

No. 849,773.

PATENTED APR. 9, 1907.

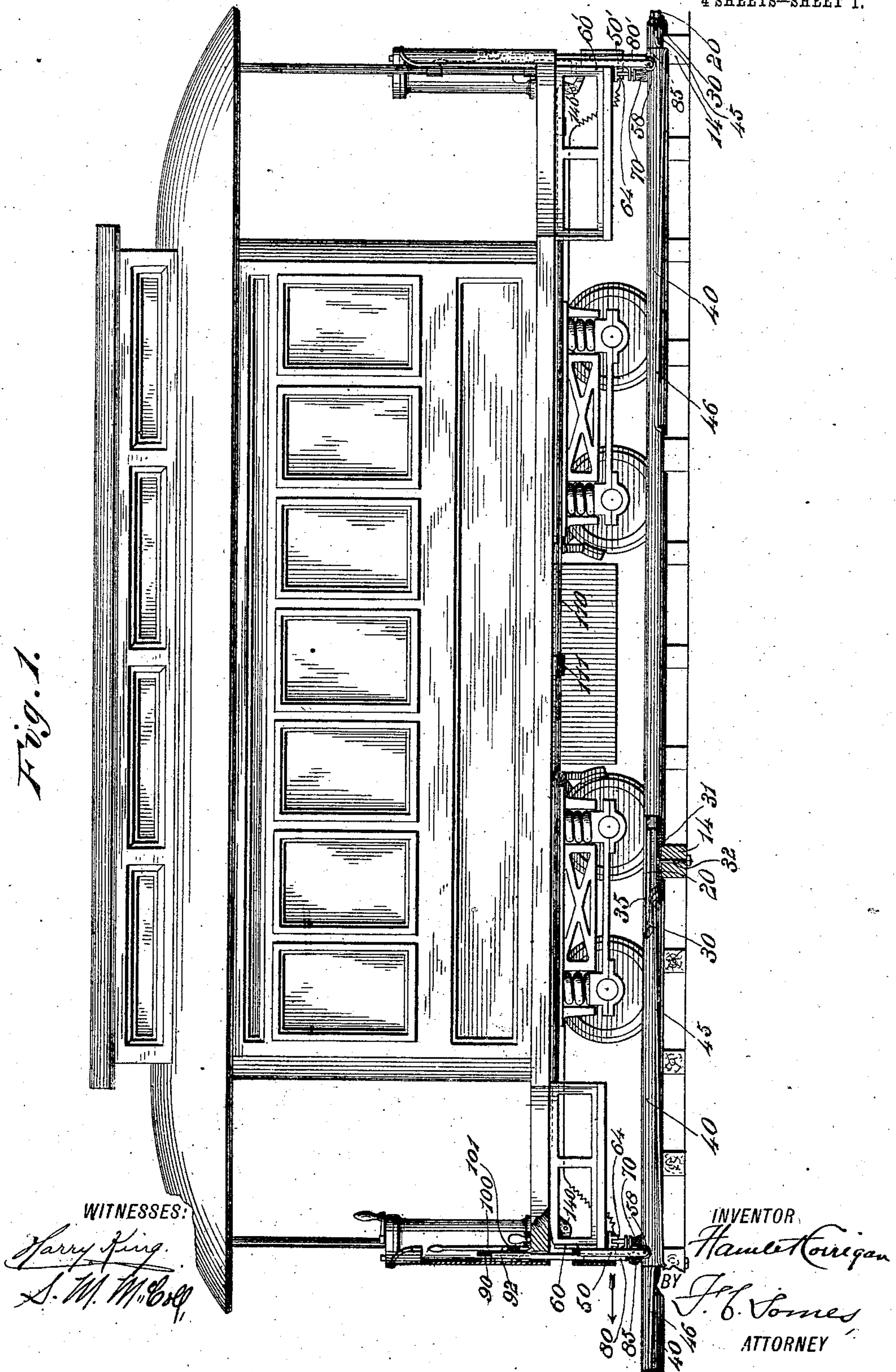
H. CORRIGAN.

THIRD RAIL PROTECTING MECHANISM FOR ELECTRIC RAILROADS.

APPLICATION FILED MAY 3, 1906.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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INVENTOR

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4 SHEETS—SHEET 2.

