

(No Model.)

5 Sheets—Sheet 1.

C. KLETTNER.
AUTOMATIC RAILWAY CAR PROTECTOR.

No. 528,254.

Patented Oct. 30, 1894.

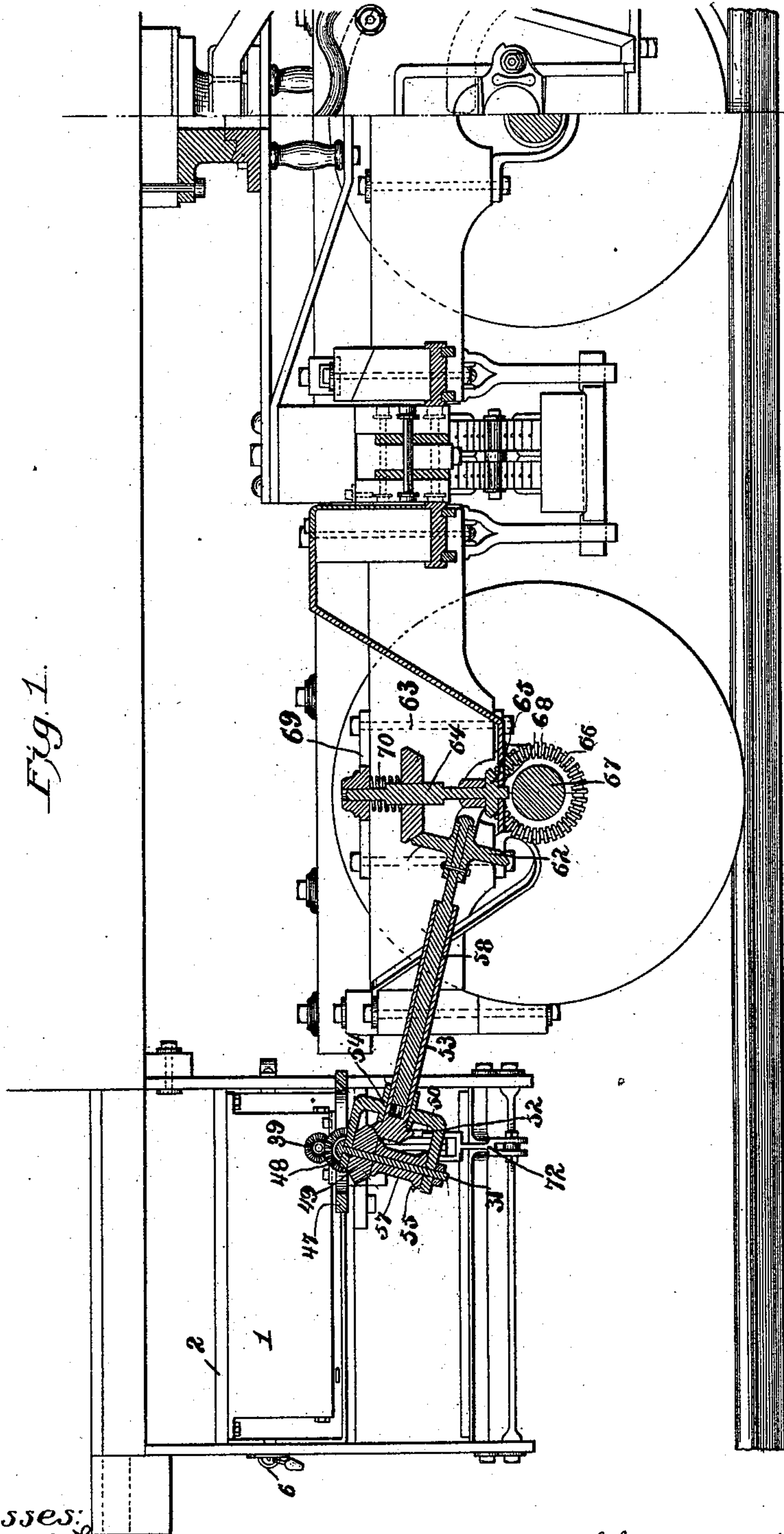


Fig. 1.

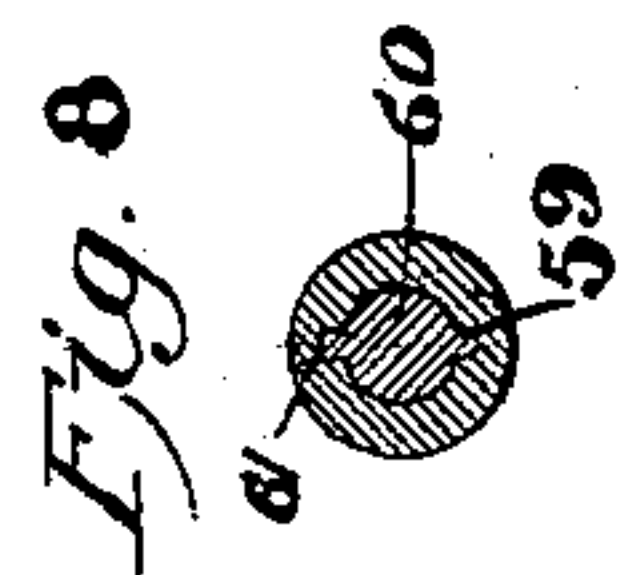


Fig. 8.

