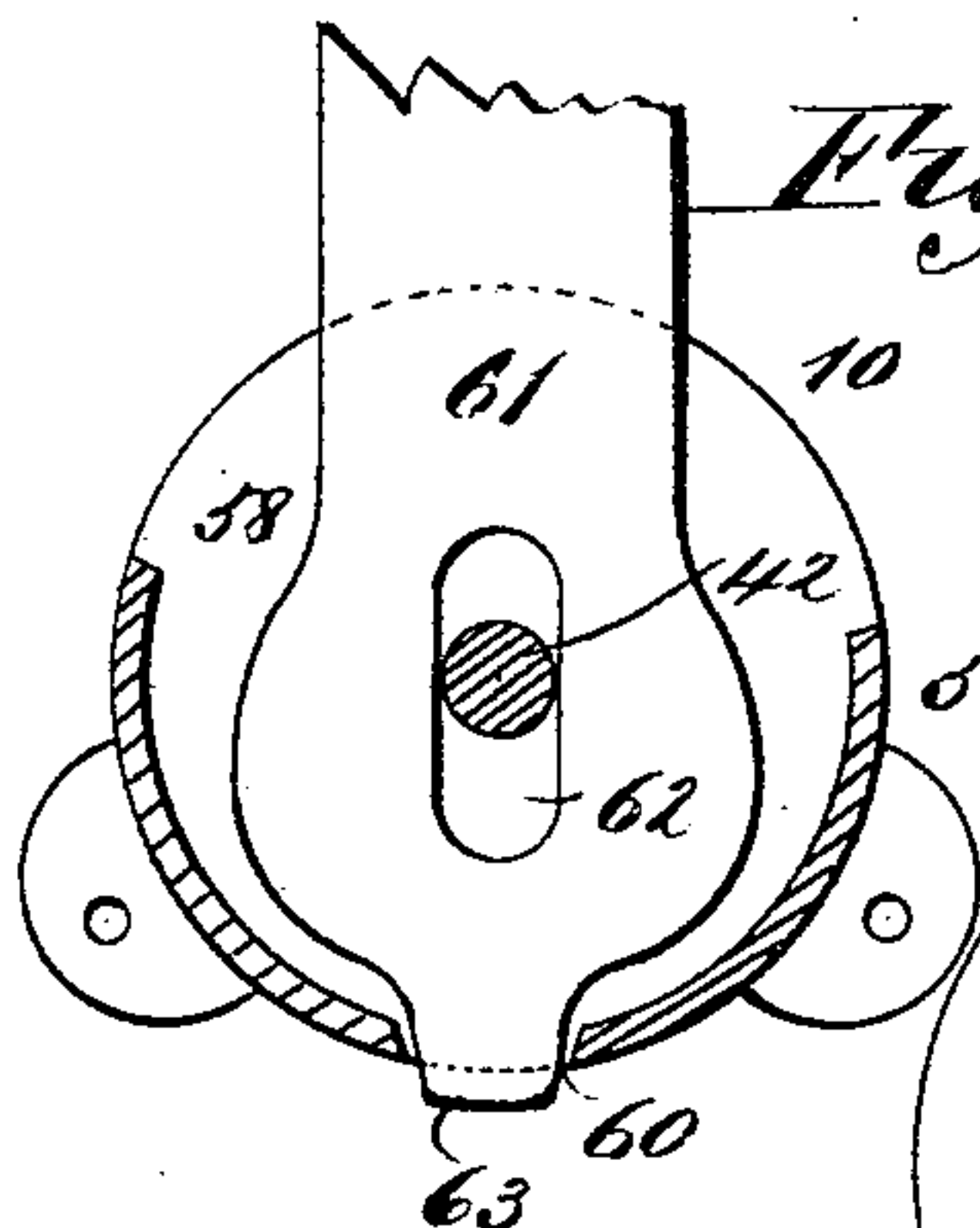
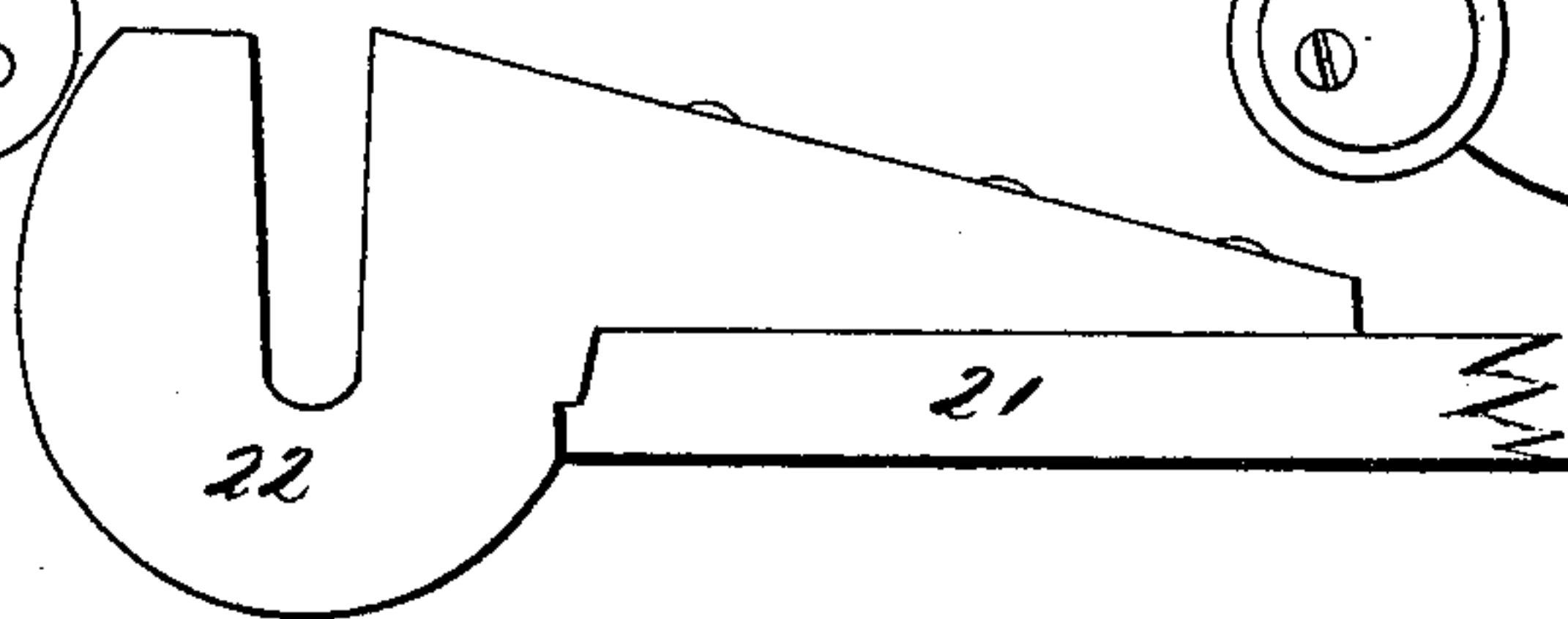