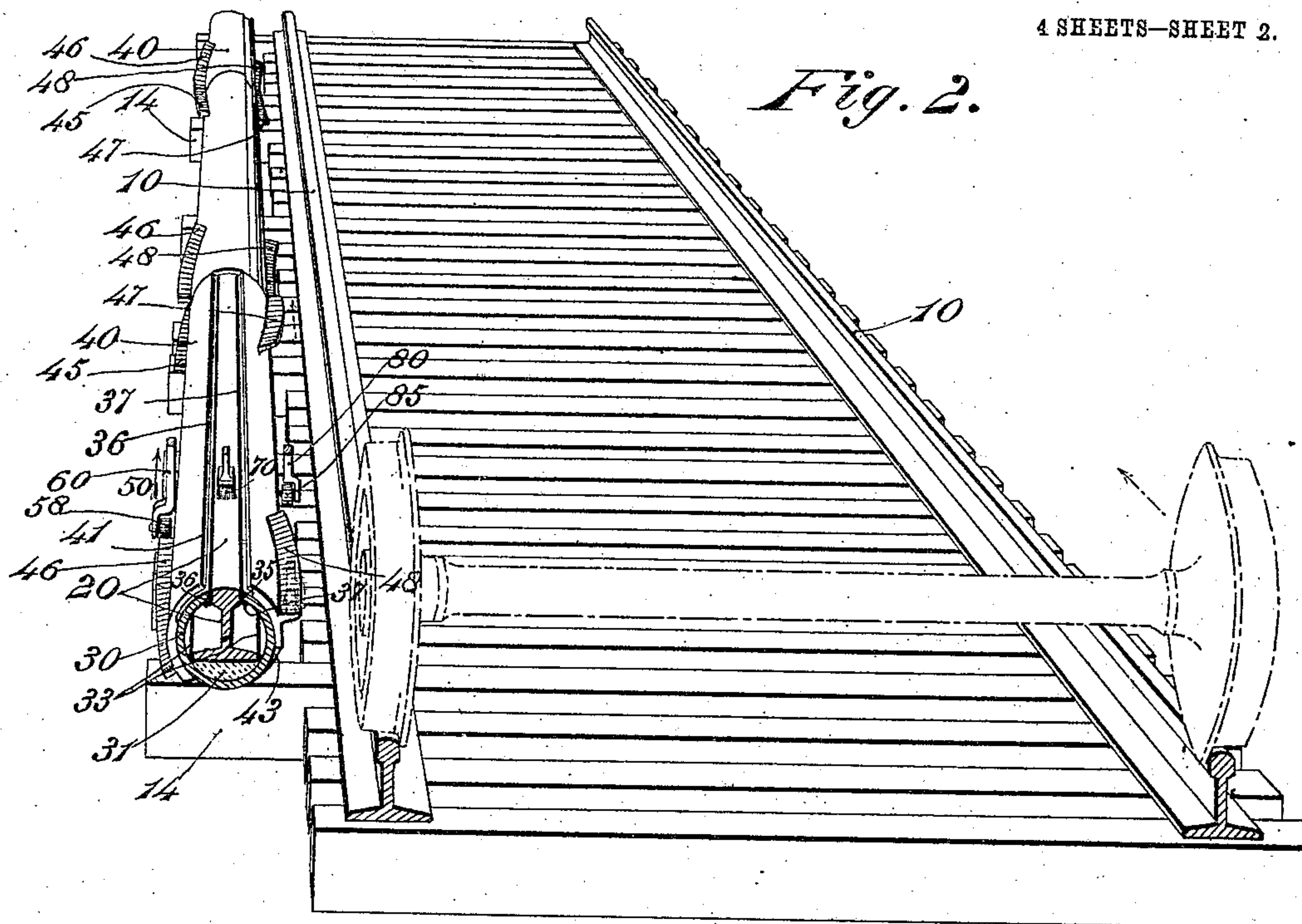
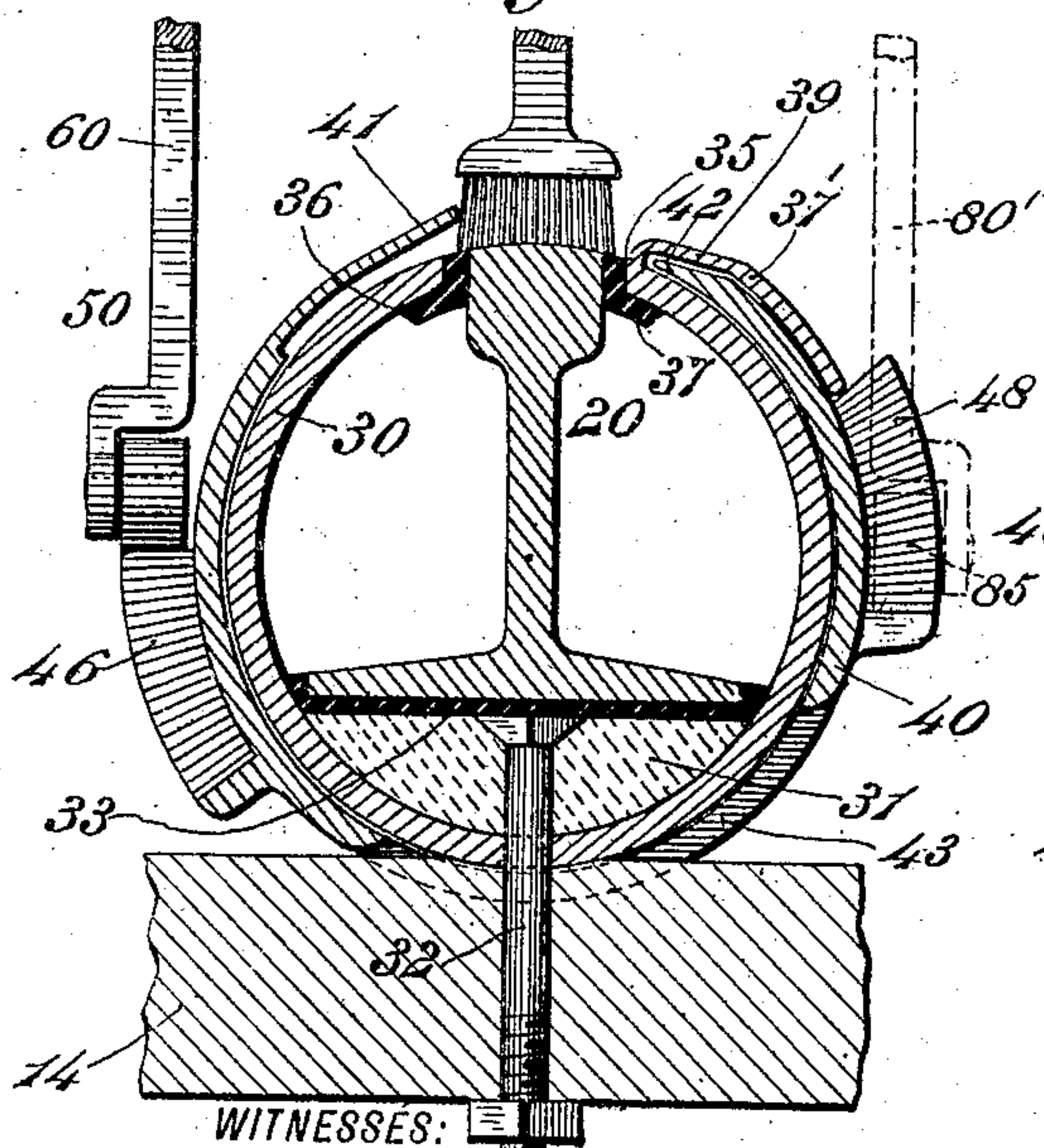


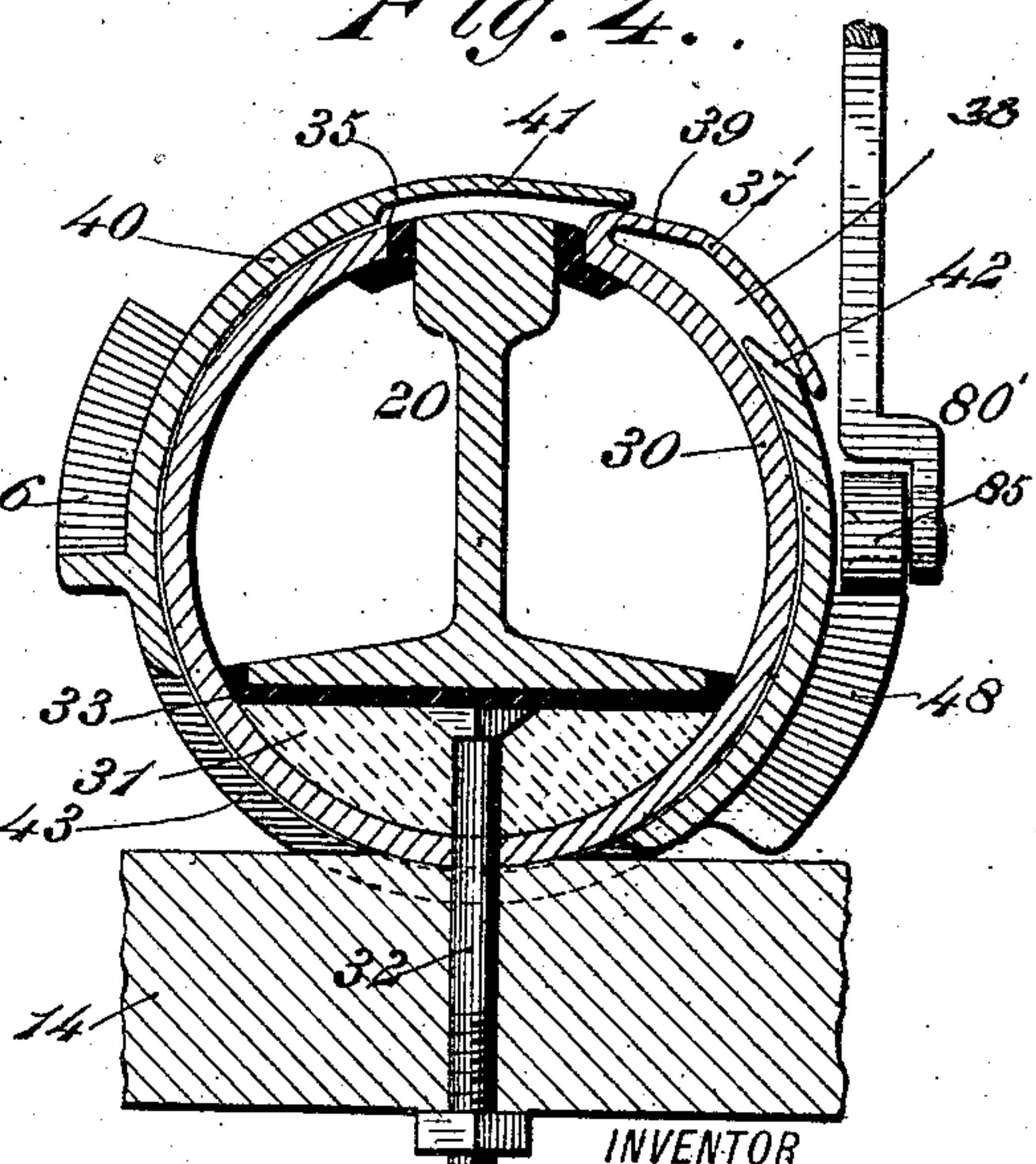
Fig. 3.