Witnesses:
Daniel O. Laws
Louise Eberhardt

Inventor:
Charles Klettner.

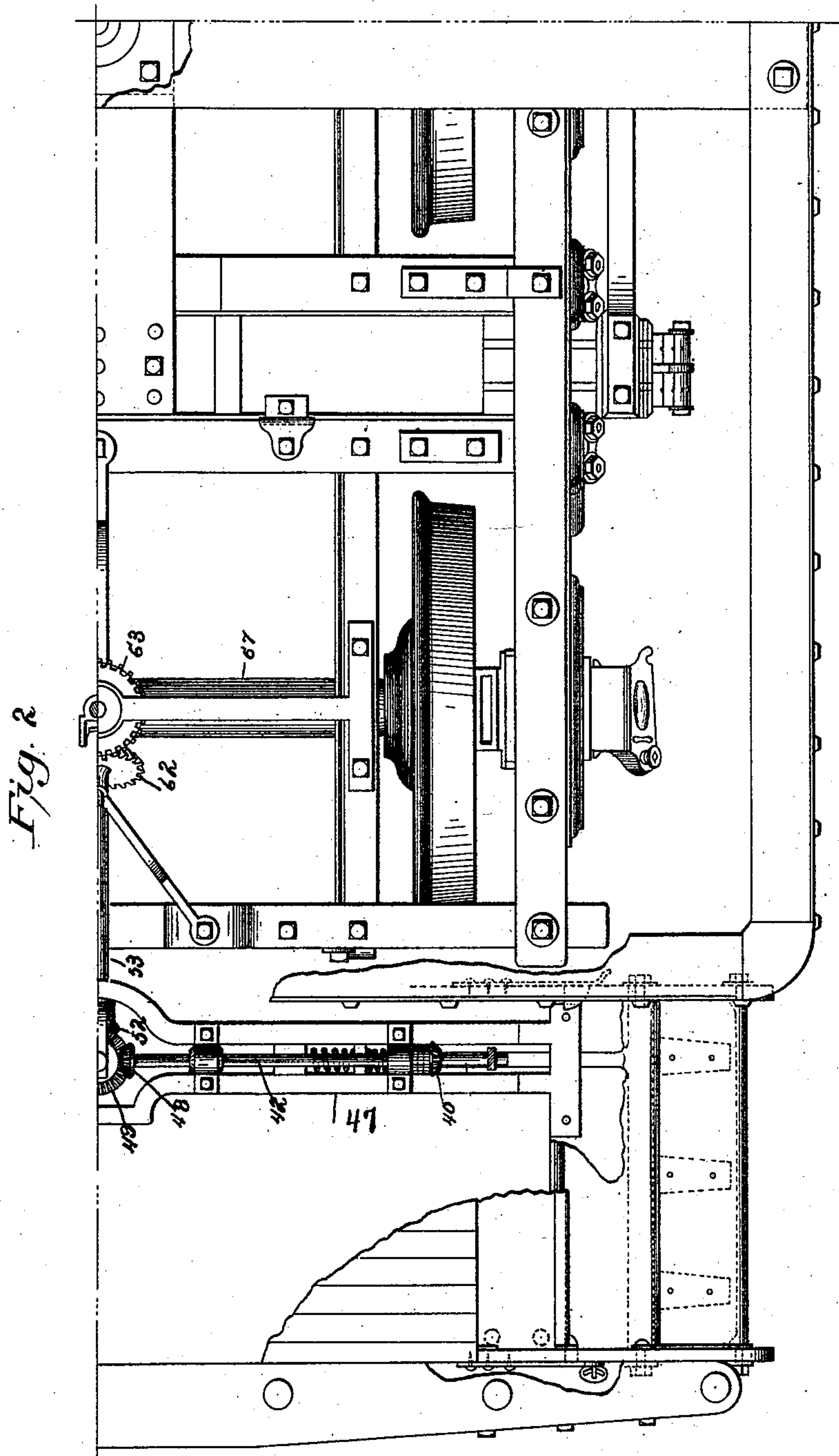
(No Model.)

5 Sheets—Sheet 2.

C. KLETTNER.
AUTOMATIC RAILWAY CAR PROTECTOR.

No. 528,254.

Patented Oct. 30, 1894.



Witnesses:
Daniel O. Laws
Louise Eberhardt.

Inventor:
Charles Klettner.

