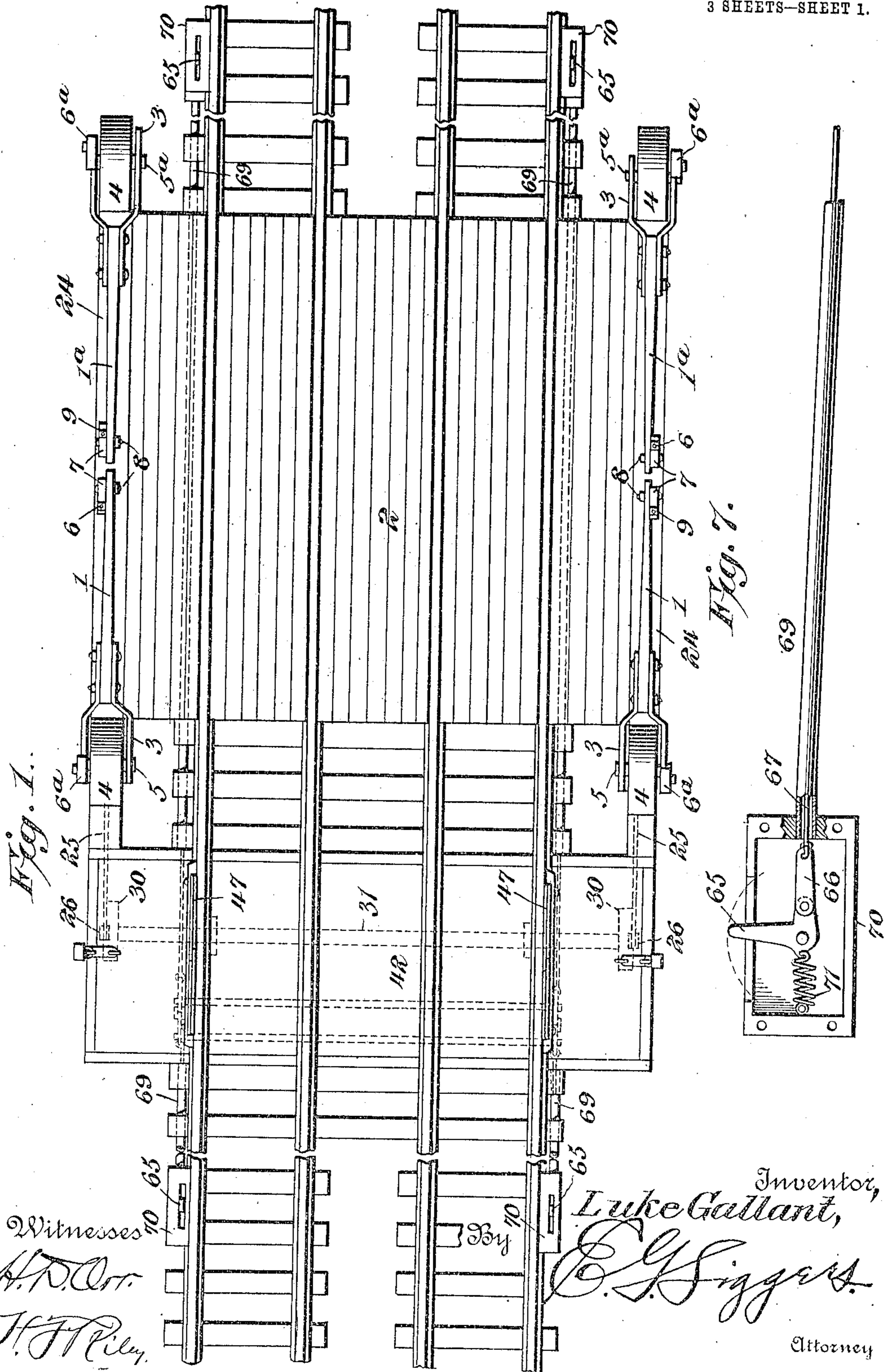


No. 843,335.

PATENTED FEB. 5, 1907.