WITNESSES:

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Fig. 4.



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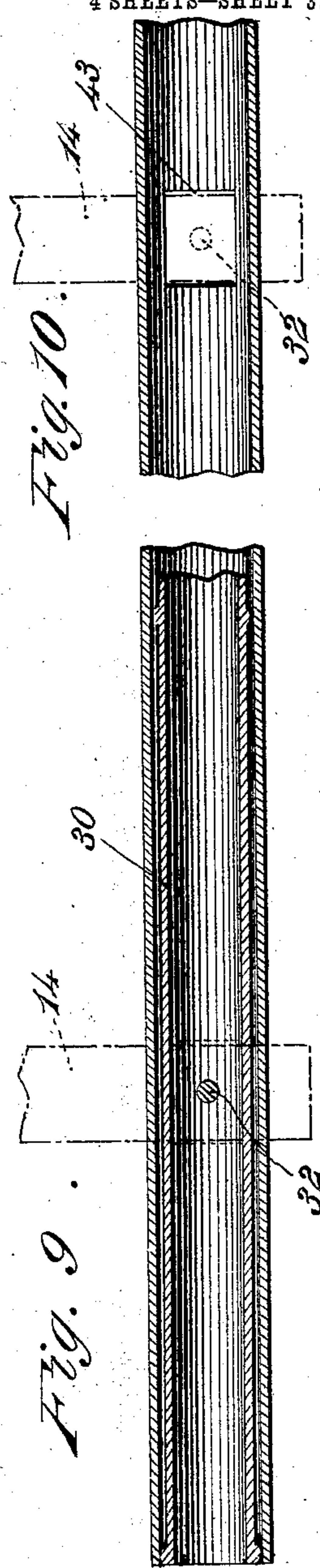
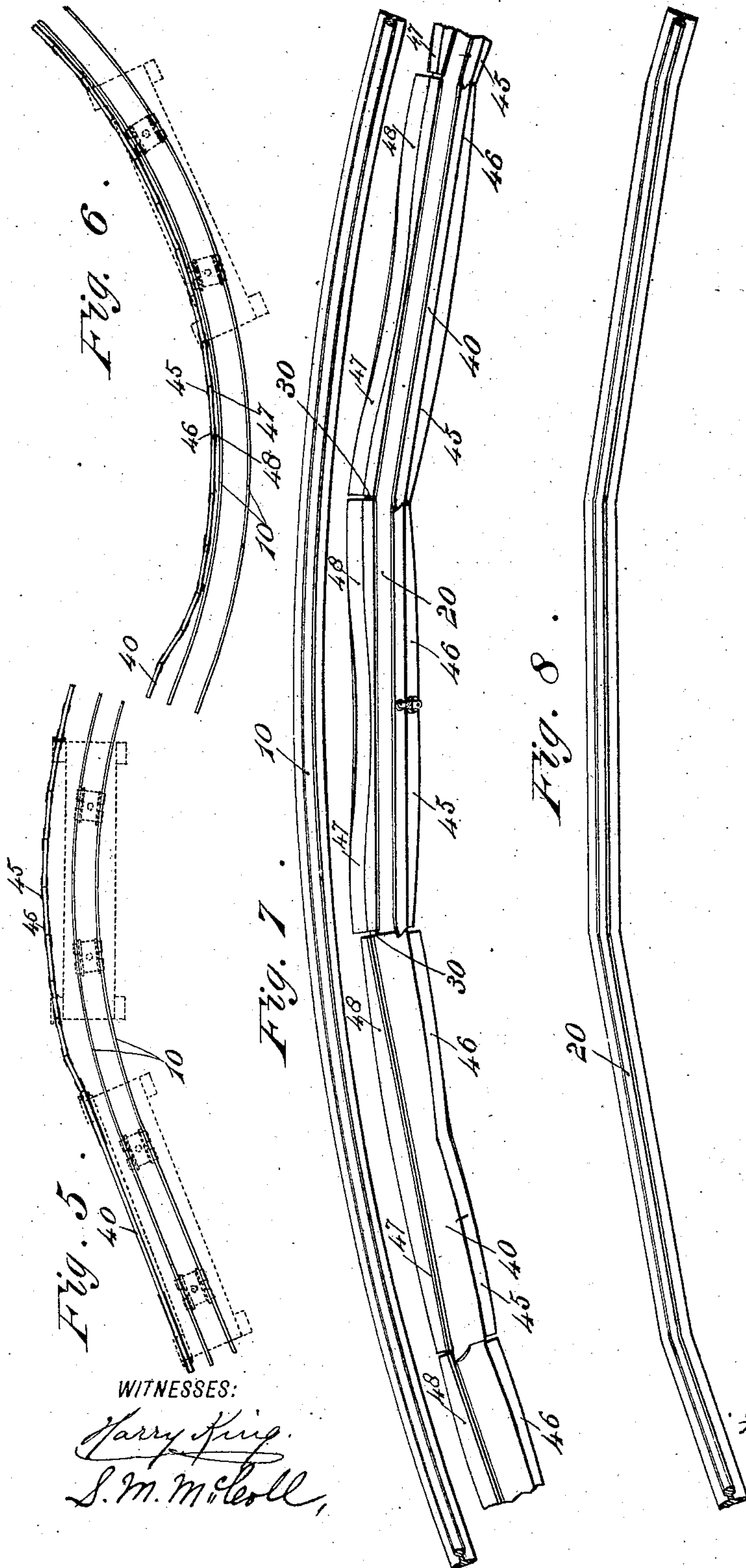
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4 SHEETS—SHEET 3.



