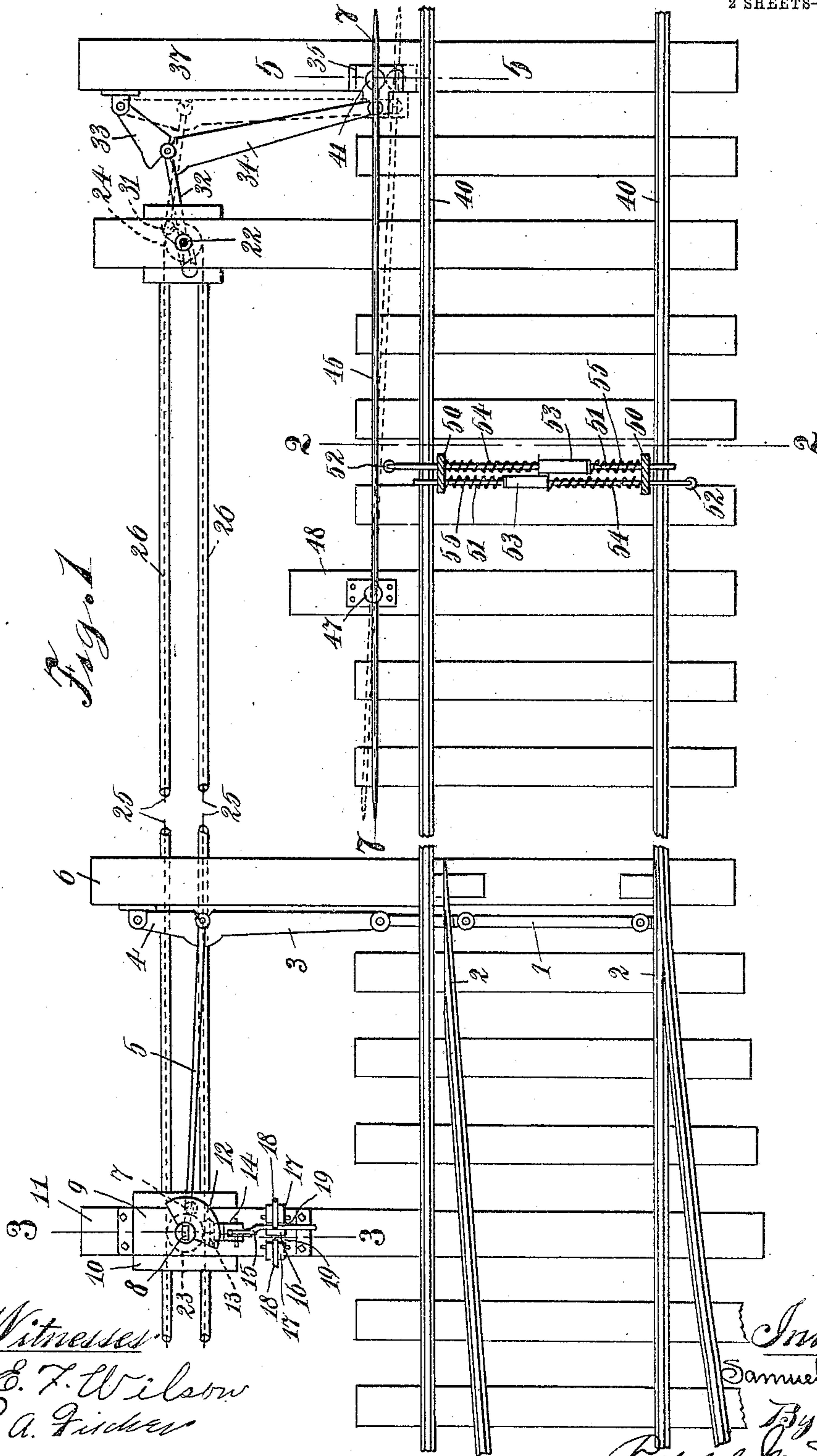


No. 817,702.

PATENTED APR. 10, 1906.