L. GALLANT.
AUTOMATIC RAILROAD GATE.
APPLICATION FILED AUG. 6, 1906.

3 SHEETS—SHEET 1.



Witnesses
H. D. Carr
H. F. Riley

Inventor,
Luke Gallant,
C. G. Siggers
Attorney

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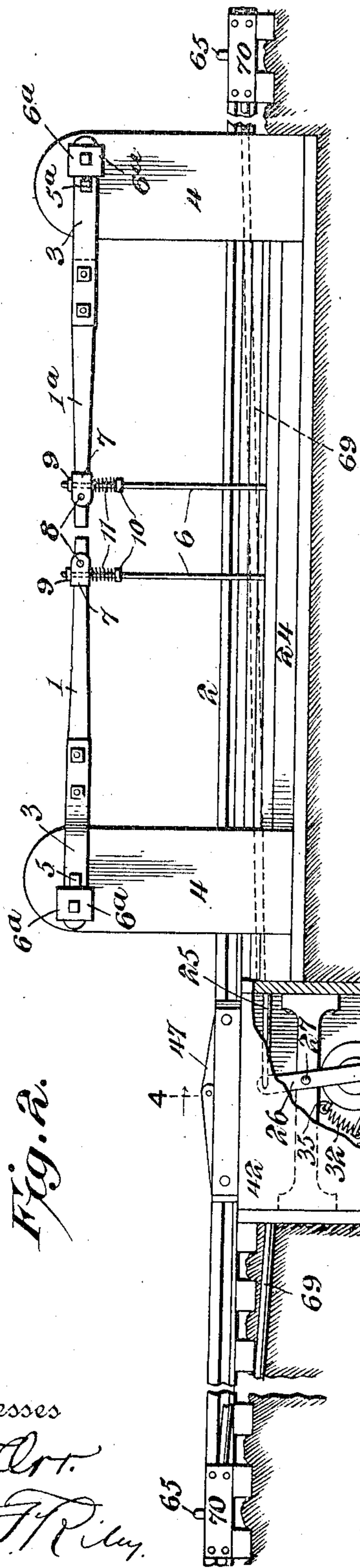
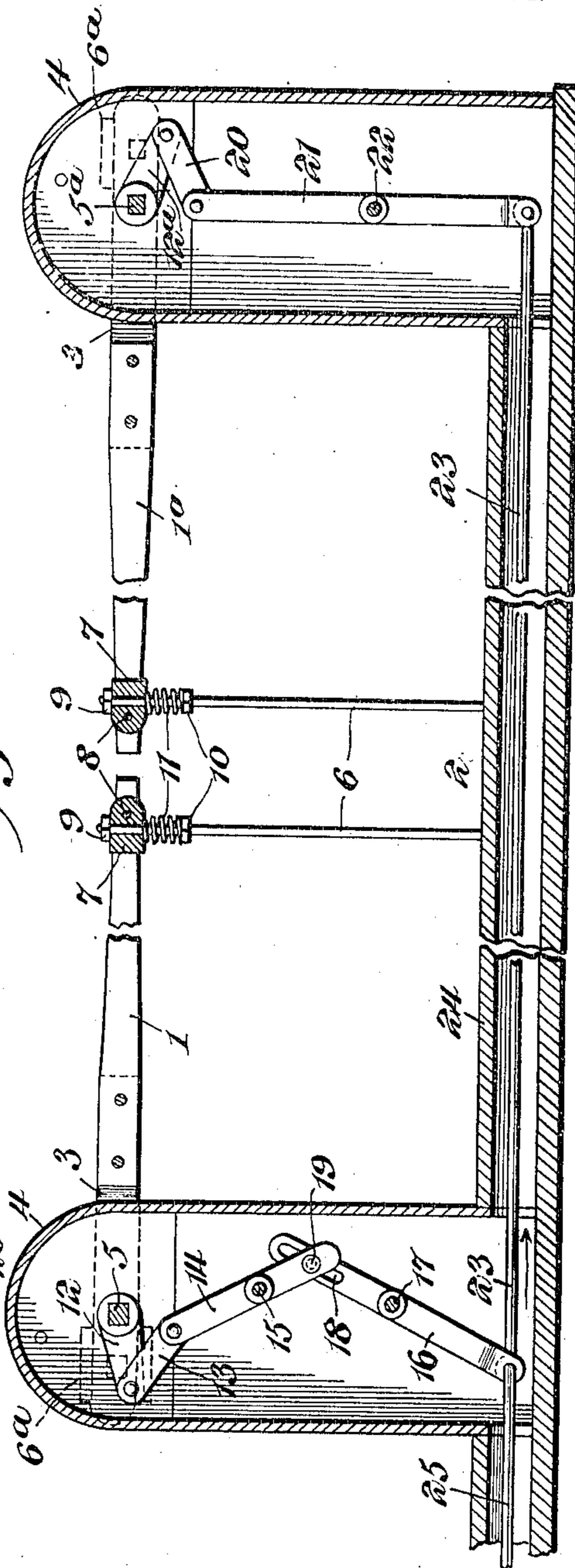


Fig. 2.

Fig. 3.



Luke Gallant, Inventor,

By

C. J. Siggers.

Attorney

Witnesses
A. D. Art.
J. F. Riley.

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3 SHEETS—SHEET 3.

