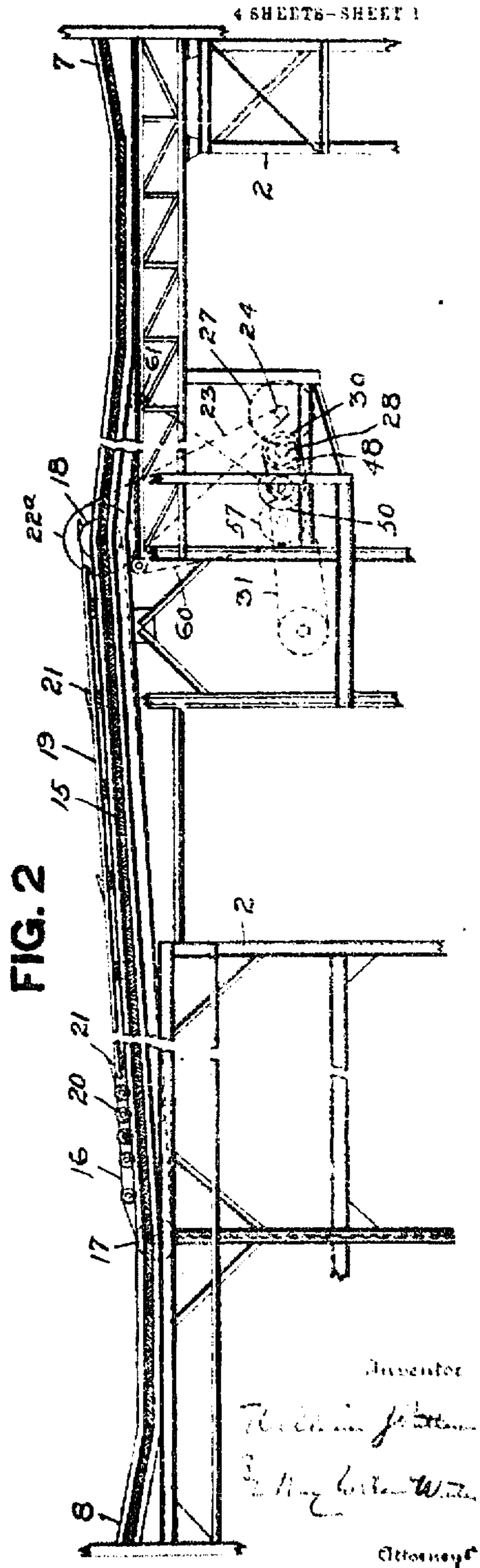
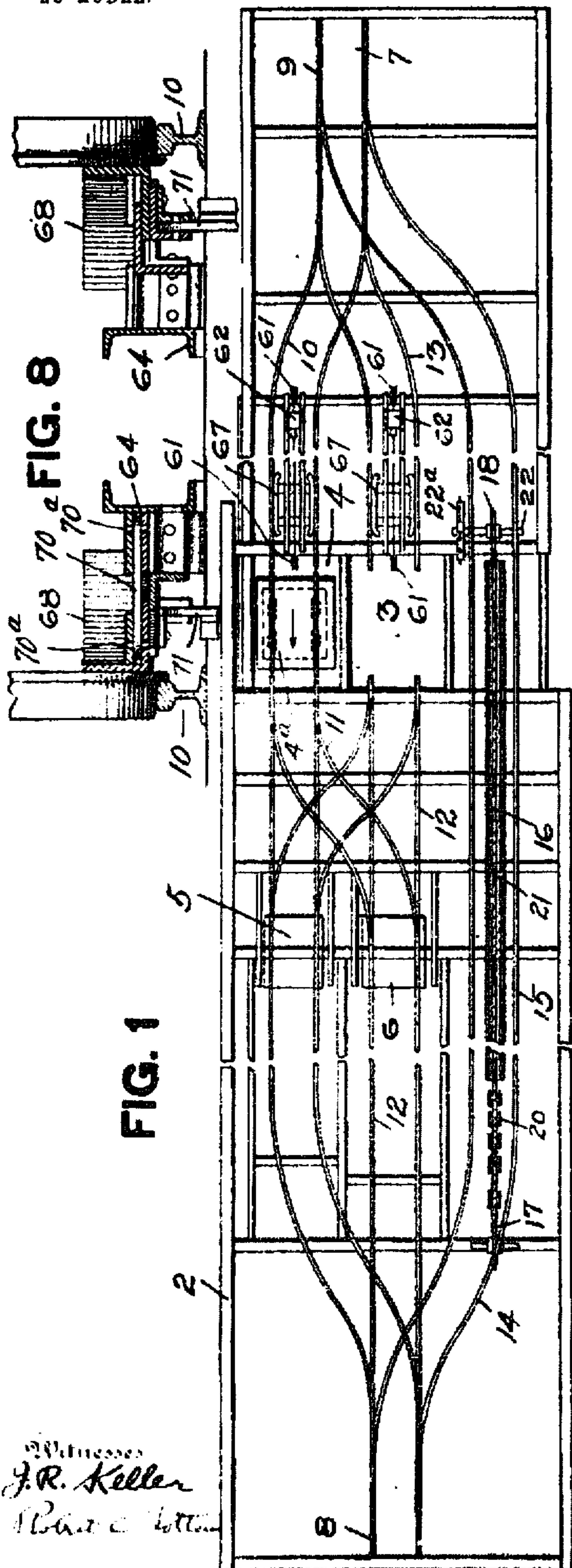