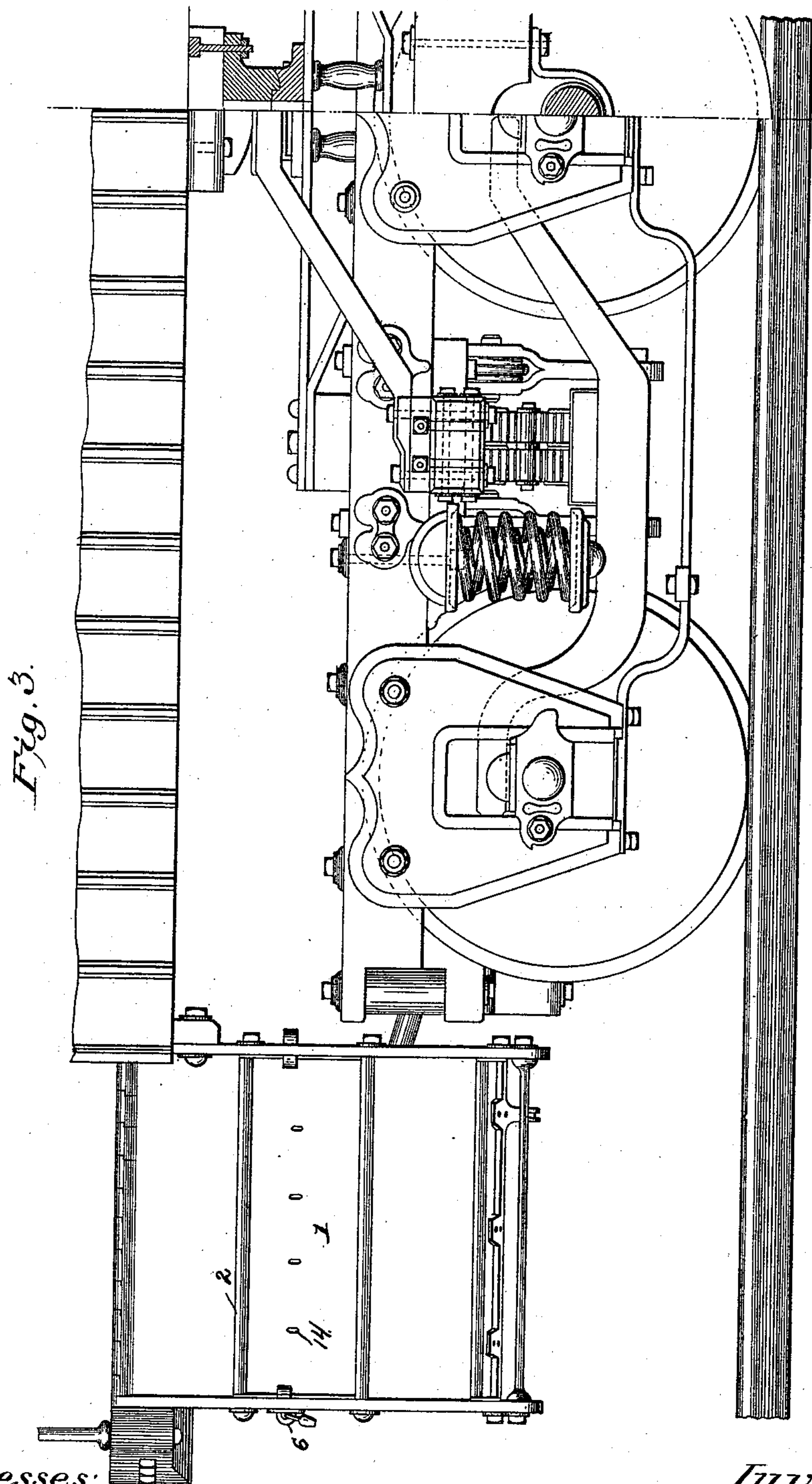
(No Model.)

5 Sheets—Sheet 3.

C. KLETTNER.
AUTOMATIC RAILWAY CAR PROTECTOR.

No. 528,254.

Patented Oct. 30, 1894.



Witnesses:
Daniel O. Laws.
Louise Eberhardt

Inventor:
Charles Klettner.

(No Model.)

5 Sheets—Sheet 4.

C. KLETTNER.
AUTOMATIC RAILWAY CAR PROTECTOR.

No. 528,254.

Patented Oct. 30, 1894.