Fig. 9.



INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN STEPHAN MEYERS, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-HALF TO GEORGE ANDREWS, OF THE UNITED STATES ARMY.

RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 389,315, dated September 11, 1888.

Application filed November 3, 1887. Serial No. 254,168. (No model.)

To all whom it may concern:

Be it known that I, JOHN STEPHAN MEYERS, of St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and
5 Improved Railroad-Switch, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved railroad-switch adapted for use with fixed rails and points; and the further object of the invention is to provide a simple, effective, and reliable switch, capable of
10 being operated by a lever located near the track or automatically from the engine.

The invention consists in the construction and operation of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate
20 corresponding parts in all the views.

Figure 1 illustrates the application of a right-hand switch as applied to a main track and siding. Fig. 2 is a similar view with the pivoted switch-block removed, and Figs. 3 and
25 4 are perspective side views from opposite sides of the track. Fig. 5 is a side elevation of the forward-throw cam and eccentric. Fig. 6 is a vertical section through the eccentric. Fig. 7 is an end view of the said eccentric. Fig. 8 is a side elevation of the automatic back-throw cam and ratchet. Fig. 9 is a partial detail view of the switch-block lock-bar. Figs.
30 10 and 11 are detail views of the stationary switch and lever. Figs. 12 and 13 are plan views of the frames supporting the forward and rear throw cams. Figs. 14 and 15 are detail views of the forward-throw cam and eccentric. Fig. 16 is a detached view of the rear-throw cam and ratchet. Fig. 17 is a side elevation of the cam-frames. Fig. 18 is a side elevation of the switch-block, Fig. 19 is a bottom plan view of the same, and Fig. 20 is a transverse section on the line *xx* of Fig. 1.