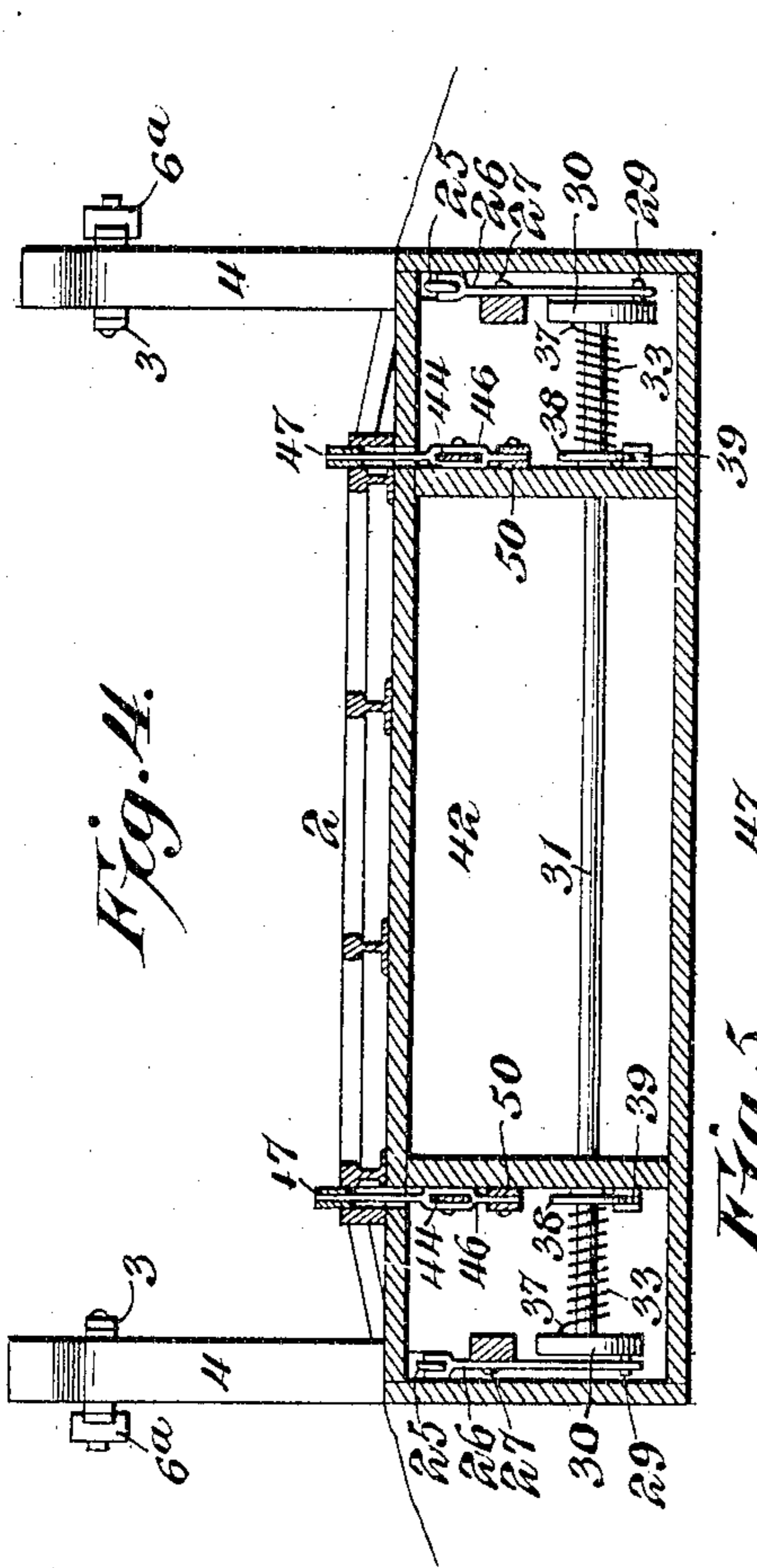


Fig. 4.