Fig. 4

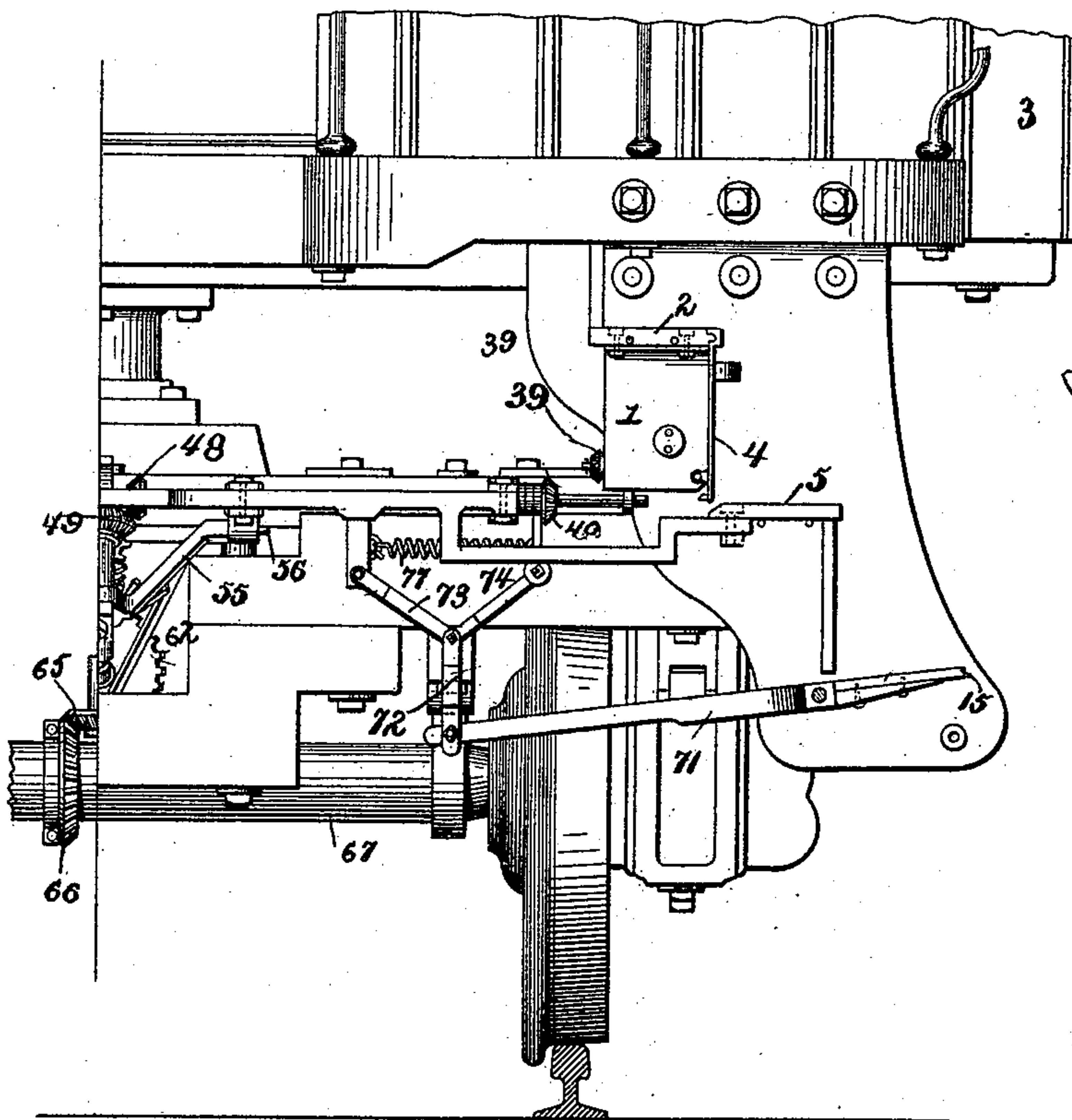


Fig. 5

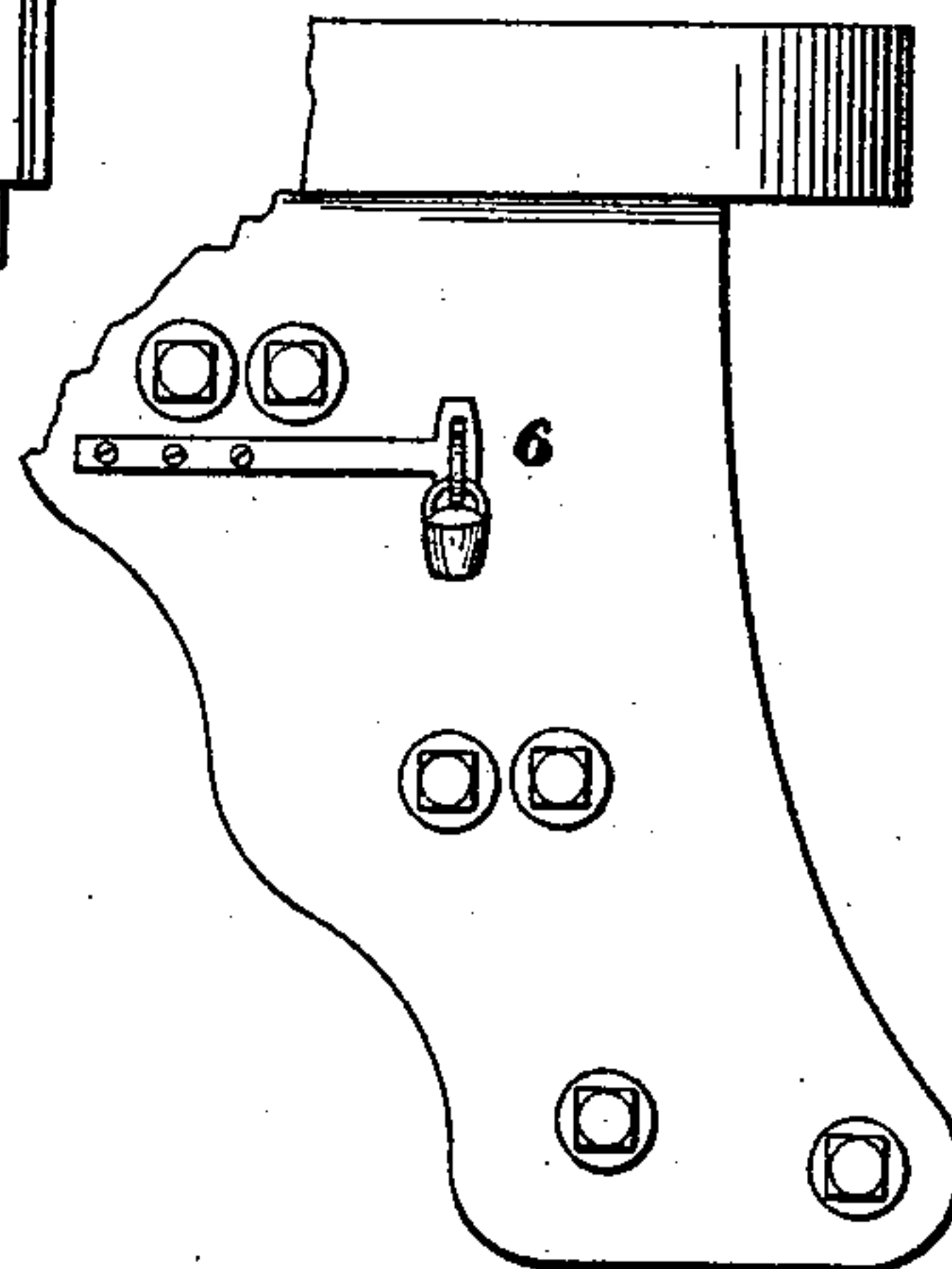
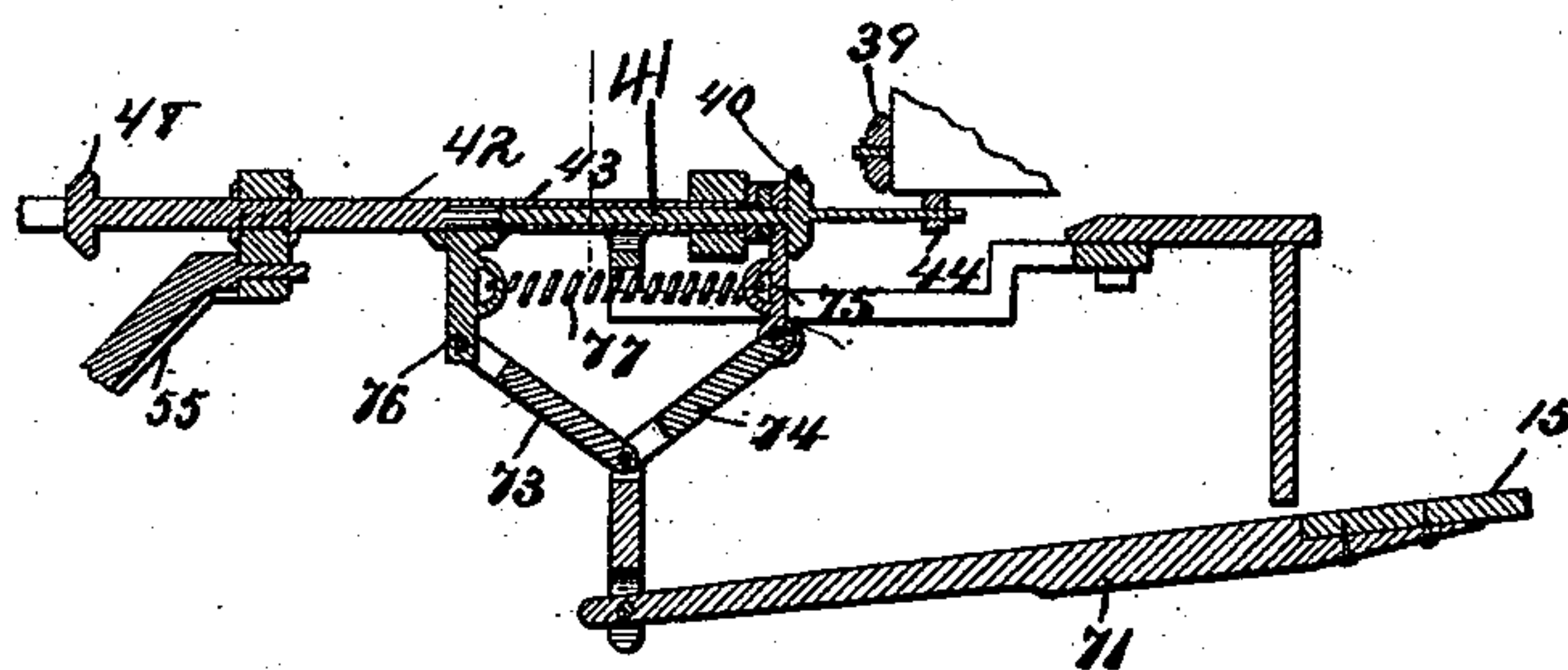


Fig. 7



Fig. 6



Witnesses:
Daniel O. Laws
Louise Eberhardt

Inventor:
Charles Klettner.

(No Model.)

5 Sheets—Sheet 5.

C. KLETTNER.
AUTOMATIC RAILWAY CAR PROTECTOR.

No. 528,254.

Patented Oct. 30, 1894.