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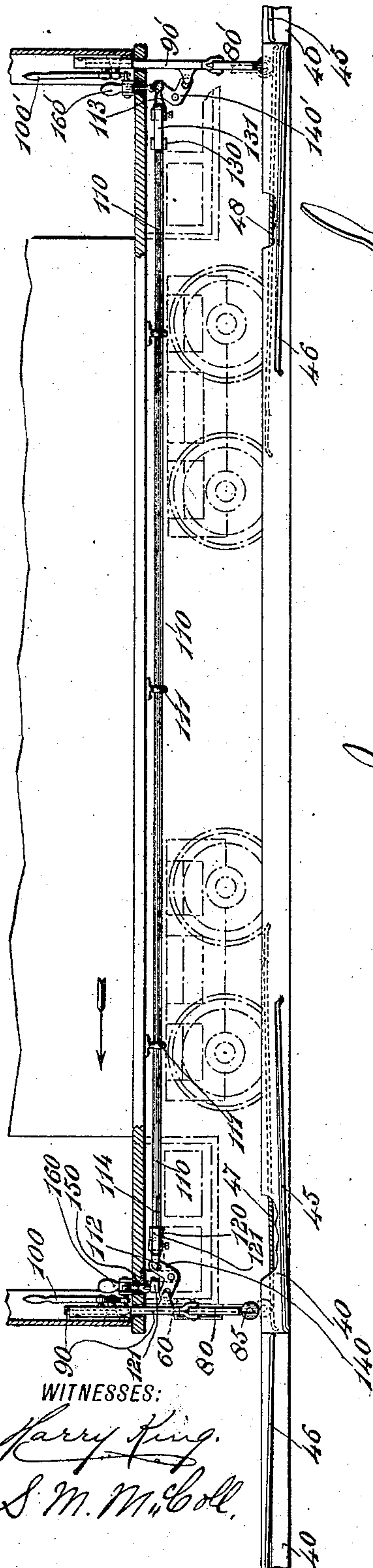
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4 SHEETS—SHEET 4.

Fig. 11.



WITNESSES:

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Fig. 13.

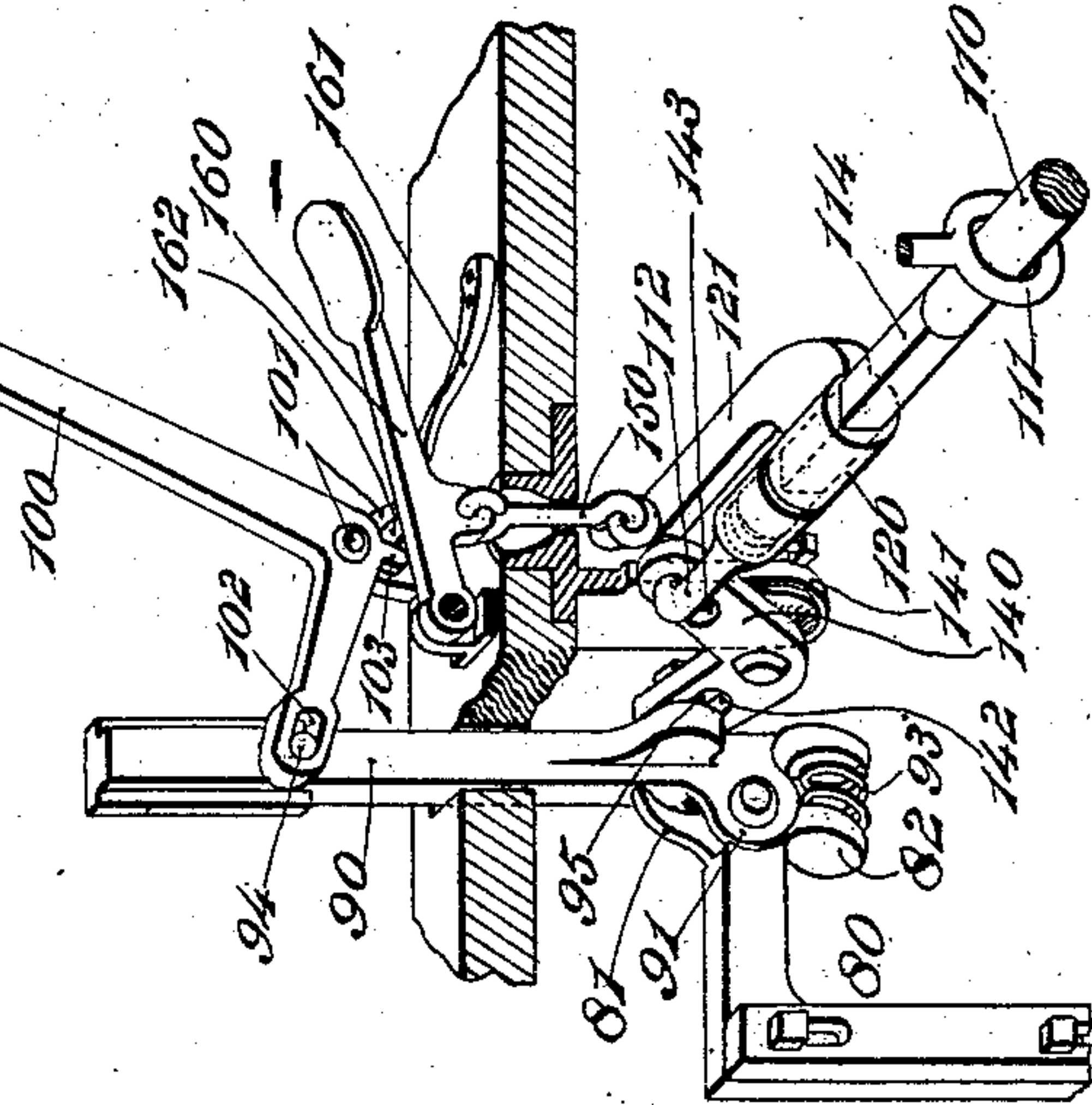
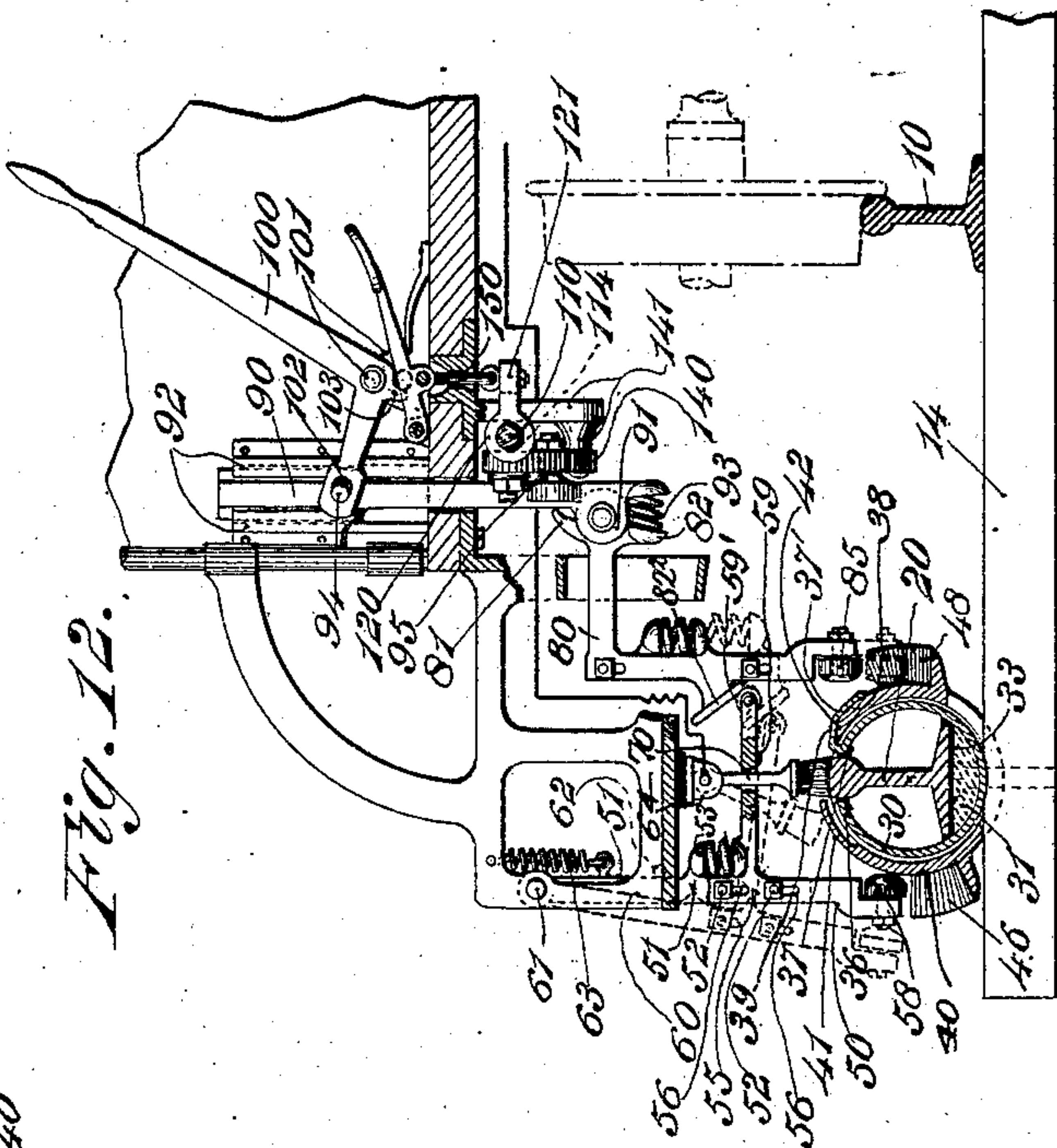