W. J. PATTERSON.
APPARATUS FOR HANDLING MINE CARS.

APPLICATION FILED MAR. 26, 1904.

NO MODEL.



4 SHEETS-SHEET 1

No. 765,902.

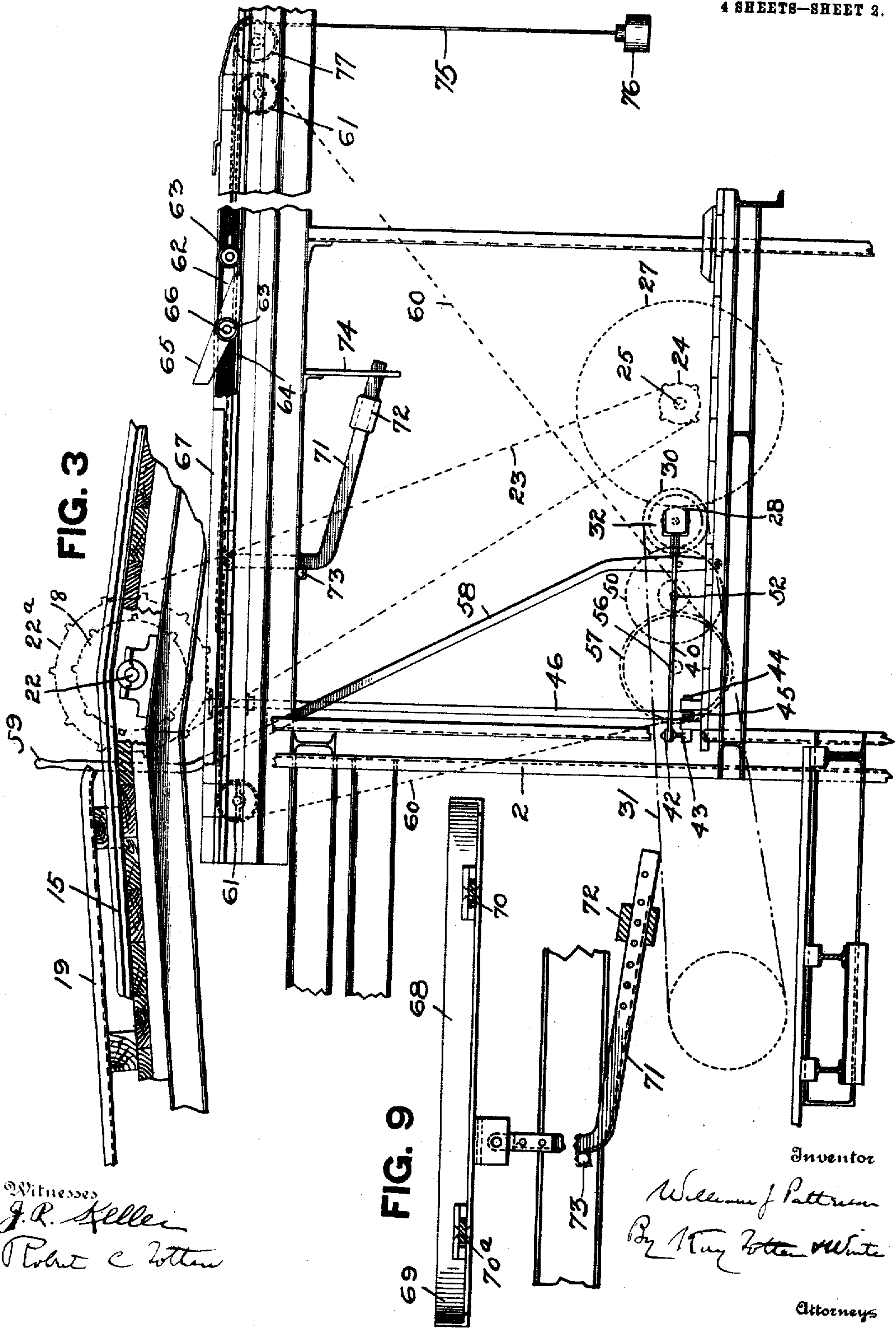
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4 SHEETS—SHEET 2.