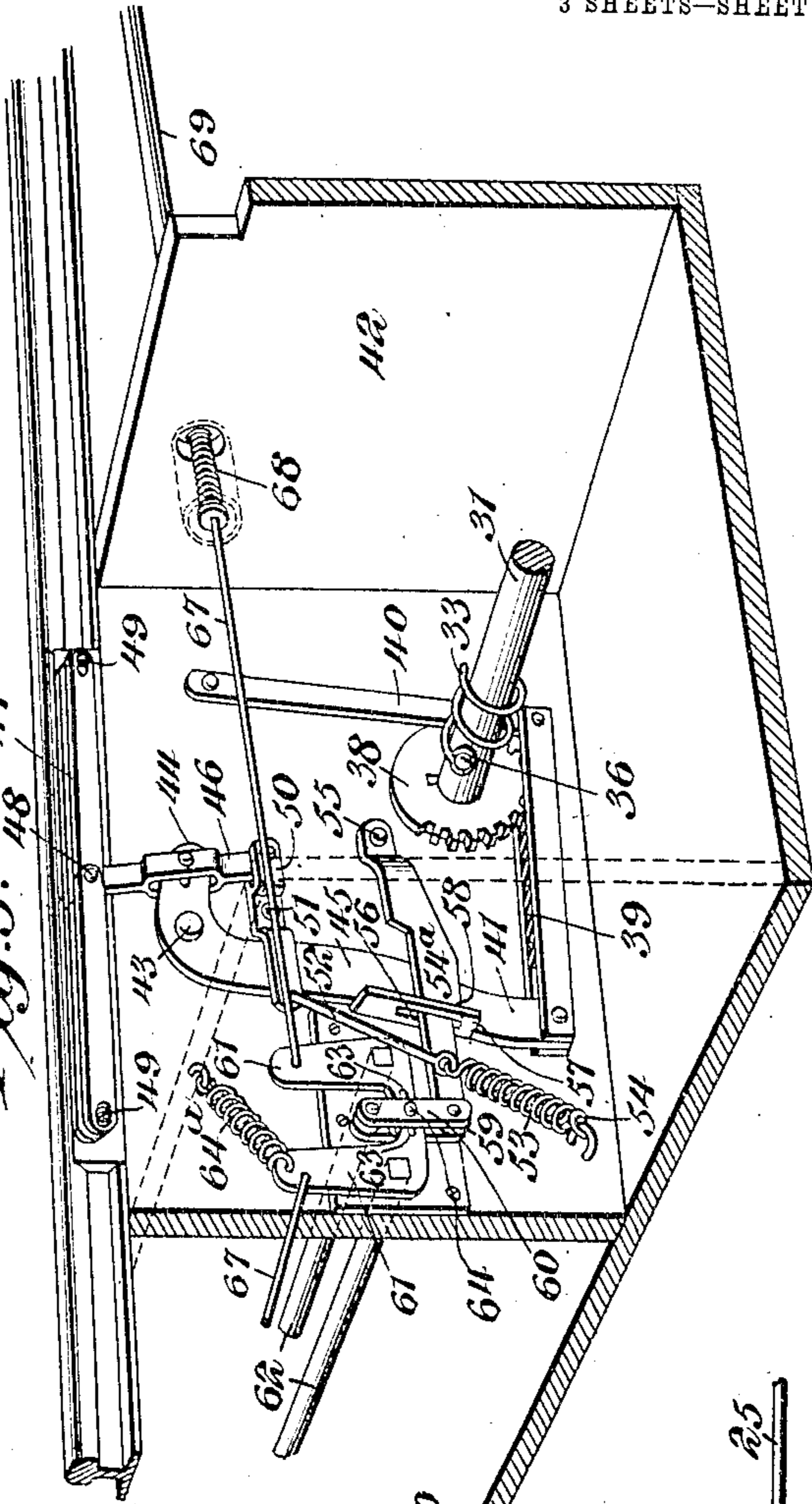


Fig. 5.

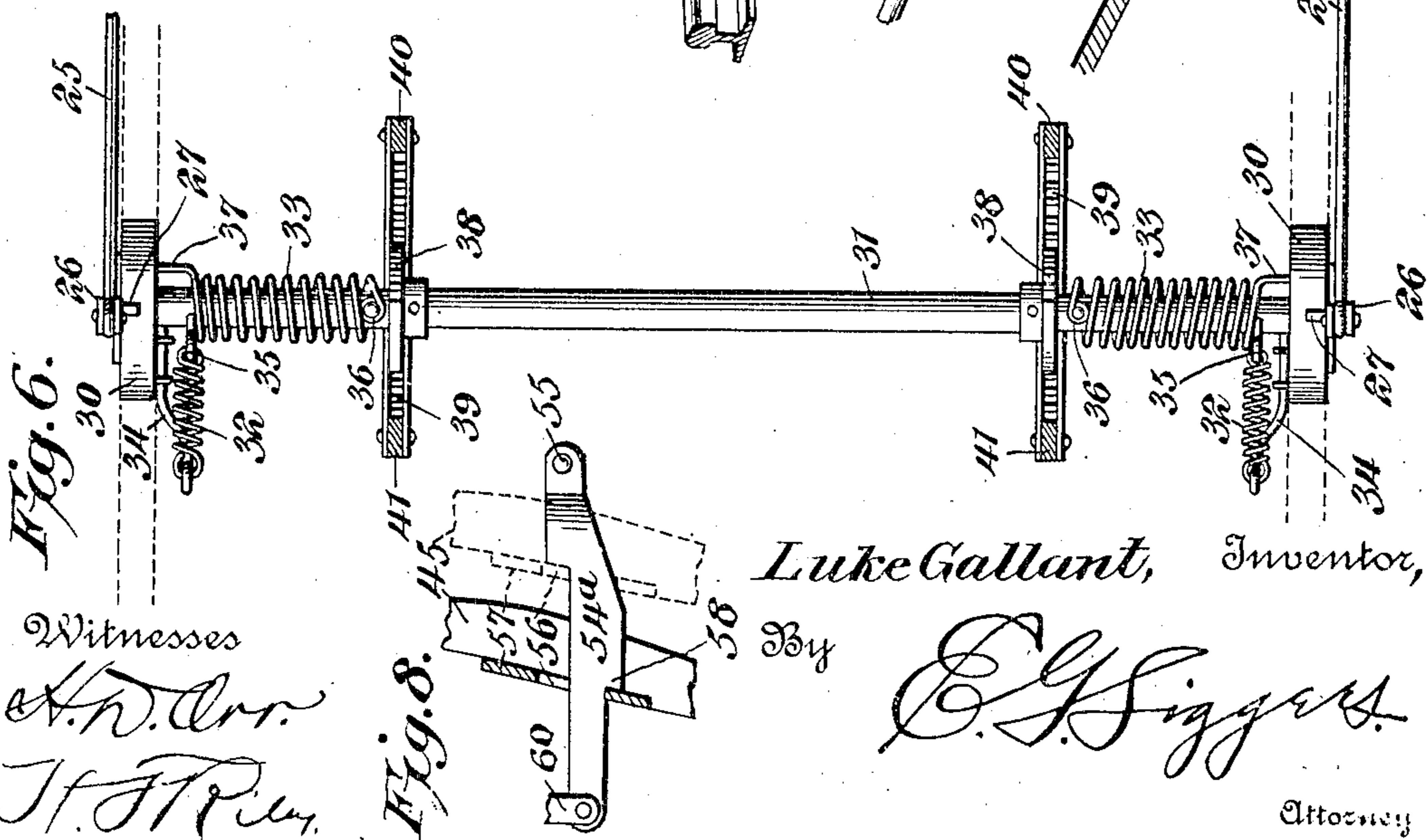


Fig. 6.