Fig. 12.



UNITED STATES PATENT OFFICE.

HAMLET CORRIGAN, OF PITTSTON, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO CHARLES FRANCIS CURRY AND ONE-THIRD TO MICHAEL HENRY KEATING, OF PITTSBURG, PENNSYLVANIA.

THIRD-RAIL-PROTECTING MECHANISM FOR ELECTRIC RAILROADS.

No. 849,773.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed May 3, 1906. Serial No. 315,046.

To all whom it may concern:

Be it known that I, HAMLET CORRIGAN, a citizen of the United States of America, and a resident of Pittston, in the county of Luzerne, in the State of Pennsylvania, have invented certain new and useful Improvements in Third-Rail-Protecting Mechanism for Electric Railroads, of which the following is a specification.

10 This invention relates to electric railroads of the class known as the "third-rail system," in which a third or conductor rail disposed alongside or between the track-rails supplies current to the car-motors through contacts
15 carried on the cars, the current returning through the wheels and track-rails.

The object of the invention is to provide practicable means for avoiding the dangers incident to an exposed third rail charged
20 with a powerful electric current. This is accomplished by a series of sectional insulated inclosing mechanical protectors for said rail severally opened and closed in succession by actuating devices on the passing car.

25 Separate opening and closing devices may be employed, one before and the other behind the contact-shoe, and two sets of such devices may be applied to a reversible car. The opening devices at opposite ends of the
30 car are preferably automatic. The closing devices at opposite ends of the car are shiftable at either end thereof, so that the car may be run back when necessary.

In the accompanying drawings, in which
35 similar reference characters indicate corresponding parts in all the figures, Figure 1 represents a side elevation, partly in section, of a three-rail track and car provided with third-rail-protecting mechanism illustrating this
40 invention. Fig. 2 represents an enlarged perspective view of a three-rail track provided with a third-rail protector illustrating this invention. Fig. 3 represents an enlarged transverse section of a third rail and
45 its protecting mechanism and the means which project from the car for opening and closing the rotary sleeve thereof, the latter being in open position, exposing the third rail for the action of the contact shoe or
50 brush. Fig. 4 represents a similar view to Fig. 3, the rotary sleeve being in closed position. Fig. 5 represents a plan of a curved track of a three-rail electric railroad provided

with this third-rail protector, the third rail being on the convex side of the track. Fig. 55 6 represents a similar view in which the third rail is located on the concave side of the track. Fig. 7 represents an enlarged plan of a carved section of one of the track-rails and the protected third rail adjacent thereto. 60 Fig. 8 represents an enlarged plan of the third rail as constructed for a curved track and without the protecting devices. Fig. 9 represents an enlarged longitudinal horizontal section of the third-rail-inclosing tube 65 attached to a cross-tie and the rotary closing-sleeve on said tube. Fig. 10 represents a longitudinal horizontal section of a fragment of the inclosing tube and a rest therein for the third rail. Fig. 11 represents a longitu- 70 dinal section of the lower part of a car-body, showing duplex means thereon for opening and closing the third-rail protector from opposite ends of the car. Fig. 12 represents a transverse section through one of the end 75 platforms of a car, showing the protector opening and closing mechanism mounted thereon. Fig. 13 represents a perspective view of the lever mechanism at one end of the car for simultaneously shifting the closer- 80 actuator at one end into inoperative position and the closer-actuator at the other end into operative position.