S. A. GAEDE.
RAILWAY SAFETY DEVICE.
APPLICATION FILED SEPT. 23, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

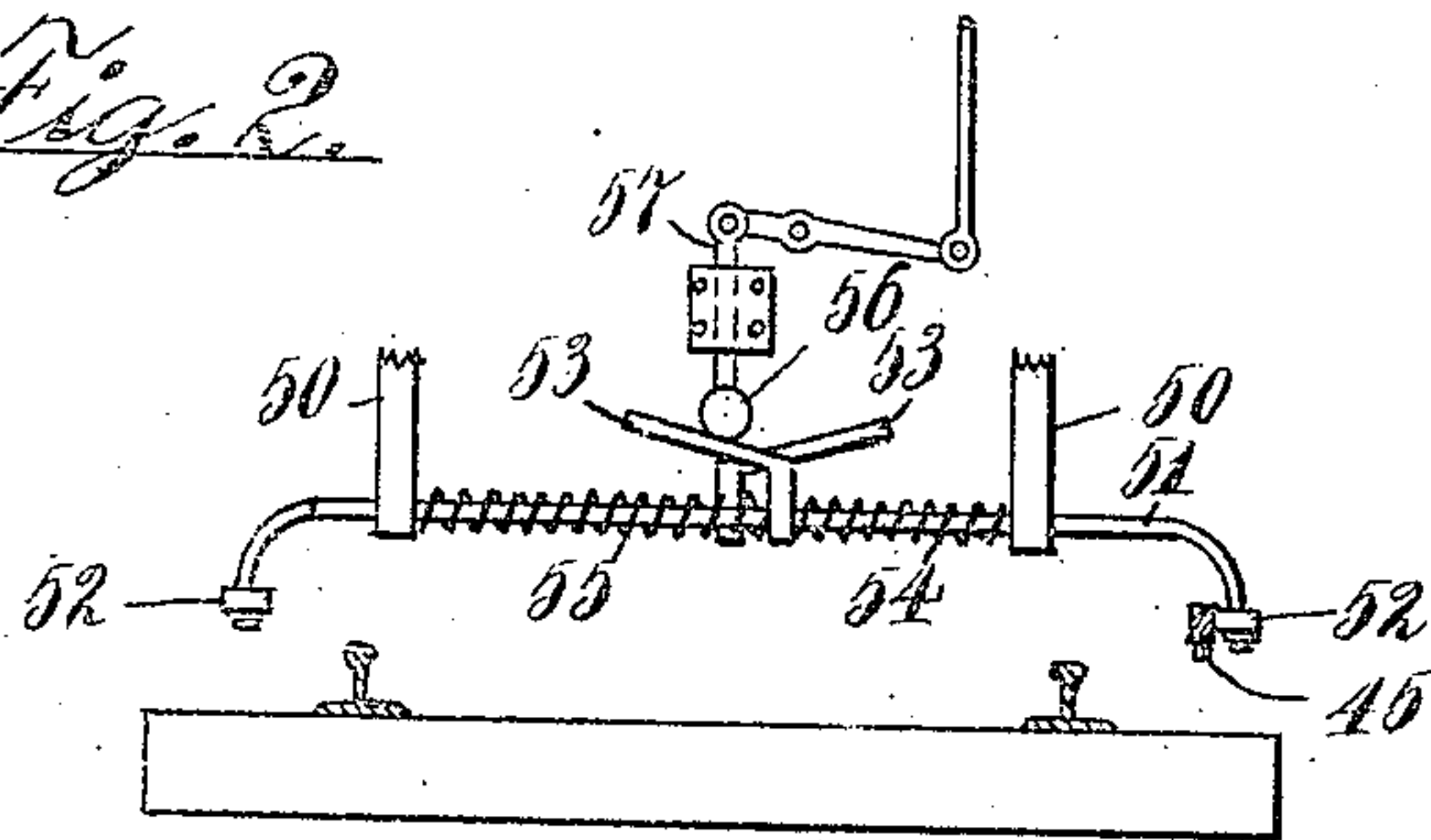


Fig. 3.