Witnesses
A. D. Carr.
J. F. R.

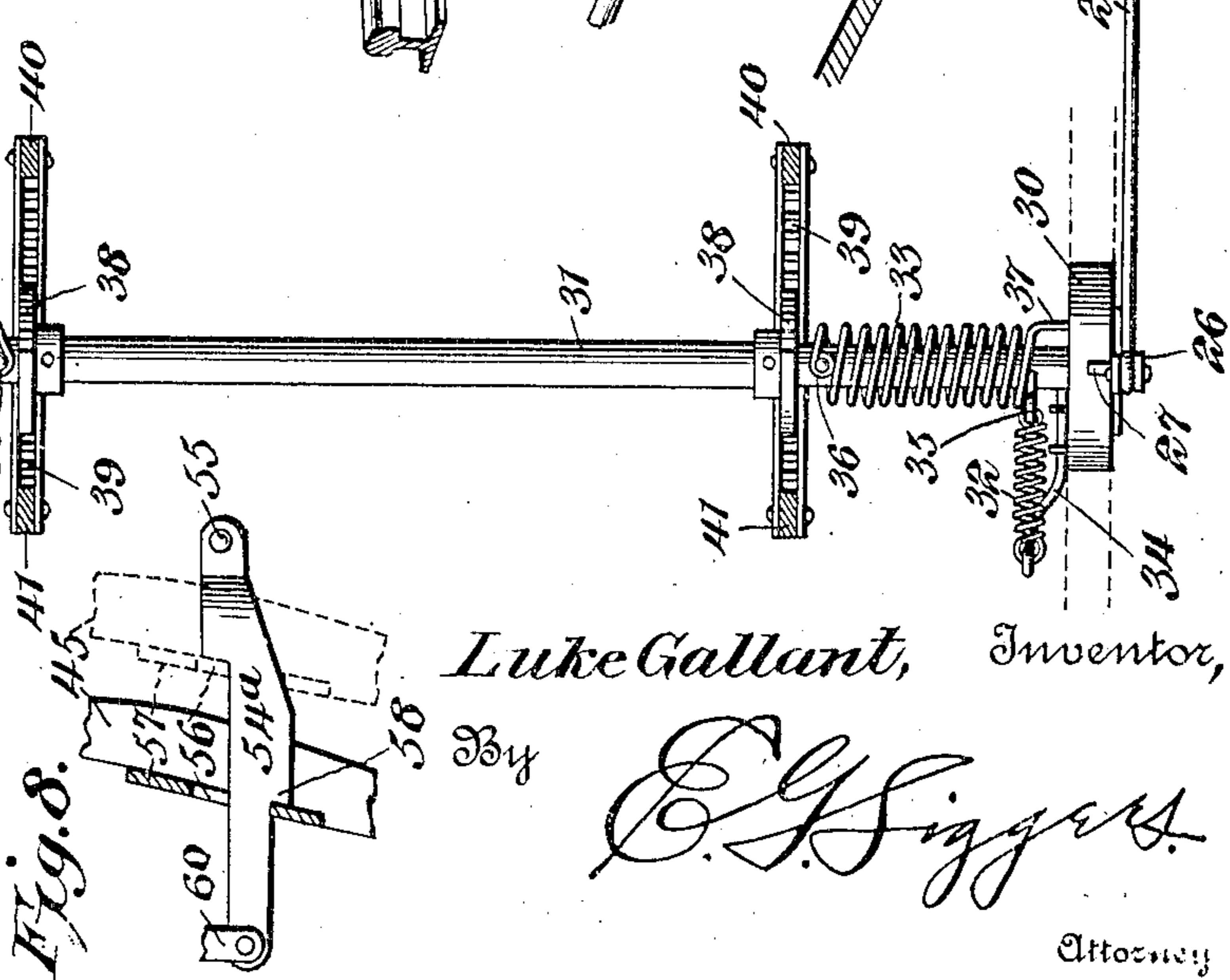


Fig. 8.

Luke Gallant, Inventor,

C. G. Siggers, Attorney

UNITED STATES PATENT OFFICE.

LUKE GALLANT, OF AMERY, WISCONSIN.

AUTOMATIC RAILROAD-GATE.

No. 843,335.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed August 6, 1906. Serial No. 329,451.

To all whom it may concern:

Be it known that I, LUKE GALLANT, a citizen of the United States, residing at Amery, in the county of Polk and State of Wisconsin, have invented a new and useful Automatic Railroad-Gate, of which the following is a specification.

The invention relates to improvements in automatic railroad-gates.

The object of the present invention is to improve the construction of automatic railroad-gates and to provide a simple, inexpensive, and efficient one of great strength and durability which will be adapted to be opened and closed by passing trains and which will not require the attention of an operator or other person.