An ordinary car-track 10, the track-rails of which are bonded to serve as conductors 85 for the return-current, is provided along one side or otherwise with a third or contact rail 20, which serves as the leading conductor for supplying the motive force to the motors on the cars. This third or contact rail is mount- 90 ed in a stationary inclosing protecting-tube 30 and insulated therefrom, said tube being secured in any suitable manner to extended cross-ties 14. In the form illustrated the tube 30 is provided in its lower part with seg- 95 mental blocks, as 31, which may be composed of vitreous or other insulating material disposed at intervals thereon. Fastening-bolts, as 32, pass through these blocks, through the wall of the tube, and through the extended 100 cross-ties. These blocks serve also as seats for the sections of the third rail 20. Insulating material, as 33, may be interposed between the top faces of said blocks and the bottom of said rail-sections and also between 105 the edges of the base of said sections and the

tube 30, as clearly shown in Figs. 3 and 4. The inclosing tube 30 is provided along its top with a longitudinal slot 35 for exposing the contact-rail 20 to the contact shoe or brush on the car. The head of the contact-rail 20 preferably extends into or through the slot 35 of the inclosing tube 30 and is insulated from the edges of said slot by insulating-strips 36 and 37 on opposite sides of said head. These strips serve also to close the tube and prevent the entry of dust, water, or other matter. The tread of the contact-rail is preferably flush with the outer periphery of the inclosing tube. The inclosing tube is provided along one edge at its slot with a skirt 37', which forms a longitudinal chamber 38 and protects it from rain or snow or other clogging material. The skirt has a beveled portion 39 adjacent to the slot for a purpose hereinafter explained.

A series of rotary slotted sleeves or sleeve-sections 40 are disposed on the slotted third-rail-inclosing tube 30 and adapted to turn thereon a fraction of a rotation in one direction to cover and protect the top of the third rail and in the other direction to uncover and expose said top. Each sleeve 40 is provided along one edge of its longitudinal slot with a recessed lip 41 and along the other edge of said slot with a beveled edge 42, and arc-shaped transverse slots, as 43, engage the bolts, as 32, and permit and limit the oscillation of the sleeve. The recessed lip 41 when the sleeve is in closed position shuts over the slot 35 of the tube 30 and covers the top of the third rail 20 without coming in contact therewith, as shown in Fig. 4. When the sleeve is turned to open position, the lip 41 moves off the top of the third rail and exposes it and the beveled edge 42 rides in the chamber 38 of the tube 30 and is protected from interfering matter. Each sleeve or sleeve-section 40 is also provided near its opposite ends and on the same side with exterior inclined wings 45 and 46, which serve as opening-cams. These cams are inclined upward in opposite directions from opposite ends of the sleeve and are preferably provided at their inner ends with downwardly-curved lips. The cam 45 is engaged by an opening device at the near end of an approaching car moving over the sleeve-section in one direction, and the cam 46 is engaged by another opening device at the opposite, then the rear, end of the approaching car moving in the opposite direction, as the case may be. Each sleeve 40 is also provided on the side opposite the opening-cams with two exterior inclined wings 47 and 48, which serve as closing-cams. These cams are also inclined upward in opposite directions from opposite ends of the sleeve and correspond with the opening-cams 45 and 46, being also preferably provided with beveled or curved lips at their inner ends. The cam 47 is en-

gaged by a closing device at the rear end of the car as it is about to pass off the given sleeve-section 40 when going in one direction, and the cam 48 is engaged by another closing device at the opposite, but also the rear, end of the car when it is passing in the opposite direction off said sleeve. Thus in the passage of the car in either direction cams which are diagonally opposite on the sleeve 40 are engaged in succession—first the opening-cam by an opening device on the front of the car and next the closing-cam on the opposite side of the sleeve and at the opposite end thereof by a closing device at the rear end of the car.

To adapt said third rail to curved tracks, it is constructed in a connected series of straight sections forming slight angles, and these sections are disposed at different distances from the track-rails to correspond with the varied overhang of the car-body at opposite ends thereof in turning the curves. When disposed on the convex side of a curved section of track, it is necessary to place the inclosed third rail farther from the track-rails than in a straight section, as shown in Fig. 5, where the car-body and its position with reference to the curved track and third rail is indicated in dotted lines. When the inclosed third rail is disposed on the concave side of a curved section of track, it is necessary to place said third rail nearer to the track-rails, as shown in Fig. 6, where the relative position of the car-body is indicated in dotted lines.

The motor-car is provided with any suitable means for engaging the opening cam or cams 45 and 46 at the outer side of the rotary sleeve 40 to open said sleeve to expose the third rail to the touch of the traveling contact and for engaging the closing cam or cams 47 and 48 to close said sleeve and protect said rail. In the form of embodiment herein shown the sleeve-openers are automatic and separate from the closers and in a reversible car are disposed at opposite ends thereof. The opener 50 is supported in a bracket 60, attached to the outer end of a car-platform, which bracket preferably forms the outer end frame of the car-step and extends laterally therefrom to bring said opener outside the track-rails in turning curves in which the third rail is on the concave side thereof. This opener 50 is preferably adapted to yield both laterally and vertically to suit varying conditions of the track or vibrations of the car, and for this purpose the opener may consist of a pivoted extensible arm comprising an upper member 51, pivoted at its upper end to a stud 61 on the bracket 60, and a lower member 55, having a sliding connection with the uppermember by studs 52 and slots 56 or other means. The upper member 51 is held normally in vertical position against a stop 62 on the bracket 60

by means of a spring 63, connected at one end to said member and at the other end to said bracket. The member 51 is provided near its lower end with a lug 53, and the member 55 is provided near its upper end with a lug 57, and an expansive spring 54 is interposed between said lugs and operates to normally hold the extensible arm in extended position. The arm or opener 50 is preferably provided at its lower end with a roller 58, adapted to engage by its periphery an opening-cam of the sleeve 40 for opening the latter and by its inner face the surface of said sleeve, whereby the opener is held in operative position for engaging such cam. The lateral swinging of the arm 50 under the tension of the spring 63 enables it to follow closely the inclosed third rail in any lateral variations thereof, and especially in its angles at curved sections of track, and the extensibility of said arm permits it to yield vertically to inequalities in the surface of the track or variations in the load of the car.

Any suitable traveling contact having a rolling or sliding touch with the third rail is disposed on the car and connected with the motor for supplying the motive current thereto, and suitable means are provided to cause said traveling contact to maintain its operative position in connection with the third rail. In the form herein shown the traveling contact comprises a brush 70, pivoted at its upper end to an insulated lug 64, dependent from the bracket 60. The shank of this brush is engaged by a lateral arm 59, attached to the laterally-swinging sleeve-opener 50. By this means the brush, shoe, or other traveling contact is maintained in position over the third rail in traveling over the angle therein at the curves of the track.

A sleeve-opener 50' at the opposite end of the motor-car may be of similar construction to the sleeve-opener 50 and may be supported in a bracket 60', similar to the bracket 60.