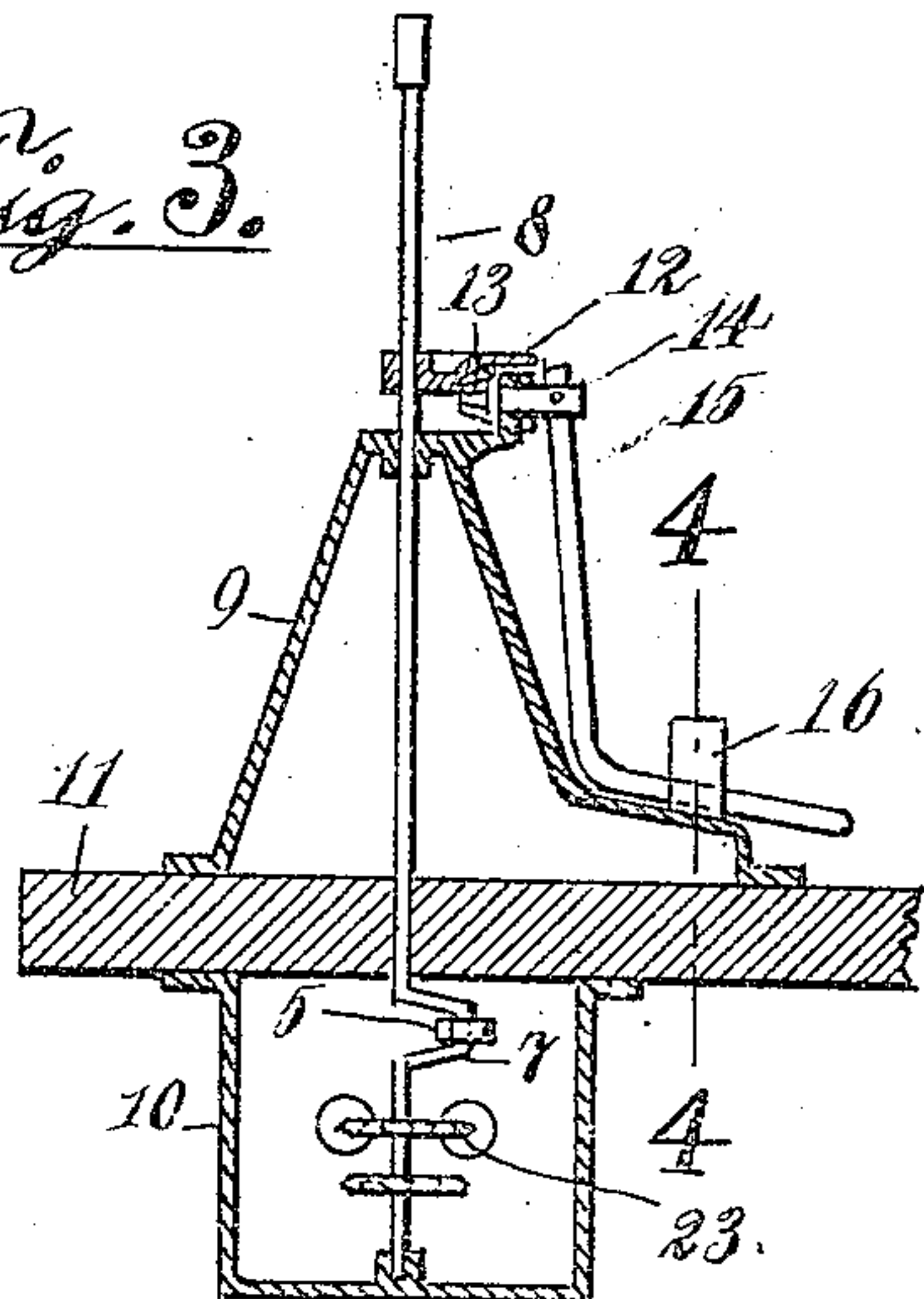


Fig. 4.