With these and other objects in view the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a plan view of a railroad-gate constructed in accordance with this invention. Fig. 2 is an elevation of the same, partly in section. Fig. 3 is an enlarged vertical longitudinal sectional view illustrating the construction of the gates and the means for communicating rotary motion to the shafts or pivots of the gates for swinging the same from a vertical to a horizontal position, and vice versa. Fig. 4 is a transverse sectional view taken substantially on the line 4-4 of Fig. 2. Fig. 5 is an enlarged detail perspective view illustrating the construction for setting and tripping the gates. Fig. 6 is an enlarged detail view illustrating the arrangement of the main transverse shaft, the gearing for actuating the same, and the spring for yieldably connecting the shaft with the crank-disks. Fig. 7 is a detail view illustrating the arrangement of the train-operated tripping-levers. Fig. 8 is a detail view illustrating the construction for locking the main lever to hold the gates in their open position.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 and 1^a designate oscillatory mast-gates, arranged in pairs at opposite sides of a railroad-track at a crossing 2, as clearly illustrated in Fig. 1 of the drawings, and arranged in a vertical position when open and adapted to swing downwardly to the position illustrated in Figs. 2 and 3 of the drawings to close the crossing in the usual manner. The gates at each side of the railroad-track and the mechanism for operating the same are of the same construction, and the following detail description of the construction and operation of one pair of the gates and the operating mechanism thereof is applicable to both pairs of gates and both sets of the operating mechanism. The gates 1 and 1^a have bifurcated portions 3, which straddle posts 4 and which are pivoted to the same by transverse shafts 5 and 5^a. The shafts are arranged intermediate of the ends of the sides of the bifurcated portions of the gates, which are provided with counterbalancing-weights 6^a, adjustably secured to the outer portions or arms of the sides of the bifurcated portions of the gates. These counterbalancing-arms of the gates may, however, be weighted in any other preferred manner. The gates are preferably provided at their outer or free ends with rods 6, pivotally connected with the gates and adapted to fold automatically alongside the gates when the latter are raised and capable of swinging from the gates when the latter are closed. The rods are arranged vertically when the gates are in a horizontal position, and they support the free ends of the gates for relieving the same of strain. The upper attached ends of the rods 6 pierce blocks 7, which are pivoted to the free ends of the gates by means of bolts 8 or other suitable fastening devices. The attached portions of the rods are provided with nuts 9 and 10, located above and below the blocks when the gates are closed, and coiled springs 11 are interposed between the blocks and the lower nuts 10 for cushioning the gates in their closing movement.

The posts 4 are in the form of casings, and the shafts 5 and 5^a are provided with intermediate squared portions, which receive arms 12 and 12^a. The arms 12 and 12^a are arranged at a slight inclination and extend from the shafts in opposite directions when the gates are closed, as clearly illustrated in Fig. 3 of the drawings. The arm 12 is connected by a link 13 with the upper arm of an

upper inclined lever 14, located within the post 4 and fulcrumed at an intermediate point of its ends on a pivot 15. The lower arm of the inclined lever 14 is connected with
 5 a lower inclined lever 16, which is fulcrumed at an intermediate point between its ends on a pivot 17. The upper arm of the lower inclined lever is provided with a longitudinal slot 18, which receives a pin or pivot 19 of the
 10 lower arm of the upper lever. The arm 12^a at the opposite end of the roadway is connected by a link 20 with the upper arm of an upright lever 21, which is fulcrumed at a point between its ends on a pivot or pin 22.
 15 The lower arm of the lever 21 is connected by a rod 23 with the lower arm of the lower inclined lever 16, whereby the levers 16 and 21 are caused to move in unison. When the rod 23 is moved in the direction of the arrow
 20 in Fig. 3 of the drawings, the lower arms of the levers 16 and 21 are moved to the right and the arms of the shafts are swung downward, thereby partially rotating the shafts and raising the gates to open the same.
 25 When the rod 23 is moved in the opposite direction, the gates will be swung downward for closing them. The rod 23 is arranged in a suitable boxing or casing 24, which may be of any desired construction.
 30 The lower end of the lever 16 is connected by a rod 25 with the upper arm of an upright lever 26, which is fulcrumed at an intermediate point between its ends on a pivot or pin 27. The lower arm of the lever 26 is provided with a longitudinal slot 28, which receives a wrist-pin 29 of a crank disk or wheel.
 35 The crank-wheel or disk 30 is located at one end of a main transverse shaft 31, which extends entirely across the track and which carries the crank disk or wheel 30 of each set of operating mechanism.

The transverse shaft, which is rotated by the means hereinafter described for opening and closing the gates, is yieldably connected
 45 with the crank disk or wheel 30 by means of coiled springs 32 and 33, whereby the gates are permitted to move independently of the actuating mechanism. This construction will permit the gates to be readily raised by
 50 hand should they close either upon a vehicle or while a vehicle is crossing the track. Also this construction will prevent the mechanism from being injured should the gates when tripped or released be held in their closed position by any means. The spring 32 is connected with an arm 34 of the crank disk or wheel and with an arm 35 of the shaft, and the other spring 33, which is disposed on the shaft 31, is secured at its inner end 36 to the
 60 shaft and is connected at its outer end 37 to the crank disk or wheel. The springs normally maintain the crank-disk in proper position with relation to the shaft, and should the actuating mechanism move independently of either set of gates the springs will

operate the crank-disk and open or close the gates, as the case may be, when the said gates are free to respond to the action of the springs.