The sleeve-closers 80 and 80' herein shown are alike and disposed at opposite ends of a reversible car and designed to operate, respectively, from the rear thereof in whichever direction the car is moving. The closer 80 comprises an elbow-arm hinged to lateral lugs 91 near the lower end of a vertical slide-rod 90, movable in guides 92, attached to the inner face of a car-dash. The horizontal arm of the elbow-lever is provided at its inner end on its upper side with a stop 81 and on its lower side with a lug 82. A spring 93 is interposed between the lower end of the slide-rod 90 below the pivot of the elbow-lever and said lug on said lever. This spring operates to force the vertical arm of the elbow-lever outward and permits it to yield or swing inward. The stop aforesaid prevents an excessive outward swing. The vertical dependent member is preferably extensible by means of studs and slots or

otherwise to permit a vertical play of the roller 85, disposed on the lower end of said member and designed to act on one of the closing-cams of the rotary sleeve 40. The slide-rod 90 is provided with a stud 94 on its rear face and with a lateral stud 95 on its inner face. An actuating elbow-lever 100 is pivoted at its angle to a lug 101 on the car-platform. This lever is provided at the outer end of its lower short arm with a slot 102, by which it engages the stud 94 of the slide-rod 90 for lifting and lowering said rod. This lever is provided at the lower end of its long arm with a locking-teat 103, the function of which will hereafter appear. Connecting mechanism is provided to cause the sleeve-closer at the far end of the car to be lifted into inoperative position when the sleeve-closer at the rear end thereof is lowered into operative position for reversing the car. The mechanism shown for this purpose comprises a longitudinal rock-shaft 110, supported in eyes 111, dependent from the bottom of the car. This rock-shaft is provided with hooks 112 and 113 at its opposite ends and with angular shanks at 114 adjacent to said ends. Sleeves 120 and 130, provided with angular sockets, are disposed on said angular shanks, and the rod is slidable in said sleeves, but compelled to rock therewith. The sleeve 120 has a lug 121, which extends laterally therefrom and thence parallel therewith, and the sleeve 130 has a corresponding lug 131. A bell-crank lever 140 is pivoted at its angle to a lug 141, dependent from the platform, and is provided at one end with a slot 142, which engages the stud 95 of the vertically-sliding rod 90, and at its other end with a slot 143, which engages the hook 112 of the rock-shaft 110. The lateral lug 121 on said sleeve 120 is connected at its outer end by means of a link 150, which depends through a hole in the platform, with a foot-lever 160 pivoted to said platform and held normally in upward position by spring 161. This foot-lever is provided with a lateral locking-stud 162, which engages the stud 103 on the hand-lever 100 to lock it. A bell-crank lever 140', similar to the lever 140, is disposed at the opposite end of the car and is there connected at one end with the slide-rod 90', corresponding to the rod 90, and at the other end to the hook 113 on the rock-shaft 110. The angular sleeve 130 is connected by a link with a foot-lever 160', corresponding to the lever 160, and this foot-lever has a locking connection with the hand-lever 100' by means of studs or bolts in the same manner as the levers 100 and 160 are related.

When it is desired to use reversible cars on a third-rail track equipped with this protecting mechanism, sleeve-openers and sleeve-closers are disposed at each end of the car, and in such case the sleeve-openers, as well as the sleeve-closers, are adjustable into and

out of operative position. For this purpose the horizontal arm 59 of the sleeve-opener 50 is extended under a cam 80² on the sleeve-closer 80 and preferably provided with an
5 antifriction-roll 59'.

The operation of the invention will now be described. Assuming that a motor-car is traveling toward the left in the direction of the arrow, as shown in Figs. 1 and 11, the
10 sleeve-section 40, then directly beneath the car, is in open position, the traveling contact 70 touches the contact-rail 20, as more clearly shown in Fig. 3, the sleeve-opener 50 at the front end of the car is in operative position,
15 the sleeve-closer 80 at the front of the car is raised into inoperative position, the sleeve-closer 80' at the rear of the car is lowered into operative position, and the sleeve-opener 50' at the rear of the car is out of operative position. As the car moves over the next
20 sleeve-section 40 the roller of the sleeve-opener 50 at the front end of the car immediately engages the rear opening-cam 46 of said sleeve-section, depressing said cam and
25 turning said sleeve-section from the closed position (shown in Fig. 4) to the open position, (shown in Fig. 3,) the opener 50 passing off the inner end of said cam 46 when said last-named sleeve-section 40 is open to the
30 full, as shown in said Fig. 3. The front sleeve-closer 80, which is over the rear closing-cam 48 opposite said opening-cam 46 during the opening operation, does not interfere with the turning of the sleeve, because said sleeve-closer is lifted to a plane above the plane
35 which the closing-cam 48 assumes when the sleeve is in open position. As the car is about to pass off the track-section over which it is shown in Fig. 1 or off any similar
40 track-section the rear sleeve-closer 80' engages the rear closing-cam 48 on the rotary sleeve of said section, depressing said cam and oscillating said sleeve toward the right to closed position, as shown in Fig. 4. The
45 rear sleeve-opener corresponding to the opener 50 does not interfere with the closing of the sleeve, as said sleeve-opener is thrown to one side out of operative position corresponding to the position of the sleeve-opener
50 50 when in the dotted-line position of Fig. 12. The adjustability of the sleeve-closers is sufficient to correspond with the throw of the sleeve, or the closing-cams 47 and 48 may be somewhat longer than the opening-cams 45
55 and 46, as shown in Fig. 11, so that the sleeve-closer will remain in contact with its cam after the opener passes the opposite opening-cam.

In traversing curves the protected third
60 rail will be so located in relation to the track and the location of the sleeve openers and closers as to permit the latter to follow the third rail and have operative connection therewith.

65 The third rail may be omitted at curves

and the gaps connected by cable, in which case the car will pass the curves by its acquired momentum.

I claim as my invention—

1. The combination of a conductive contact-rail, a slotted tube partially inclosing
70 said rail, and a rotary slotted sleeve disposed on said slotted tube for covering and exposing said rail, said rotary sleeve being provided with means engaged by actuating
75 means on the car for opening and closing said sleeve.

2. The combination of a conductive contact-rail, a slotted protecting-tube for inclosing
80 said rail, provided with a longitudinal skirt along one edge of its slot, and a rotary slotted sleeve disposed on said tube and adapted to oscillate thereon to cover or expose said rail, one edge of said slotted sleeve
85 playing in and being protected by said skirt.

3. The combination of a conductive contact-rail, a slotted tube partially inclosing
90 said rail, and a rotary slotted sleeve disposed on said slotted tube for covering and exposing said rail, one edge of said slotted sleeve having a recessed lip adapted to shut over
95 the top of said rail without contact therewith.

4. The combination of a protecting-tube provided with a longitudinal slot, a conductive
95 contact-rail disposed in and insulated from said tube and having its head projecting into the slot thereof, a rotary slotted sleeve disposed on said tube, and means for oscillating said sleeve to cover or expose said rail.

5. The combination of a protecting-tube
100 provided with a longitudinal slot, rail-supports disposed in said tube, a conductive contact-rail disposed in said tube on said supports and insulated therefrom, the head of
105 said rail projecting into the slot of said tube, insulating-strips between the head of said rail and the edges of the slot of the tube, a rotary slotted sleeve disposed on said tube, and means for oscillating said sleeve to cover or
110 expose said rail.

6. The combination of a protecting-tube
110 provided with a longitudinal slot, a conductive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube and provided with an inclined opening-cam and
115 with an inclined closing-cam adapted to be engaged by actuating means on the car for exposing and covering said rail.