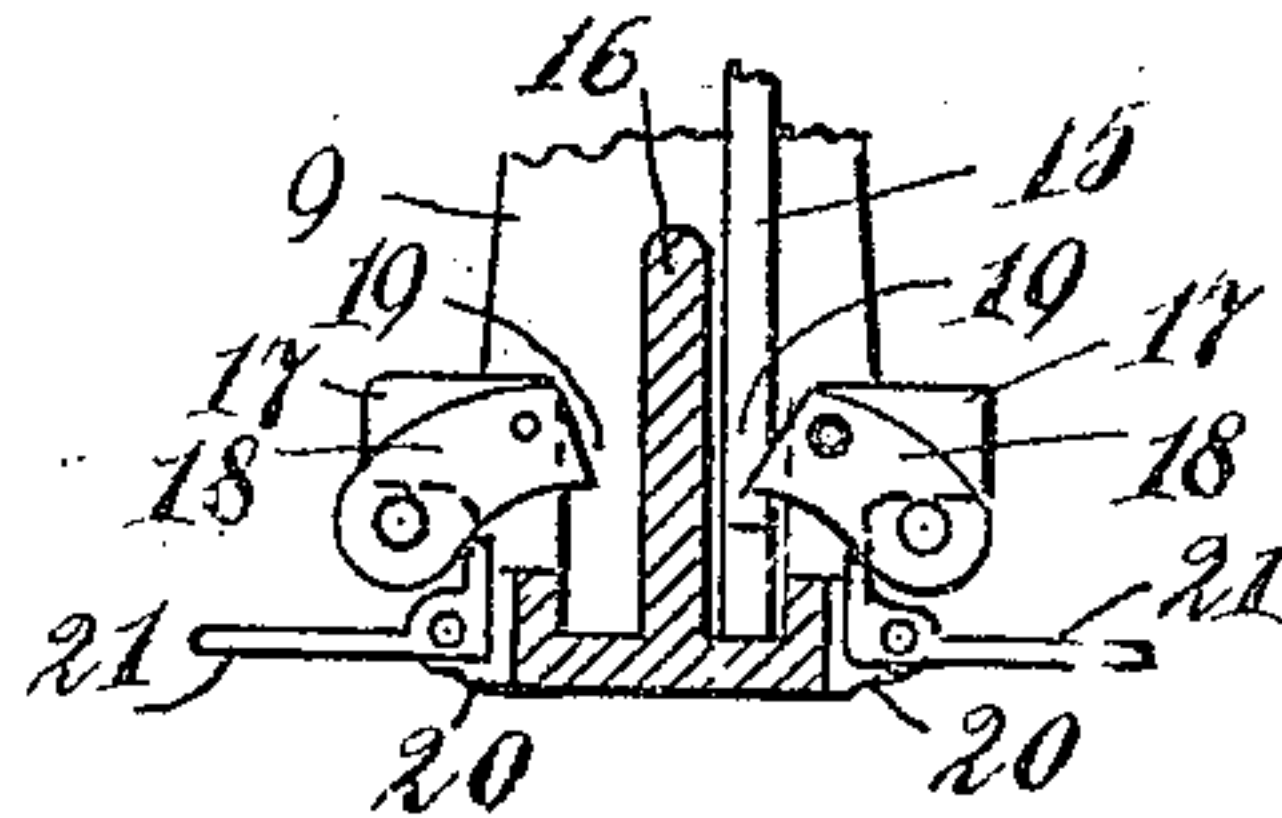


Fig. 5.