Witnesses
J. R. Keller
Robert C. Witten

Inventor
William J. Patterson
By Henry F. White
Attorneys

No. 765,902.

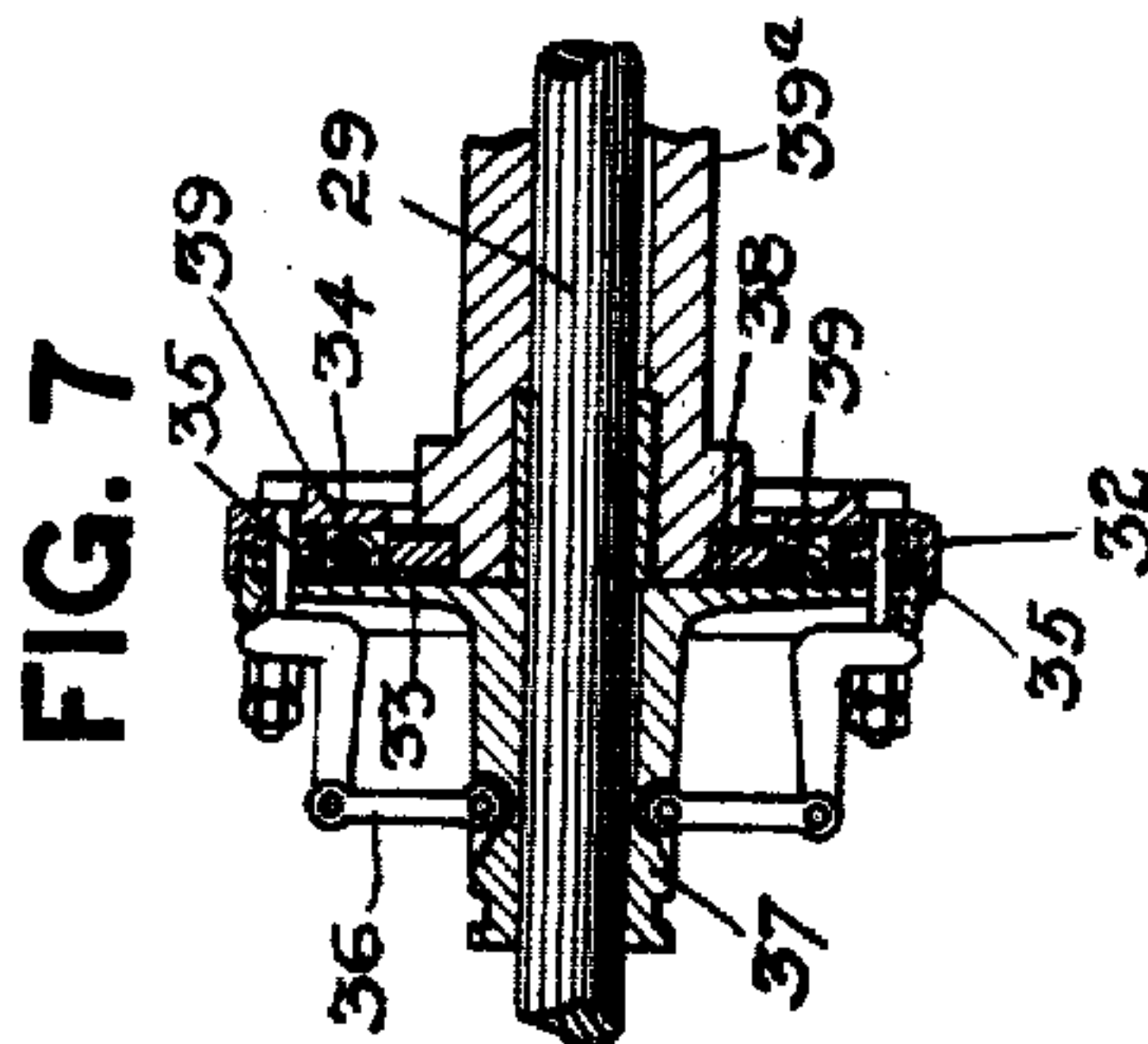