45 In carrying out the invention the tracks are represented as laid for a right-hand switch. The rails 1 and 2 represent the main track, and the rails 3 and 4 the siding, the main track 2 from a point, *a*, to where it abuts the

outer rail of the siding being made convex. 50 At the point C a crossing-V is formed by the junction of the pointed rail on the main track and the outer side or branch track, and a second crossing-V, C', is similarly formed, the pointed rail in this instance being on the side
55 track. The crossing-V's are not opposite each other by about two feet. All of the rails are firmly spiked to the sleepers, no rail being required to move, and the sleepers are arranged as required. For a track branching
60 to the left from the main track this arrangement of the rails is reversed. Between the crossing-V's a pivot-bed, 5, is securely fastened, provided with a central stud, 6, concentric grooves 7, and four or more rollers, 8, adapted to rotate transversely the grooves, as illustrated in Fig. 2.

The switch-block 9, which is pivoted at one end upon the bed stud 6 and adapted to bear at that end upon the rollers 8, is more or
70 less elliptical in general contour and constructed of cast or wrought iron or steel. The circular bearings upon which the switch-block 9 moves in the bed 5 and the rollers imparts strength to resist sudden and severe shocks, 75 due to the oval form of the switch-block. The lateral sides, which are slightly curved, constitute sufficient guide when brought in proper relation to the rails to determine the direction of the cars running into or out of the switch. 80 To prevent wear upon the frame itself, guard-rails 10 (illustrated in Fig. 1) are bolted to the upper edge surface and present a smooth face to the action of the wheels. These rails can be renewed at pleasure. Their cross-section
85 is nearly rectangular. The molding or beading 11 is to assist in holding a cover in place, which cover may be of wood or metal. To further prevent dirt, snow, &c., from getting into the mechanism, aprons of canvas or box-
90 ings of wood may be used.

The switch-block is provided with a central longitudinal opening, 12, spanned by a series of parallel and diagonally-placed braces, 13. The braces may be of steel, and are mortised
95 into the frame, so they can be readily renewed. The braces are provided with series of recesses 14 and 15 in their opposing faces, de-

signed to act as "lock-catches." The recesses are respectively located at the ends, the recess in one brace being opposed by a smooth surface in the contiguous brace, one set of catches 5 being designed to act when the block is swung to the right and the other set when swung to the left, and are fully illustrated in the top view, Fig. 1, and bottom plan, Fig. 19. In co-operation with a lock-bar, hereinafter described, 10 the catches serve to lock the switch when automatically operated.

Upon the under edges of the switch-block 9, at the free end, aligning-lugs 16 are produced, adapted to carry a bar, 17, which bar, 15 passing under the rails, as shown at Fig. 1, and at right angles to them, prevents the switch-block from rising when struck by the wheels, the bar being made long enough to remain under the rails when the switch is shifted. The 20 switch may be used and worked by the switch-stand in common use, the attachment being made to this bar or to some other point of the free end of the block. Inside the lugs 16 aligning-bearings 18 are produced, in which friction-rollers 19 are longitudinally journaled, adapted 25 to carry the free end of the switch-block upon plates 20, attached to a sleeper or other suitable support.

Longitudinally between the rails a lock-bar, 30 21, is held to slide partially under the switch-block 9, provided at the outer end with a hook, 22, and longitudinal side flanges, 23, which flanges may be dispensed with at or near the center. The bar 21 carries three lugs, 24, 35 which slide, respectively, between the braces of the switch-block and fit into the recesses or lock-catches therein. The said lugs, as heretofore stated, work into two sets of catches, one set locking the switch for the side track, the 40 other set for the main track.

The flanges of the lock-bar work in the grooves of friction bearing-wheels 25, each pair of these wheels being adapted to work upon a suitable friction-plate. When the 45 flanges 23 are continuous, three or more pairs of friction-wheels may be employed.