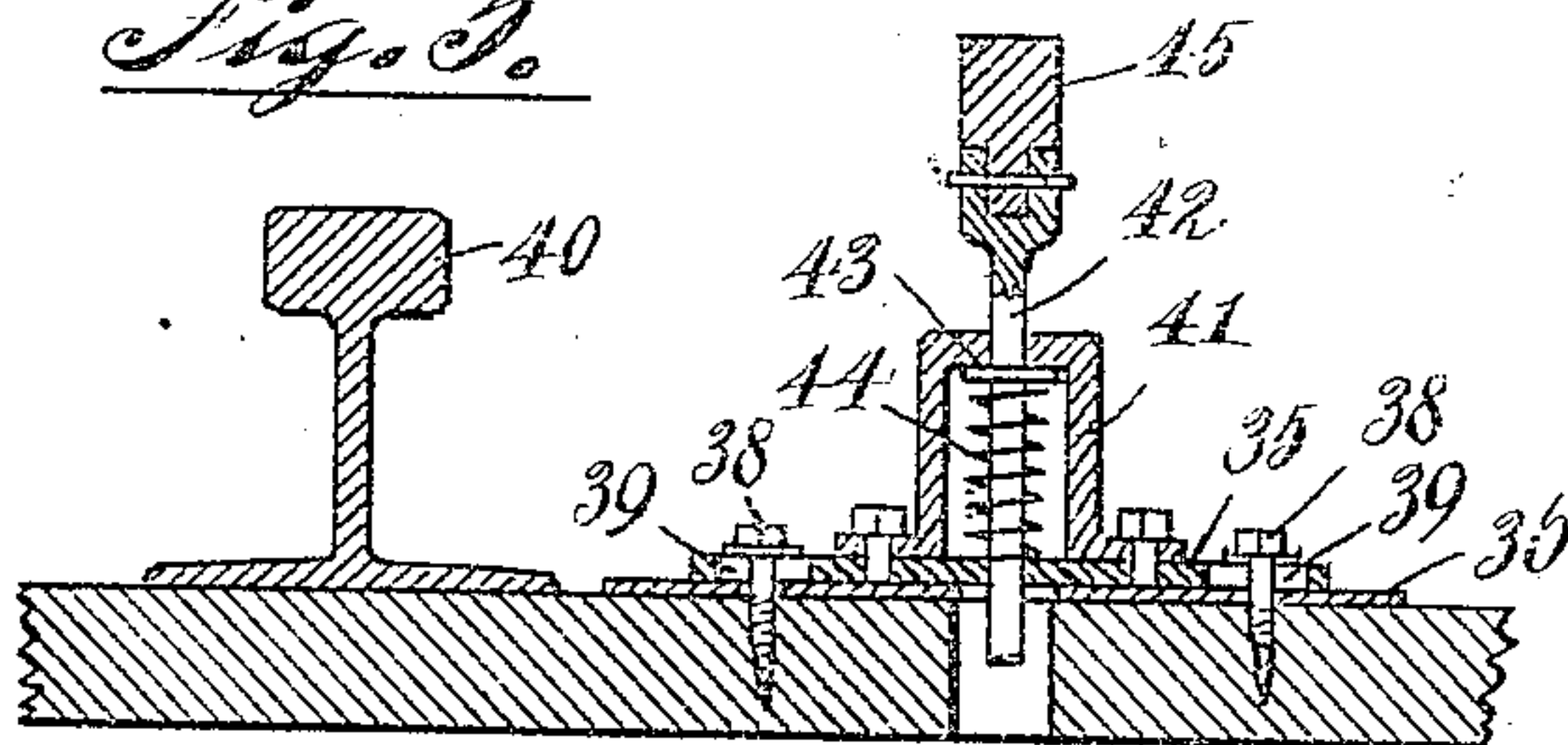


Fig. 6.

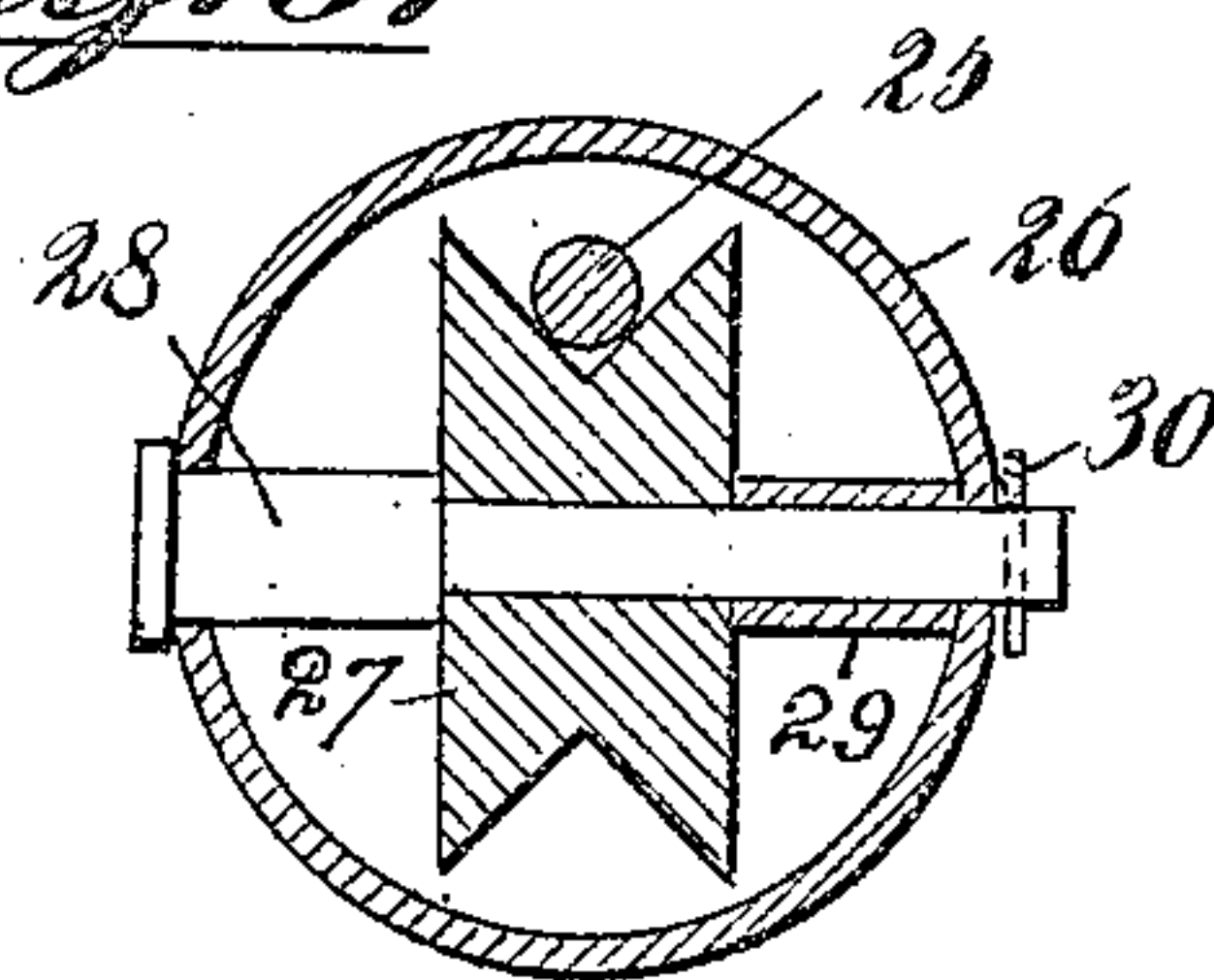
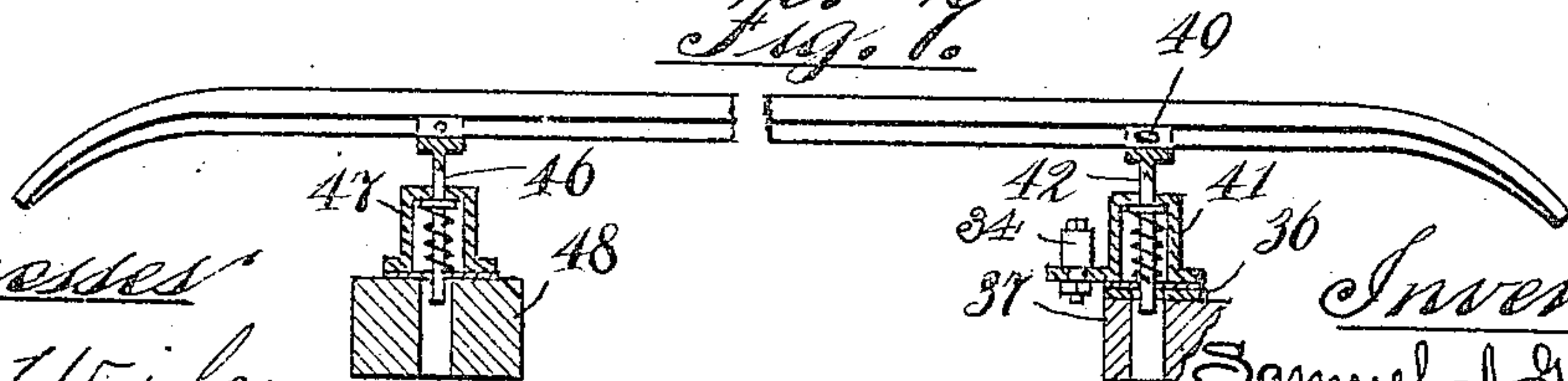