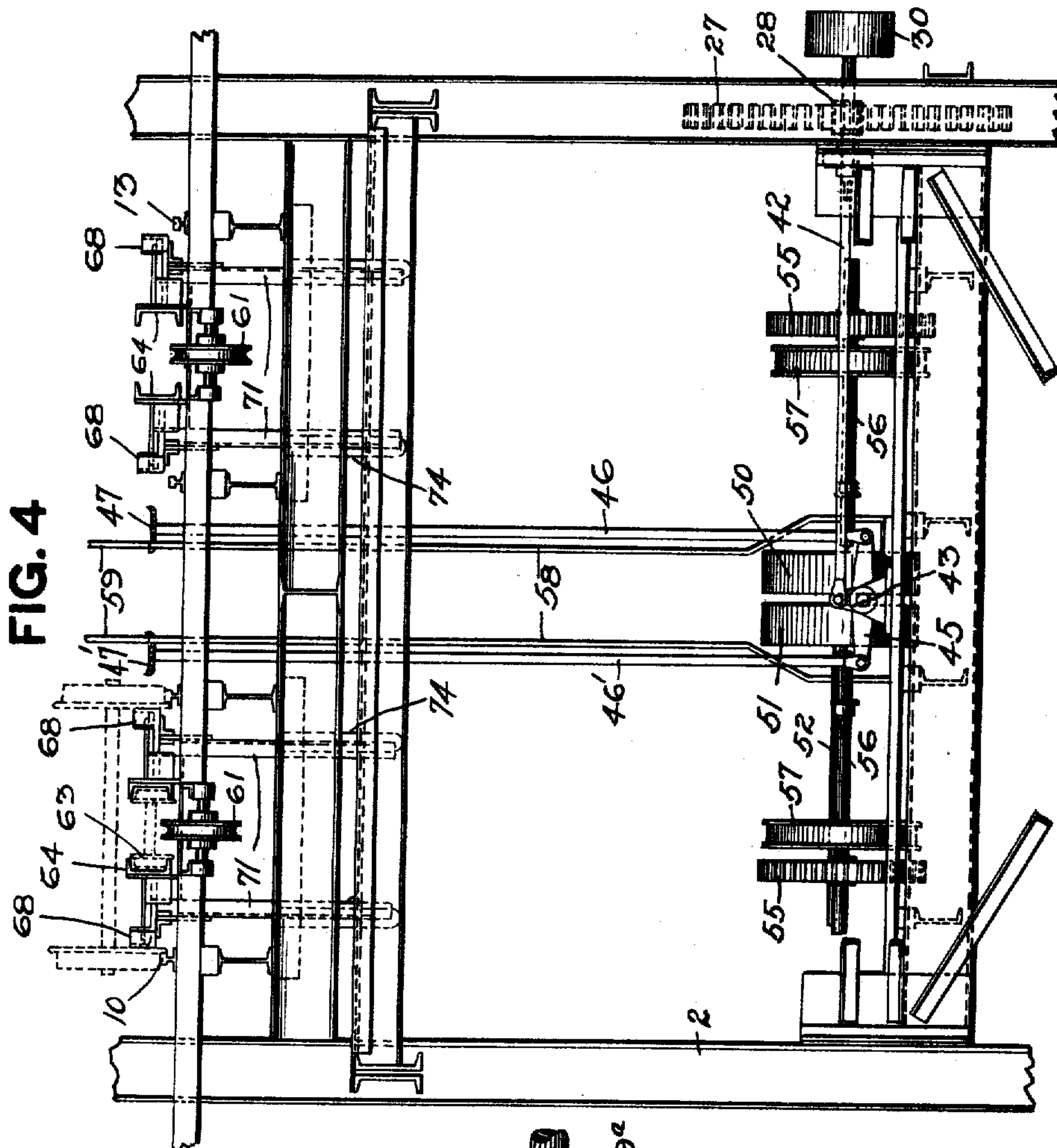
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W. J. PATTERSON,
APPARATUS FOR HANDLING MINE CARS.