Fig. 9

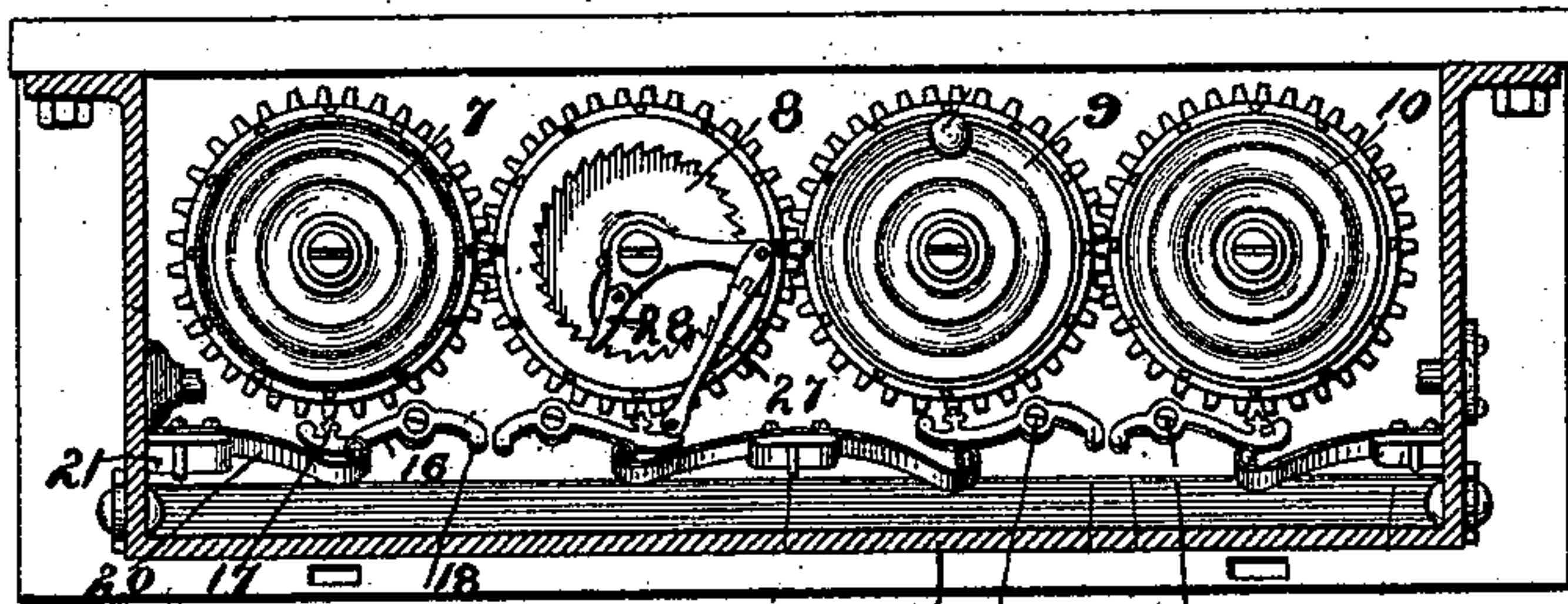


Fig. 10

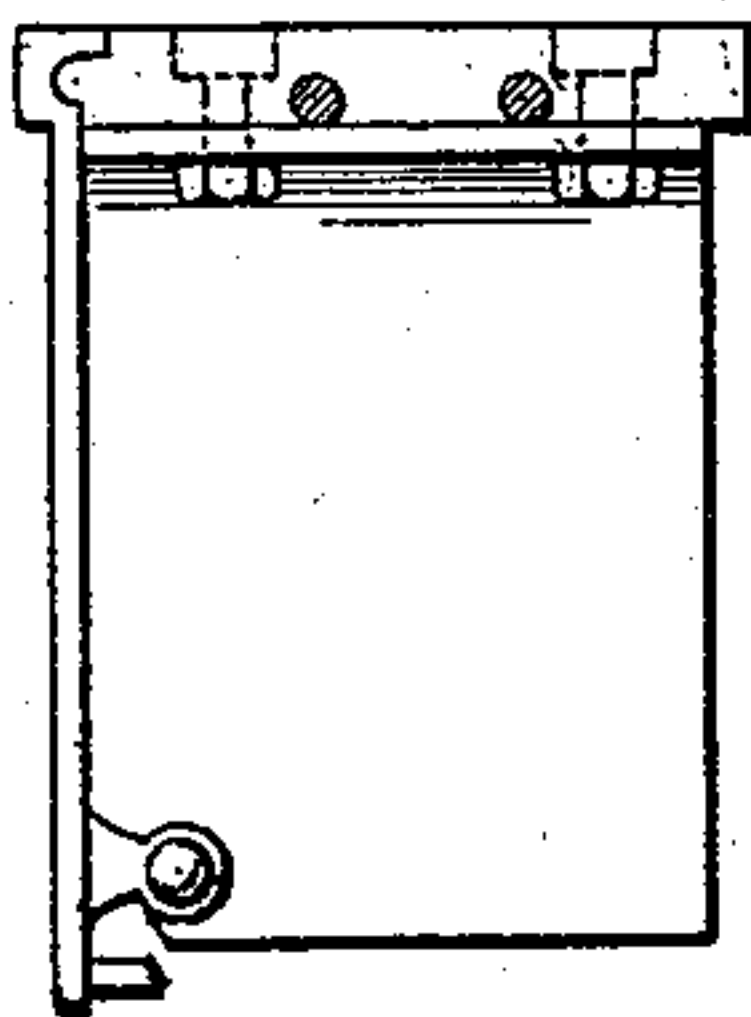


Fig. 12.