Fig. 7.



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UNITED STATES PATENT OFFICE.

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RAILWAY SAFETY DEVICE.

No. 817,702.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed September 23, 1905. Serial No. 279,860.

To all whom it may concern:

Be it known that I, SAMUEL A. GAEDE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway Safety Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel construction in a railroad safety device, more particularly to switch and signal and safety devices controlled by the switch-operating means, the object being to provide simple and efficient devices of this character; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a fragmentary plan view of a railroad, showing devices constructed in accordance with my invention applied thereto, including a part carried by a locomotive or other rolling-stock. Fig. 2 is a fragmentary detail section on the line 2 2 of Fig. 1. Fig. 3 is a central vertical sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail fragmentary section, on an enlarged scale, on the line 4 4 of Fig. 3. Fig. 5 is a fragmentary detail section, on an enlarged scale, on the line 5 5 of Fig. 1. Fig. 6 is a detail transverse section of the tubular conduit for the transmitting wire or cable employed. Fig. 7 is a detail longitudinal section on the line 7 7 of Fig. 1.

My present invention is designed to prevent passenger-trains on railroads from accidentally running into open switches, which so frequently causes disastrous wrecks, and to this end comprises a signaling device actuated by the switch-operating means, a device carried by a part of the rolling-stock and adapted to actuate or set the brake, and means controlled by the switch operating and signaling means for actuating said brake-setting device.

I am aware that signaling devices are at the present time actuated by the switch-operating devices and simultaneously with the switch, but signals cannot be completely depended upon, inasmuch as they are very apt to be overlooked or so obscured by atmospheric conditions as to prevent the engineer in control of the train from seeing the same. I have therefore devised means carried by the

locomotive to operate the air-brake independently of the engineer or other member of the crew and actuated by a member on the road-bed set in operative relation to said means simultaneously with the setting of the danger-signal and which will be effective to bring the train to a stop or so reduce its speed by the time the switch is reached as to either entirely prevent accident to the train or minimize the effect of such accident, and thereby prevent injury and loss of life to passengers and crew.