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NO MODEL.

4 SHEETS—SHEET 3.



Witnesses
J. R. Keenan
Robert C. Lott

Inventor
William J. Patterson
By *Kay, Lott & Winter*
Attorneys

No. 765,902.

PATENTED JULY 26, 1904.

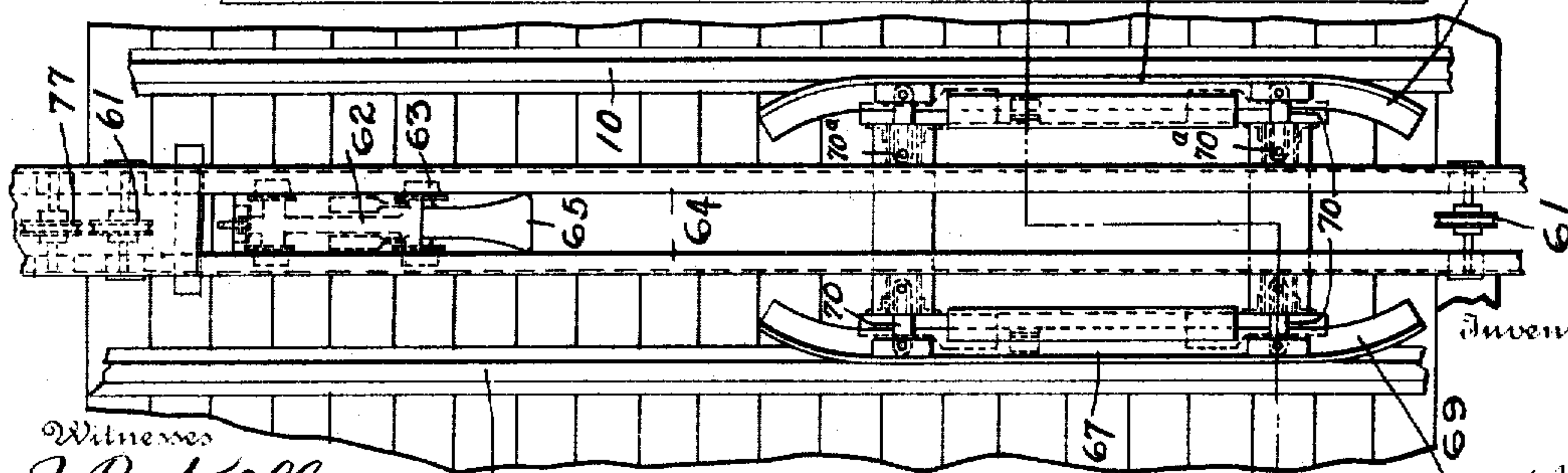
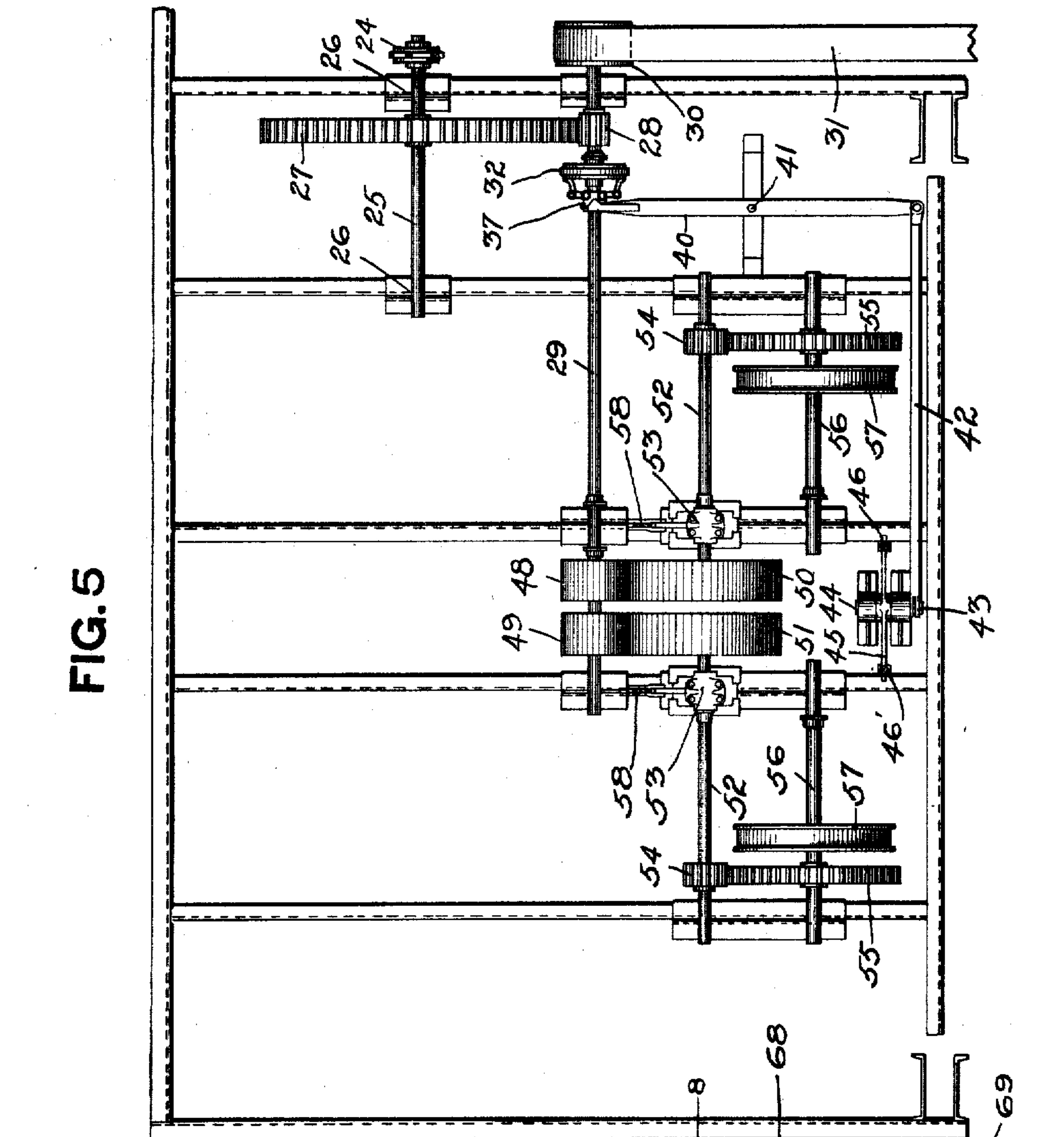
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NO MODEL.