Two bearing-frames, 26 and 27, are provided, essentially alike, except the shape of the slots in which the pivot ends of the cams (hereinafter described) work, one slot being slightly 50 longer than the other. The bearing-frames are constructed of either cast or wrought iron, and, as shown in Figs. 12, 13, and 17, consist of a side bar, 28, having attached to one inner 55 end a plate, 29, having a longitudinal slot, 30, a recess, 31, adapted to receive a sleeper, and an apertured lug 32 at the other end, adapted to rest upon and be attached to the sleeper in advance of that spanned by the recess 31, and 60 between the lug and recess a stepped portion, 33, adapted to span the distance between the aforesaid sleepers.

At the end of the side bar, 28, carrying the lug 32, a cross-bar, 35, is attached at right angles, having a lug, 36, upon the end corresponding to the lug 32, and a parallel cross-

bar, 37, is projected from the wall of the recess 31, also carrying a lug, 38, the two cross-bars being united by a bridge-piece, 39, parallel and in the same plane with the reduced 70 or stepped portion of the side bar, 28. In the bridge-piece and also in the stepped portion of the side bar aligning-bearings 40 and 41 are produced. The two bearing-frames are so secured by the aforesaid lugs to the sleepers as 75 that the track will extend above the inner journal-bearing, 41, in each, as the said track rests upon the frames at this point, as shown in Figs. 1 and 2, the side bars and the end plates, 29, and that portion of the frame aligning the 80 said end plate being outside the track.

In the aforesaid journals 40 and 41 of each bearing-frame a shaft, 42, is made to rotate, the said shaft being provided centrally with a yoke, 43, which yoke is engaged by the hook 85 22 of the lock-bar 21, the shaft 42 being the medium by which the lock-bar is manipulated.

Between the bearings 40 and 41 of the supporting or bearing frame 26 an eccentric, 44, is keyed to the shaft 42, and between the bearings 90 in the opposite supporting-frame a ratchet or winged eccentric, 45, is keyed.

The eccentric 44, illustrated in Figs. 6, 7, and 14, is provided with one straight side, 46, and in the edge a continuous slot, 47, is cut to 95 produce an interior hub, 47^a, around the shaft, as shown in Figs. 7 and 6.

A lever, 48, is pivoted in the slotted plate of the supporting-frame 26 at one end. The other end, extending longitudinally the frame, 100 is provided with a curved guide-slot, 49, whereby the said end is bifurcated. The bifurcated end is entered in the slot 47 of the eccentric embracing the central interior hub, 47^a, the upper or lesser member being piv- 105 oted between the sides. The cam-lever is provided at the upper edge with a longitudinal flange, 50, adapted to engage the straight edge of the said eccentric. Thus, when the lever is elevated and depressed it will rock the 110 shaft 42.

One of the wings 57 of the ratchet-eccentric 45 is recessed to produce a lip, 52, the said wing being adapted to enter an irregular recess, 53, cut in the outer end of a lever, 54, 115 having its other end pivoted in the plate attached to the side bar of the supporting-frame 27, and as illustrated in Fig. 8. Thus when the lever 54 is raised and depressed by means of the wing 57, the shaft 42 is rocked, which 120 raises the lever upon the opposite side, and when said opposite lever is depressed the other wing of the eccentric 45 will elevate the lever 54.

To a sleeper outside the track, upon each 125 side, one end of an impact-plate, 55, is held, the other end being adapted to rest, respectively, upon the levers 54 and 48, as illustrated in Figs. 1 and 2, 3 and 4.

To operate the switch by hand, a stand, 56, 130 is provided, having a combination-box consisting of pieces of metal 58 and 59, bolted to-

gether and provided with a spacing-web, and adapted to rotate in proper bearings, having a slot, 60, at the bottom in the web. Between the plates or disks 58 and 59 a lever, 61, is adapted to reciprocate, having an elongated slot, 62, and end projection 63. The shaft 42 passes through a slot in the plate nearest the rail, through the slot in the lever, and is fastened to the outer plate or disk, so that the said shaft and disk revolve together. When the projection on the lever 61 is entered the slot 60 in the plates, the shaft 42 may be revolved therefrom; but when the lever 61 is raised out of the slot 60 and secured in any suitable manner to the switch-stand, the switch is capable of being worked only from the train.