To better effect the results desired to be obtained, I have designed special switch-operating devices and parts actuated thereby, which I will now proceed to describe.

The bar 1, to which the switch 2 is secured, is connected at one end with the end of a toggle-lever 3, which, together with its companion toggle-lever 4, is pivotally connected with one end of a link 5, said lever 4 being pivotally secured at one end to a projection on the tie 6. The said link or pitman 5 is connected at its other end with the crank 7 of a vertical shaft 8, passing centrally through and suitably journaled in a standard 9, mounted upon and a casing 10 mounted below the tie 11, through which said shaft 8 also passes. Above said standard 9 said shaft 8 carries a segmental bevel-gear 12 rigid therewith, which meshes with a bevel-pinion 13 on a horizontal shaft 14, journaled in a bearing on said standard. Said shaft 14 is provided in its free end with a slot in which one end of a crank 15 is pivotally secured, by means of which said shaft 14 is turned, said crank being also free to swing slightly in another direction. On a projecting portion of said standard 9 is a vertically-disposed stop 16, and at each side of the same is a projection 17 of less height than said stop and each carrying two parallel horizontal projections between which dogs 18 are pivotally secured adjacent their inner ends, said inner ends being adapted to normally project into the recesses 19 between said stop 16 and projections 17. The outer ends of said dogs 18 are provided with openings adapted to receive locking means to prevent the inner ends of said dogs from being swung clear of the recesses 19. Pivotaly mounted upon suitable projections 20 below said projections 17 are L-shaped foot-levers 21, one arm of each of which is disposed in the path of and is adapted to normally support the outer end of the dog 18 and the other arm of each of which

extends outwardly and is adapted to be engaged and depressed by the foot to raise said outer end of said dog, and thereby swing the inner end thereof clear of the recess 19. The free end or arm of the crank 15 is adapted to be received in and held against removal by one of said dogs 18 at either limit of its movement to lock the switch in its open or closed position, respectively, the pivotal connection of said crank 15 with said shaft 14 being so disposed as to prevent said free arm of said crank from being raised to swing clear of said stop 16. The said toggle-lever 3 4 is so disposed as to bring all pivots thereof in alignment when the switch is closed, and thus prevent accidental opening thereof, and to further guard against such accidental opening the pivotal connection of the link or pitman 5 with the crank 7 is so made that when the switch is closed said pivot is disposed in alignment with the axis of said shaft 8 and the pivotal connection of said link or pitman with said toggle-levers. Hence accidental opening of such switch must necessarily be against a succession of dead-centers and likewise of the locking means before described.

The greatest danger to trains is to those running toward the switch from the direction in which the switch points, and hence it is most important to signal such trains at a point sufficiently far removed from the switch to enable heavy trains running at a higher rate of speed to be brought to a stop before reaching the switch in the event that the latter be open; but I consider it also important to signal trains running in the opposite direction, but this may be eliminated at the option of railroad company.

To transmit the movement of said shaft 8 to the shaft 22 at a distance from the switch, I provide sprocket-wheels 23 and 24 on said shafts, respectively, over which sprocket-chains are trained, which are secured at their ends, preferably, to wires 25, which pass through tubular conduits 26 and over grooved pulleys 27 therein, said pulleys being of relatively sufficiently large diameter to prevent said wires from springing off the same or becoming jammed between the edges of the pulley and the inner wall of the tube. Said pulleys are preferably loosely mounted upon shoulder-pins 28 and held in proper position thereon by means of sleeves 29, mounted on the reduced ends of the pins 28, the latter passing diametrically through the tube and held in place by means of cotter-pins 30 in a well-known manner. The said shaft 22 is suitably journaled in relatively properly disposed bearings and is provided between its ends with a crank 31, which is connected, by means of a link or pitman 32, with the pivotal connection between the toggle-levers 33 and 34, coinciding in form and relative arrangement with the toggle-levers 3 and 4. The said toggle-lever 34 is connected at one end