4 SHEETS—SHEET 4.

FIG. 5



Witnesses
J. R. Keller
Thoburn Fetter

FIG. 6

By

William J. Patterson
By Ray Fetter White
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM J. PATTERSON, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR HANDLING MINE-CARS.

SPECIFICATION forming part of Letters Patent No. 765,902, dated July 26, 1904.

Application filed March 26, 1904. Serial No. 200,210. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. PATTERSON, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Handling Mine-Cars; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to apparatus for handling mine-cars, its object being to provide for the quick handling and discharge of loaded cars as well as the returning of the empty cars to the point where they are reloaded.

My invention therefore comprises the novel features hereinafter fully set forth and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of my improved apparatus. Fig. 2 is a side view thereof. Fig. 3 is an enlarged side view of a portion of the apparatus, showing the pusher-carriage for advancing the empty cars onto the elevator and the mechanism for operating the same. Fig. 4 is an end view. Fig. 5 is a plan view of the driving mechanism and the different connections therefrom for operating the apparatus. Fig. 6 is a plan view of the pusher-carriage and the safety-stop for checking the too rapid movement of the car in advancing onto the elevator. Fig. 7 is a sectional detail view of the clutch shown in Fig. 5 for throwing the mechanism into and out of operation for driving the endless chain. Fig. 8 is an enlarged cross-section on line 8 8, Fig. 6; and Fig. 9 is an enlarged detail view of the frictional rail-operating mechanism.

In the drawings the numeral 2 represents an elevated structure of proper size and dimensions for supporting my improved apparatus, and said structure may be varied according to the conditions and requirements of different plants. As my invention is used in connection with vertical mine-shafts, the numerals 3 and 4 designate suitable shafts through which the cars are raised and lowered into the mine, said shafts being provided with

any suitable form of elevator or lift 4^a for raising and lowering the cars to and from the mine. This elevator 4^a has a platform with a section of track laid thereon adapted to support the mine-car. (Shown in dotted lines in Fig. 1.) The structure 2 is further provided with tipples 5 and 6, where the loaded cars may be dumped; but as any suitable form of tipple or dumping apparatus may be employed and the same forms no part of my present invention it has not been deemed necessary to illustrate the same further than in the diagrammatic form of Fig. 1.

At the rear of the structure 2 is the kick-back 7, upon which the track 9 is laid, said track extending forward to a suitable point, where it branches off into the track 10, said track extending to and being in alinement with the track on the elevator-platform and extending still farther forward, where it curves at 11 and unites with the track 12 on the kick-back 8 at the forward end of the structure. Branching off from the track 9 is the track 13, which operates in connection with the shaft 3, said track extending forward and connecting with the track 12. A return-track 14 connects with the track 12, said track 14 leading to the inclined track 15.

Within the track 15 is the endless chain 16, mounted on the sprockets 17 and 18, supported within the frame. This chain 16 passes through a suitable guide 19, above which the projections 21 extend, said projections being adapted to engage with the car, axle, or other projection and carry the same up the inclined track 15. Idle rollers 20 are employed to support the chain 16 at proper intervals.

Mounted on the shaft 22, upon which the sprocket-wheel 18 is mounted, is the large sprocket-wheel 22^a, over which the sprocket-chain 23 passes, said sprocket-chain passing over the sprocket-wheel 24 on the shaft 25, mounted in suitable bearings 26. Upon the shaft 25 is a large gear-wheel 27, which meshes with the small gear-wheel 28 on the shaft 29. This shaft 29 is mounted in suitable bearings, and at the outer end of said shaft is the pulley 30, driven by the belt 31 from a suitable engine.