Upon each side of the engine or car 65, at the ends, a switch-setter, 66, is attached, which consists of a curved arm, 67, pivoted at its center to the frame, carrying at one end a wheel, 68, the other end being attached to rods 69, which are conducted by suitable guides, 70, to the cab, when they are controlled by the engineer.

To use the switch setter, push the proper rod 69 forward. This motion lowers the corresponding wheel, the shape of the arm and weight of the wheel assisting. The rod may be held by a catch. As the engine approaches the switch, the wheel strikes the impact-plate 55 or reducer upon that side, made of spring-steel, and, following up the same, springs or depresses the cam, thus turning the switch to that side. This automatic arrangement is used principally in the yards, and yard-engines should have switch-setters in the rear and front.

To set the switch for the side track or branch line by hand, the lever-handle 61 is lowered and thrown into gear, then moved forward toward the switch, the shaft 42 turns the yoke 43 forward, which, acting upon the hook 22, pushes the lock-bar 21 in the same direction. The lugs 24, acting on the inclined planes of the braces 13, cause the switch to move to the right. The lugs 24 then lock into the forward catches, 14, and prevent any return motion. The left guard-lug, 16, is now in contact with the bar 21 and prevents further motion to the right. The same motion can be produced by pressing down the forward cam, 44.

To set the switch for the main track, throw the lever 61 away from the switch or press down the ratchet or winged cam 45, the lock bolts or lugs 24 move to the rear, then strike the inclined planes of the braces, which action shifts the switch-block, the locking bolts or lugs enter into the other set of catches, 15, and the other guard-lug, 16, comes in contact with the bar 21.

When the automatic gearing is to be used without the use of the lever 61, the latter is thrown out of gear and pinned up. The action of the switch upon the flanges of the wheels will be understood by reference to Fig.

1. The bend in the rail at *a* is to enable the longest truck to settle into the direction of the side track without offering too much strain and friction to the switch. 70

The prime object of the invention is to leave no open switch, and to provide for a train passing into or out of a switch without danger of being derailed, and especially that no adjustment of the switch is necessary to enable a train to run out of a switch. It will be also observed that the switch being pivoted it may be moved by using the automatic principle, (the lever 61,) or by means of an ordinary switch-stand. 80

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

1. The combination, with a track provided with fixed points, of a reciprocating switch pivoted between the rails of the main track, provided with a series of transverse inclined planes having recesses cut in opposite sides, a sliding lock-bar, lugs upon said lock-bar adapted to engage said recesses, and means, substantially as described, for reciprocating said lock-bar. 85 90

2. The combination, with a track provided with fixed points and having one rail curved out of parallel, of a reciprocating switch pivoted between the rails of the main track opposite said curve, provided with a series of spaced inclined planes having recesses cut in opposite sides, a lock-bar sliding longitudinally between the rails beneath the switch, a series of lugs integral with said bar adapted to enter said recesses, a transverse rock-shaft connected with the lock-bar, and means, substantially as described, for manipulating said shaft. 95 100 105

3. The combination, with a fixed track provided with fixed points, of a reciprocating switch pivoted between the rails of the main track, provided with a series of spaced inclined planes having recesses cut in opposite sides, and a guide-rod at the free end passing beneath the track, a longitudinal lock-bar sliding between the rails under the switch, a series of lugs integral with said bar engaging the said inclined planes, a transverse rock-shaft connected with said lock-bar, and means, substantially as described, for automatically manipulating the said shaft. 110 115

4. The combination, with a fixed track provided with fixed points, of a reciprocating switch pivoted between the rails of the main track provided with a series of spaced inclined planes having recesses cut in opposite sides, guide-rails secured at each side of the switch, and a guide-rod at the free end passing beneath the track, a longitudinal lock-bar sliding between the rails and under the switch, a series of lugs integral with said lock-bar engaging the inclined plane, a transverse rock-shaft connected with said lock-bar, cams connected to said shaft having respectively a forward and rearward throw, and means, sub- 120 125 130

stantially as described, for operating said
cams.

5. A switch adapted to be pivoted between
the main rails of a track, consisting of a block
centrally recessed, and having curved sides
provided with a series of spaced transverse
inclined planes having recesses cut in oppo-

site sides, and a guide-rail detachably attached
to the upper side edges, substantially as shown
and described.

JOHN STEPHAN MEYERS.

Witnesses:

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GEORGE D. HAMMOND.