7. The combination of a protecting-tube
120 provided with a longitudinal slot, a conductive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube and provided with opening-cams inclined in opposite directions, and closing-cams also inclined in opposite directions, a cam of each
125 set being engaged in alternation to oscillate said sleeve to uncover and cover said rail.

8. The combination of a protecting-tube
130 provided with a longitudinal slot, a conductive contact-rail disposed in said tube, and

insulated therefrom, a rotary slotted sleeve disposed on said tube and provided on one side with opening-cams inclined in opposite directions, and on its opposite side with closing-cams inclined in opposite directions, sleeve-openers disposed on the car for engaging said opening-cams respectively, and sleeve-closers disposed on the car for engaging said closing-cams respectively according to the direction of movement of the car.

9. The combination of a protecting-tube provided with a longitudinal slot, a conductive contact-rail disposed in said tube and insulated therefrom, a rotary slotted sleeve disposed on said tube and provided on one side with opening-cams inclined in opposite directions, and on its opposite side with closing-cams inclined in opposite directions, sleeve-openers disposed on the car for engaging said opening-cams respectively, sleeve-closers disposed on the car for engaging said closing-cams respectively according to the direction of movement of the car, and means for adjusting said closers into operative and inoperative positions respectively.

10. The combination of a protecting-tube provided with a longitudinal slot, a conductive contact-rail disposed in said tube, and insulated therefrom, a rotary slotted sleeve disposed on said tube and provided on one side with opening-cams inclined in opposite directions, and on its opposite side with closing-cams inclined in opposite directions, sleeve-openers disposed on the car for engaging said opening-cams respectively, sleeve-closers disposed on the car for engaging said closing-cams respectively according to the direction of movement of the car, and means operative from either end of the car to simultaneously adjust one of said sleeve-closers into operative position and the other into inoperative position.

11. In a third-rail electric railway, the combination of a curved track, a third rail adjacent to said curved track and composed of a series of straight sections forming slight angles, an inclosing protective tube for said sections provided with exposing-slots therefor, and rotary slotted sleeves disposed on said sections and adapted to expose or cover said rail.

12. In a third-rail electric railroad, the combination of a curved track, a conductive third rail composed of straight sections disposed adjacent to one of the rails of said track at different distances therefrom, protecting-tubes inclosing said rail-sections and provided with longitudinal slots for exposing the heads thereof, and rotary slotted sleeves disposed on said tubes and adapted to oscillate to expose or cover said rail-sections.

13. In a third-rail electric railroad, the combination of a track, a third rail disposed adjacent thereto, a protecting-tube inclosing said third rail and provided with a longitudi-

dinal slot for exposing the contact-surface thereof, a series of rotary slotted sleeves disposed on said tube and provided with cams, and sleeve actuators disposed on the car for engaging said cams, said actuators being adapted to yield vertically.

14. In a third-rail electric railroad, the combination of a track, a third rail disposed adjacent thereto, a protecting-tube inclosing said third rail and provided with a longitudinal slot for exposing the contact-surface thereof, a series of rotary slotted sleeves disposed on said tube and provided with cams, and sleeve-actuators disposed on the car for engaging said cams, said actuators being adapted to yield laterally.

15. In a third-rail electric railroad, the combination of a track, a third rail disposed adjacent thereto, a protecting-tube inclosing said third rail and provided with a longitudinal slot for exposing the contact-surface thereof, a series of rotary slotted sleeves disposed on said tube and provided with cams, and sleeve-actuators disposed on the car for engaging said cams, said actuators being adapted to yield vertically and laterally.

16. In a third-rail electric railroad, the combination of a track, a third rail disposed adjacent thereto, a protecting-tube inclosing said third rail and provided with a longitudinal slot for exposing the contact-surface thereof, a series of rotary slotted sleeves disposed on said tube and provided with cams, and sleeve-actuators disposed on the car for engaging said cams, and a traveling contact connected with said actuator.

17. The combination of a protecting-tube provided with a longitudinal slot, a conductive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube provided with a projection, an actuator on the car adapted to engage said projection, for turning said sleeve, and means for lifting said actuator into and out of operative position.

18. The combination of a protecting-tube provided with a longitudinal slot, a conductive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube and provided with a projection, an actuator on the car adapted to engage said projection for turning said sleeve, a vertical slide-rod carrying said actuator, and a pivoted lever engaging said slide-rod for lifting and lowering it.

19. The combination of a protecting-tube provided with a longitudinal slot, a conductive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube and provided with projecting means for oscillating the tube, actuators disposed at different parts of the car for engaging said projecting means, vertical slide-rods carrying said actuators, pivoted levers engaging said slide-rods for lifting and lowering said actuators,

foot-levers, interlocking devices between said foot-levers and said pivoted levers, and connecting mechanism between said slide-rods and foot-lever whereby the depression
 5 of one foot-lever disengages the locking mechanism of both and the actuation of one of said pivoted levers simultaneously shifts the other in the reverse direction.

20. The combination of a protecting-tube
 10 provided with a longitudinal slot, a conductive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube and provided with projecting means adapted to be engaged for oscillating said sleeve, actu-
 15 ators disposed at different points on the car for engaging said projecting means, vertical slide-rods carrying said actuators, pivoted lifting-levers for raising and lowering said slide-rods, a longitudinal oscillating slide-
 20 rod, bell-crank levers connecting the opposite ends of said longitudinal rod with said vertical slide-rods, sleeves adapted to turn with said longitudinal rod and permit it to slide therein, said sleeves having lateral lugs,
 25 levers connected with said lugs for oscillating said longitudinal rod, and locking mechanism connecting each oscillating lever with its adjacent lifting-lever.

21. The combination of a protecting-tube

provided with a longitudinal slot, a conduct- 30
 ive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube and provided with projecting means adapted to be engaged for turning said sleeve, an actu-
 35 ator disposed on the car for engaging said projecting means, said actuator comprising a pivoted arm composed of sliding members having an interposed spring.

22. The combination of a protecting-tube
 provided with a longitudinal slot, a conduct- 40
 ive contact-rail disposed in said tube, a rotary slotted sleeve disposed on said tube and provided with projecting means adapted to be engaged for turning said sleeve, an actu-
 45 ator disposed on the car for engaging said projecting means, a vertical rod with which said actuator is connected, said actuator comprising a horizontal and vertical mem-
 50 ber, the horizontal member being pivoted at its outer end to said slide-rod and provided with a stop, and a spring interposed between the end of said slide-rod and a lug on said horizontal member.

HAMLET CORRIGAN.

Witnesses:

THOS. S. LOFTUS,
 EDWARD J. HART.

It is hereby certified that the residence of the assignees in Letters Patent No. 849,773, granted April 9, 1907, upon the application of Hamlet Corrigan, of Pittston, Pennsylvania, for an improvement in "Third-Rail-Protecting Mechanism for Electric Railroads," was erroneously written and printed "Pittsburg, Pennsylvania," whereas the said residence should have been written and printed *Pittston, Pennsylvania*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of May, A. D., 1907.

[SEAL.]

E. B. MOORE,
Acting Commissioner of Patents.