The transverse shaft has keyed or otherwise fixed to it a mutilated gear or pinion 38, 70 which meshes with a reciprocatory rack 39, located beneath the gear or pinion 38 and supported at one end by a link 40 and connected at its other end with a main lever 41. The link 40 is pivoted at its upper end to the
 75 box or casing 42, in which the mechanism is arranged, and the lower end of the link is pivoted to one end of the rack 39.

The main lever 41, which is substantially L-shaped, is fulcrumed at its angle on a pin 80 or pivot 43, and it consists of a short upper substantially horizontal arm 44 and a long approximately vertical arm 45. The short upper arm 44 of the main lever 43 is connected by a vertical link or bar 46 with a pair 85 of train-operated bars or levers 47, pivoted at their inner ends by a pin 48 to the upper end of the bar 46, which is arranged in an approximately vertical position. The outer ends of the bars or levers 47 are slotted and are 90 mounted adjacent to the outer rail of one of the tracks on suitable pins or pivots 49. When the gates are closed, the bars or levers 47 are arranged in an inclined position, as illustrated in Fig. 2 of the drawings, and they 95 are adapted to be depressed by the wheels of a train to open the gates and set the same for automatic closing. The bar 46 is provided with a central opening to receive the arm 44 of the lever 43, and the lower end of the bar 100 46 is pivoted to one arm of an approximately horizontal lever 50, which is fulcrumed at an intermediate point on a pin or pivot 51, the other arm of the lever 50 being connected by a link 52 with a coiled spring 53, which in 105 practice will be of sufficient strength to close the gates when the mechanism is tripped by a train, as hereinafter explained. The spring 53, which is arranged at an inclination, is secured at its lower end 54 to the box or 110 casing 42, and it is adapted to raise the bars or levers 47 from the horizontal position shown in Fig. 5 to the inclined position shown in Fig. 2.

The upward and downward movements of 115 the bars of levers 47 oscillate the main lever 45 and reciprocate the rack 39 and partially rotate the shaft 31, whereby the gates are opened and closed. The depression of the bars or levers 47 swings the short arm 44 of 120 the main lever 43 downward and opens the gates. This movement also places the spring 53 under tension.

The gates are locked in their open position by means of an approximately horizontal 125 latch-lever 54^a, fulcrumed at one end on a pin or pivot 55 and extending through a slot or opening 56 of a flange 57 of the main lever 43 and provided with a shoulder 58 for engaging the flange 57. The latch or locking lever 54^a 130

rests upon the flange 57 at the bottom of the slot 56, and it drops into engagement with the flanges when the lower arm of the lever 43 is swung beyond the shoulder 58. The other end 59 of the latch-lever is connected by a link 60 with a pair of bell-crank levers 61, mounted on transverse shafts or rods 62 and having their arms arranged horizontally and vertically. The link 60 preferably consists of two plates or bars arranged at opposite sides of the horizontal arms of the bell-crank levers, and the said horizontal arms are overlapped and provided with slots 63 to receive the pivot 64, which connects the link with the levers 61. The rods 62 connect the bell-crank levers 61 of the two sets of operating mechanism, so that when one of the tripping devices, hereinafter explained, is operated both sets of operating mechanism will be simultaneously tripped. A coiled spring 64^a is connected with the upwardly-extending arm of one of the bell-crank levers 61 for maintaining the same and the latch-lever in position for locking the main lever 43.

The upwardly-extending arms of the bell-crank levers are connected with pivotally-mounted tripping devices 65, consisting, essentially, of bell-crank levers located a suitable distance from the crossing at each side thereof. The tripping device has an upwardly-extending arm, which projects above the treads of the rails a sufficient distance to be engaged by the cow-catcher or pilot of a locomotive; but it may be arranged to be operated by any other portion of a moving train. The other arm of the tripping device is connected by a link 66 with an operating-rod 67, and the latter, which extends to the lever 61, is preferably composed of sections connected by a coiled spring 68, which is adapted to take up any slack of the parts. The rod 67 is arranged within a suitable casing 69, consisting of a pipe or tube, and the tripping device 65, which is located within a suitable box or casing 70, is maintained in position for operation by means of a coiled spring 71, secured to the train of the tripping device and to the said box or casing. When the tripping device 65 is swung toward the crossing by a train approaching the same, the inner bell-crank lever 61 will be operated to lift a latch-lever out of engagement with the main lever 43 to permit the spring 53 to actuate the main lever and operate the gear-
ing for partially rotating the shaft 31. When the gate-operating mechanism is tripped, the arm of the horizontal lever 50, which is connected with the spring 53, is swung downward and the other arm of the horizontal lever 50 is raised, thereby oscillating the main lever 53 and elevating the depressible bars or levers 47.

The train-operated device for setting and tripping the gates may be located at any distance from the crossing, and in practice an

audible signal, such as a bell, will be provided for announcing the approach of a train.

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

1. The combination with a pair of pivoted gates, arms connected with the gates and movable in opposite directions, a single lever fulcrumed at an intermediate point and connected with one of the arms, upper and lower levers connected together at their adjacent ends, the upper lever being also connected with the other arm, and operating mechanism connected with the lower lever and the said single lever.