Mounted on the shaft 29 is the clutch 32, said clutch, as indicated in Fig. 7, being composed of the disks 33 and 34, secured to the shaft 29, said disks being connected by the bolts 35. A toggle connection 36 connects said disks with the sliding sleeve 37 on the shaft 29. Interposed between the disks 33 and 34 is the friction-disk 38, having the wooden friction-blocks 39, said friction-disk 38 being loosely mounted on the shaft 29. Connected with the friction-disk 38 by means of the sleeve 39^a is the small pinion 28. A lever 40 is connected to the sliding sleeve 37, said lever being pivoted at 41, so that by the movement of said lever the toggle is operated to force the disks 33 and 34 into contact with the friction-disk 38, so as to cause the rotation of same, together with the pinion 28. The outer end of the lever 40 is connected to the rod 42, which in turn is connected to the crank 43 on the shaft 44. Secured to the shaft 44 is the oscillating bar 45, to the outer ends of which are secured the rods 46 46'. To the upper end of these vertical rods 46 46' are secured the foot-rests 47 47', by means of which said rods are depressed.

Mounted on the shaft 29 are the friction-wheels 48 49, adapted to bear against the faces of the friction-wheels 50 51, respectively. The large friction-wheels 50 and 51 are mounted on the shafts 52, said shafts having at one end the sliding bearings 53. Mounted on the shafts 52 are the pinions 54, meshing with the large gear-wheels 55 upon the shafts 56. On the shafts 56 are the drums 57. These parts are in duplicate in order to provide for the operation of the mechanism for each shaft.

Connected to the sliding journals 53 are the levers 58, extending up to a suitable point in the platform above, where they may be operated by the handles 59. By the operation of these levers the large friction-wheels 50 and 51 may be moved into contact with their corresponding smaller friction-wheels 48 and 49. Cables or belts 60 pass around the pulleys 57 and thence in both directions over the drums 61, where said cables are connected to the front and rear ends of the pusher-carriage 62. This pusher-carriage is provided with the wheels 63, adapted to run on the track 64. Pivoted to the carriage 62 is the pusher 65, which normally extends up in position to engage the mine-car and push the same forward. The pusher, however, is pivoted at 66, so that the said pusher will be depressed when the car passes over the same.

Just in advance of the pusher-carriage 62 is the car-checking device 67, which comprises the rails 68, with the curved ends 69, said rails being connected to the bars 70, pivoted at 70^a, whereby said rails are capable of being moved longitudinally in the manner fully hereinafter set forth. Connected to the pivotal bars are the weighted levers 71, provided with the

weights 72, said levers being adapted to return said rails 68 to their normal position. The movement of the lever 71 is regulated by the stops 73 and the guide 74, within which the outer end of said lever works.

Connected to the pusher-carriage 62 is the cable 75, to which the weight 76 is secured, said cable passing over the pulley 77. This weight is adapted to return the pusher-carriage 62 to its rearmost position.

When my improved apparatus is in operation, the loaded cars are lifted, by means of the elevator, up through the shafts 3 and 4 into position to be moved from the tracks of the elevator onto the tracks 9, to be carried to the dumping-tipple. As shown in Fig. 1, the car-shaft 4 is in such position, and said car is then advanced along the track 10 of the tipple 5, where said car is dumped, and is then advanced forward along the curved track 11 to the track 12 on the kick-back 8. The empty car passes up said kick-back 8, and then descends the same, whence it is shifted off onto the curved track 14 to the inclined track 15. When the car passes onto the inclined track 15, it is carried up said track by means of the endless chain 16, one of the projections 21 of said chain engaging the car. When the car has been carried up to the top of the incline, it descends from the same and passes to track 9 and up the kick-back 7. It then descends from said kick-back and is switched off onto the track 10. The impetus which said empty car has acquired carries it forward, and in order to check its movement and prevent it from dropping into the open shaft 4 in case the elevator of said shaft is lowered the wheels of said car engage the longitudinal movable rails 68, their inner faces being in frictional contact with said rails, whereby the speed of the car is checked and the car stopped. The flanges of the wheels will run between the rails of the track and the rails of the checking device, and in order to advance said empty car onto the platform 4^a of the elevator when the same is up in position to receive the car the operator operates the proper lever 59, so as to throw the friction-wheel 50 into contact with the friction-wheel 48, whereupon through the shaft 52 and the pinion 54 and gear-wheel 55 power is transmitted to the shaft 56. This will act to rotate the drum 57 and wind the cable 60 thereon in such a manner as to advance the pusher-carriage 62, so that the pusher 65 engages the empty car and advances the same onto the platform of the elevator. At the same time the loaded car is pushed by the empty car onto the track 10. As soon as the car has been driven onto the elevator the lever 59 is moved in the opposite direction, whereupon the friction-wheel 50 is thrown out of contact with the friction-wheel 48 and the drum 57 ceases to rotate in that direction. The weight 76 on cable 75 withdraws the car-