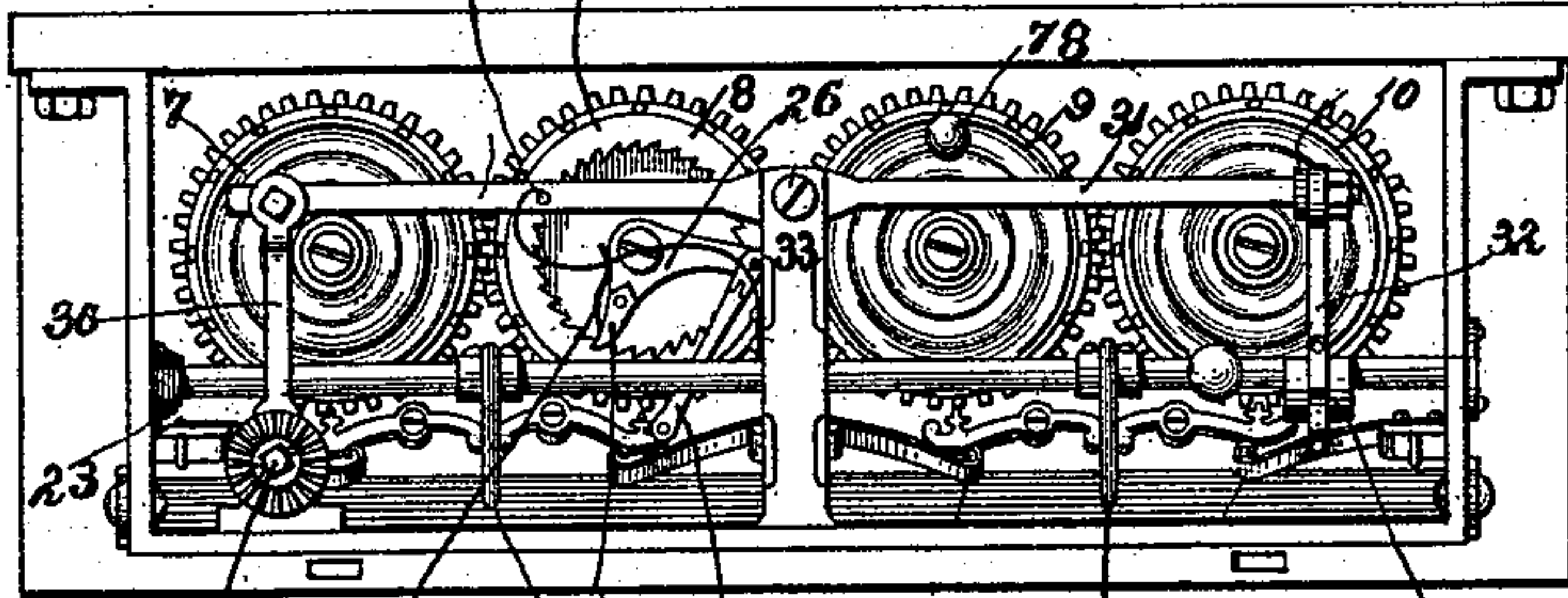


Fig. 11.