with a plate 35, resting upon a plate 36 on a tie 37 and held thereon by means of lag-screws 38, passing through slots 39 in said plate 35, the latter being movable laterally relatively to the rails 40. On said plate 35 is mounted a cylindrical casing 41, in which a plunger 42 is vertically movable, said plunger being provided with a collar 43 between its ends, between which and said plate 35 a special compression-spring 44 is disposed, which serves to normally maintain said plunger at the upper limit of its movement. The said plunger 42 passes through an opening in the plate 35 and a slot in the tie for obvious reasons. On said plunger 42 is supported one end of a rail 45, the other end of which is supported upon a similar plunger 46, vertically movable in a casing 47, disposed on a tie 48 and rigid on the latter, said rail being thus yieldingly supported. Said rail is preferably T-shaped and its lower flange disposed in the bifurcated heads of the plungers and secured by means of pins or bolts, one of which passes through a slot 49 in said flange. The ends of said rail are bent downwardly, so that in the event of the passage of a snow-plow or the like which might strike said rail the latter would be depressed out of its path. The said rail is shifted at one end by means of the toggle-lever connection with the shaft 22, so that it is disposed either parallel with the rails or at an angle thereto and when disposed in the latter position, as indicated in dotted lines in Fig. 1, lies in the path of a device carried by the locomotive of a passing train, which I will now proceed to describe. It will be noted that when the switch is closed the said rail 45 is in the position indicated in full lines in Fig. 1.

On any suitable portion of the locomotive are mounted two guides 50, in which two parallel plungers 51 are longitudinally movable. Each of said plungers is bent downwardly at one end and carries an antifriction-roller 52, which is disposed above the upper edges or faces of the rails and outwardly therefrom. Each of said plungers is provided between its ends with a projection 53, having an inclined upper face, the inclined faces of the two projections being oppositely disposed. Said plungers are normally maintained in the position shown in Fig. 1 by means of springs 54 and 55, disposed upon opposite sides of said projections 53 and bearing against said guides 50. Disposed in the path of the inclined faces of both said projections is a roller 56, disposed upon the lower end of a suitable plunger 57, which may be suitably connected with a lever controlling the air-brake or any other means for bringing the train to a stop. The outer face of the rail 45 when set in the position indicated in dotted lines in Fig. 1 is disposed in the path of one of said antifriction-rollers 52 and as the train passes draws one of said

plungers 51 outwardly, thereby obviously forcing said plunger 57 upwardly, which movement serves to set the air-brake, and thus brings the train to a stop. The said rail 45 may be of any desired length in order to render the movement of the plunger 57 very gradual. Should the train be running in the opposite direction when the switch is open, the antifriction-roller 52 would engage the inner face of the rail 45 and the plunger 51 moved inwardly, and thus not actuate the plunger 57. If desired, the said rail 45 and actuating mechanism therefor may be duplicated at a distance from the switch in the opposite direction; but illustration thereof is omitted as being superfluous.

I claim as my invention—

1. The combination with brake - setting means carried by the locomotive, and switch-operating means disposed on the railroad, of a deflecting-rail disposed adjacent the rails and substantially parallel therewith at a distance from said switch said rail being supported at one end on a fixed pivot and at its other end on a shoe movable laterally with relation to the rails, means disposed in operative relation to said shoe for imparting motion thereto to throw said rail into or out of the path of said brake-setting means, and connection between said last-named means and said switch-operating means for simultaneously operating said switch and said rail.

2. The combination with laterally-movable brake-setting means carried by the locomotive, and switch - operating means disposed on the railroad, of a horizontally-disposed deflecting-rail disposed on the railway at a distance from said switch and substantially parallel therewith, a shoe movable laterally relatively to the rails and supporting said rail at one end, actuating means dis-

posed in operative relation to said shoe, and connection between said shoe - actuating means and said switch-operating means to throw said shoe toward the rails when the switch opened, whereby said deflecting-rail is thrown into the path of said brake-setting means.

3. The combination with a locomotive carrying brake-setting means, and a deflecting-rail disposed in the paths of and adapted to actuate said brake - setting means, of a switch, a toggle - lever for setting same, a crank-shaft actuating said toggle-lever, a crank geared to said crank-shaft, and locking means disposed in operative relation to said crank, and gearing between said crank-shaft and said deflecting-rail to set the latter simultaneously with the switch.

4. The combination with switch-operating means comprising toggle - levers connected with said switch, a crank-shaft connected by a link with said toggle-levers and means for actuating said crank-shaft, of a deflecting-rail disposed adjacent the rails at a distance from said switch and adapted to be swung parallel with or at an incline to said rails, toggle-levers connected with said rail at one end, gearing between said toggle-levers and said crank-shaft for actuating said deflecting-rail simultaneously with said switch, and brake-setting means carried by the locomotive and disposed in operative relation to said deflecting-rail to be actuated thereby when the switch is open.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

SAMUEL A. GAEDE.

Witnesses:

RUDOLPH WM. LOTZ,
E. F. WILSON.