riage 62 to its normal position, while at the same time the weighted lever 71, which has been raised by the forward movement of the rails 68, resumes its normal position and carries the rails 68 back to their original position. The empty car is then lowered and a loaded car at the same time is raised in shaft 3 and after being advanced to the dumping-tipple 6 passes onto the kick-back 8 and returns in the same manner as above described to the kick-back 7, whence it passes to the similar apparatus as that just above described in connection with shaft 4, whereupon the empty car is held in check until the platform of the elevator is in position to receive the same, when it is advanced onto the elevator in the manner before described.

In case it is desired to stop the movement of the endless chain 16 for any reason, as in case where the empty cars are becoming congested at the rear end of the apparatus, the operator by putting his foot on one of the foot-rests 47' acts through the connections described to operate the lever 40, so as to throw the clutch in such position as to render the pinion 28 inoperative, whereupon the power transmitted through said pinion to the large gear-wheel 27 and thence to the large sprocket-wheel 22^a is shut off.

What I claim is—

1. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a carriage adapted to travel to and from said elevator, a yielding pusher on said carriage in the path of said car, a mechanism for moving said carriage.

2. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a carriage adapted to travel to and from said elevator, a downwardly-yielding pusher on said carriage in the path of said car, and mechanism for moving said carriage.

3. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a carriage adapted to travel to and from said elevator, a pivoted pusher on said carriage in the path of said car, and mechanism for moving said carriage.

4. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a pusher-carriage in the path of the car, a cable connected to the front and rear ends of said carriage, a drum around which said cable passes, and means for rotating said drum.

5. In apparatus for handling mine-cars, the

combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a pusher-carriage in the path of the car, a cable connected to the front and rear ends of said carriage, a drum around which said cable passes, a friction-clutch, and connections between said drum and said friction-clutch.

6. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a pusher-carriage in the path of the car, a cable connected to the front and rear ends of said carriage, a drum around which said cable passes, a power-driven shaft, a friction-wheel on said shaft, a shaft, a movable bearing in which said shaft is mounted, a friction-wheel on said shaft, means for throwing said friction-wheel into contact with said first-named friction-wheel, and connections between said shaft and said drum.

7. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a pusher-carriage in the path of the car, a cable connected to the front and rear ends of said carriage, a drum around which said cable passes, a lever connected to said movable bearing, and connections between said shaft and said drum.

8. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, and frictional means for checking the movement of the car adjacent to said elevator.

9. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, and a longitudinally-movable rail in close proximity to the track-rail adapted to contact with the inner faces of the wheels of said car.

10. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, and a longitudinally-movable rail in close proximity to the track-rail adapted to contact with the inner face of the wheels of said car, the end of said rail turning inwardly.

11. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, longitudinally-movable pivoted rail within said track in close proximity to the rail of said track, adapted to contact with the inner faces of the wheels of said car.

12. In apparatus for handling mine-cars, the

combination of an elevator in said shaft, a track in proper position with reference to said elevator, a rail parallel with the track-rail and in close proximity thereto adapted to contact with the inner faces of the wheels of said car, a bar secured to said rail and pivoted to a suitable support.

13. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a longitudinally - movable pivoted rail within said track in close proximity to the track-rail adapted to contact with the inner faces of the wheels of said car, and means for returning said rail to its normal position.

14. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track in proper position with reference to said elevator, a longitudinally - movable pivoted rail within said track in close proximity to the track-rail adapted to contact with the inner faces of the wheels of said car, and a weighted lever connected to said rail and adapted to return same to normal position.

15. In apparatus for handling mine-cars, the combination with an elevated structure and a

shaft therein, of an elevator in said shaft, a track leading from said shaft to the point of discharge, a return-track connected with said first-named track and leading to the opposite side of said shaft, mechanism for propelling said car over said return-track, and mechanism for advancing the car from said last-named track onto said elevator.

16. In apparatus for handling mine-cars, the combination with an elevated structure and a shaft therein, of an elevator in said shaft, a track leading from said shaft to the point of discharge, a return-track connected with said first-named track, mechanism for propelling said car over said return-track to the opposite side of said shaft, and for controlling the movement of the car thereon, a track connected with said return-track leading to the opposite side of said shaft, and mechanism for advancing the car from said last-named track onto said elevator.

In testimony whereof I, the said WILLIAM J. PATTERSON, have hereunto set my hand.

WILLIAM J. PATTERSON.

Witnesses:

ROBERT C. TOTTEN,
G. KREMER.