2. The combination with a gate, of a gear connected with the gate, a rack meshing with the gear, a spring for moving the rack in one direction, and train-operated means for moving the rack in the opposite direction.

3. The combination with a gate, of a gear connected with the gate, a rack meshing with the gear, a lever connected with the rack for actuating the same, a spring for moving the lever in one direction, and train-operated means for moving the lever in the opposite direction.

4. The combination with a gate, of a lever fulcrumed at an intermediate point and having one of its arms connected with the gate, a crank element connected with the other arm of the lever, a gear connected with the crank element, a rack meshing with the gear, and means for actuating the rack to open and close the gate.

5. The combination with a gate, of a lever fulcrumed at an intermediate point and having one of its arms connected with the gate, a crank element connected with the other arm of the lever, a gear yieldably connected with the crank element, a rack meshing with the gear, a spring for moving the rack in one direction, and train-operated means for moving the rack in the opposite direction.

6. The combination with a gate, of a shaft, a crank element mounted on the shaft and connected with the gate, a coiled spring disposed on the shaft and connected with the crank element, a second spring connected with the crank element and with the shaft, and means for operating the shaft.

7. The combination with a gate, of a shaft connected with the gate, a gear mounted on the shaft, a rack meshing with the gear, a lever connected with the rack for actuating the same, train-operated means for moving the lever in one direction, and means for moving the lever in the opposite direction.

8. The combination with a gate, of a shaft connected with the gate, a gear mounted on the shaft, a rack meshing with the gear, a link supporting one end of the rack, a lever connected with the other end of the rack, and means for actuating the lever for reciprocating the rack to open and close the gate.

9. The combination with a gate, of a gear, means for communicating motion from the gear to the gate, a reciprocatory rack meshing with the gear, a lever connected with the rack, train-operated mechanism for moving the lever in one direction, a spring for moving the lever in the opposite direction, locking mechanism for engaging the lever, and train-operated tripping mechanism connected with the locking mechanism for releasing the lever.

10. The combination with a gate, a lever, a rack connected with the lever, a gear meshing with the rack and connected with the gate, train-operated mechanism for moving the lever in one direction, a spring for moving the lever in the opposite direction, locking mechanism for holding the lever against movement, and train-operated tripping mechanism connected with the locking mechanism for releasing the lever.

11. The combination with a gate, of a lever, means for communicating motion from the lever to the gate, and springs for moving the lever in one direction, a train-operated device connected with the lever for moving the same in the opposite direction, a latch-lever provided with means for engaging the said lever for holding the gate in one position, and train-operated tripping mechanism connected with the latch-lever for releasing the other lever to permit the gate to be actuated by the said spring.

12. The combination with a gate, of a lever provided with a flange having an opening, means for communicating motion from the lever to the gate, train-operated mechanism for moving the lever in one direction, a spring for moving the lever in the opposite direction, a latch-lever operating in the opening of the said flange and provided with means for engaging the same to lock the gate in one position, and train-operated tripping mechanism connected with the latch-lever for releasing the other lever.

13. The combination with a gate, of a bell-crank lever fulcrumed at its angle and having an upper approximately horizontal arm, means for connecting the other arm of the lever with the gate for operating the latter, a depressible train-operated device, a bar or member connecting such device with the upper arm of the said lever, a horizontal lever connected with the said bar or member, a spring connected with the horizontal lever for moving the other lever in one direction, and means for locking the bell-crank lever and for tripping the same.

14. The combination of a gate, a main lever,

means for communicating motion from the main lever to the gate, a spring for moving the said lever in one direction, train-operated mechanism for moving the said lever in the opposite direction, a latch-lever provided with means for engaging the main lever, bell-crank levers connected with the latch-lever for disengaging the same from the main lever, and train-operated tripping devices connected with the bell-crank levers.

15. The combination of a gate, a main lever, means for communicating motion from the main lever to the gate, a spring for moving the main lever in one direction, train-operated means for moving the said lever in the opposite direction, a locking-lever provided with means for engaging the main lever, bell-crank levers having overlapped arms provided with slots, a link connected with the latch-lever and having a pivot arranged in the said slots, and train-operated tripping devices connected with the bell-crank levers.

16. The combination of a gate, a main lever fulcrumed at an intermediate point, train-operated means connected with one arm of the lever, a latch directly engaging the other arm of the lever, means for communicating motion from the lever to the gate, and train-operated means connected with the latch for releasing the main lever.

17. The combination of a gate, a main lever fulcrumed at an intermediate point, means for communicating motion from the main lever to the gate, a train-operated device connected with one arm of the said lever for operating the same, a latch directly engaging the other arm of the main lever for locking the same, inner levers connected with the latch for releasing the main lever, and outer train-operated levers connected with the inner levers.

18. The combination of a gate, a main lever, means for communicating motion from the main lever to the gate, a latch for locking the main lever, means for actuating the main lever, and a train-operated tripping device connected with the latch and comprising a bell-crank lever, a spring connected with the bell-crank lever for holding one of the arms in an upright position, and a link connected with the other arm of the bell-crank lever.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LUKE GALLANT.

Witnesses:

L. M. RICHARDSON,
F. G. MCKENZIE.