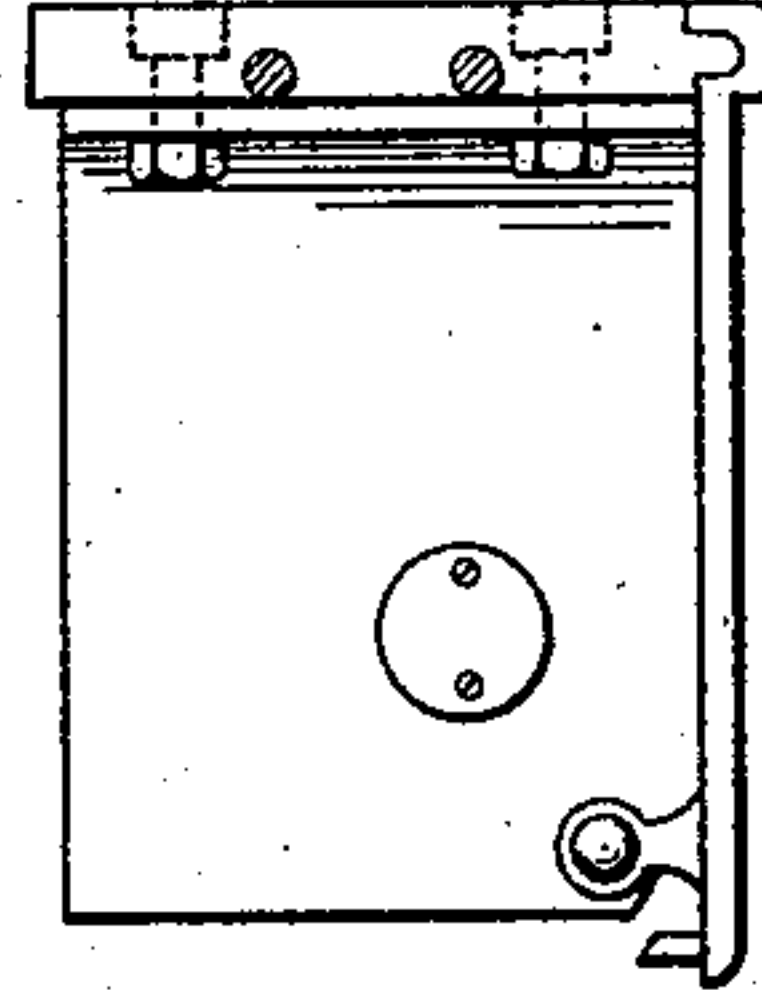


Fig. 13

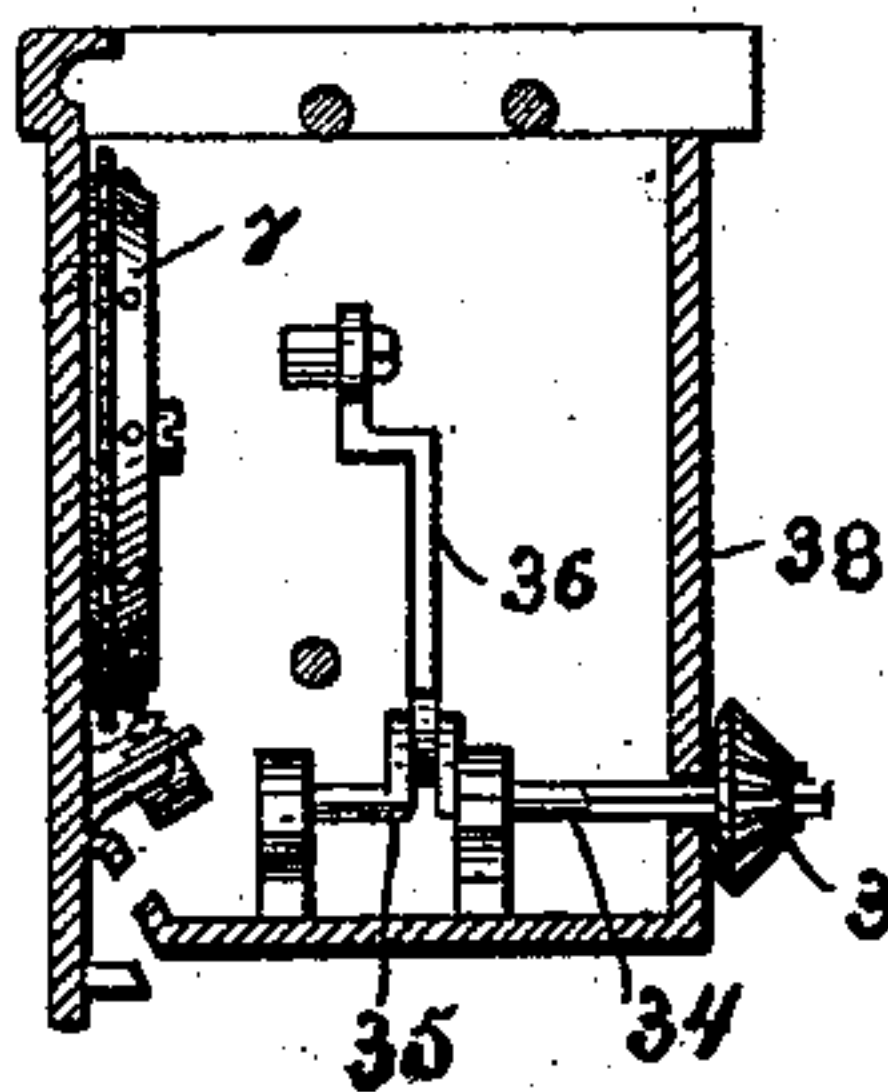


Fig. 14.

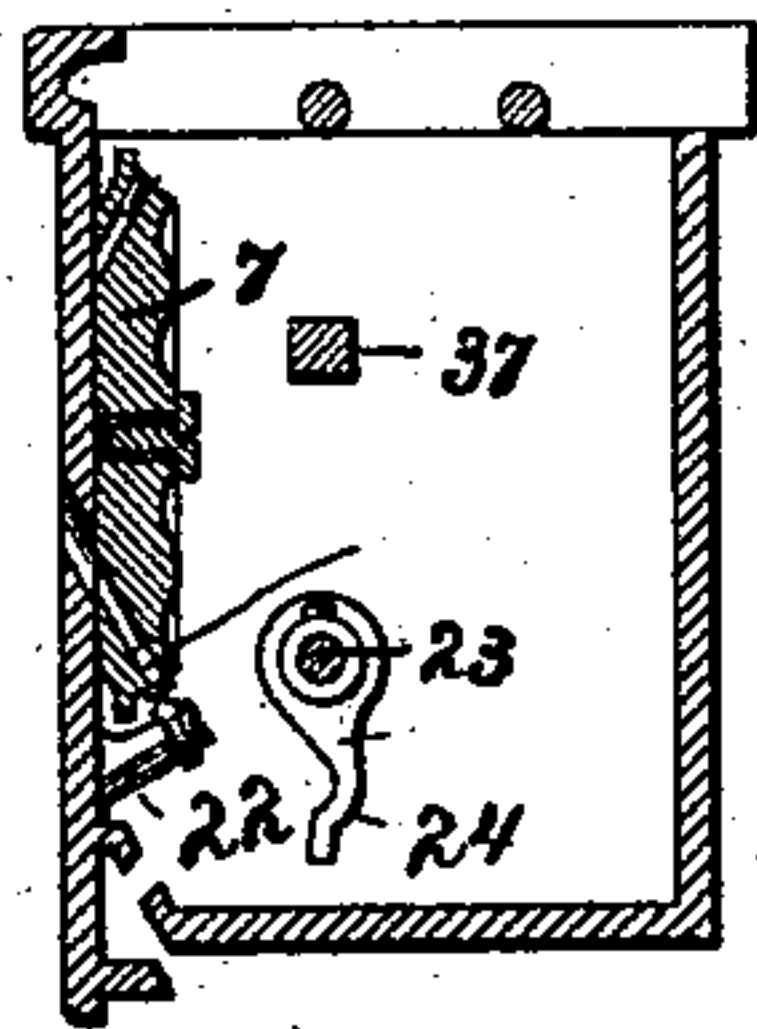


Fig. 15.

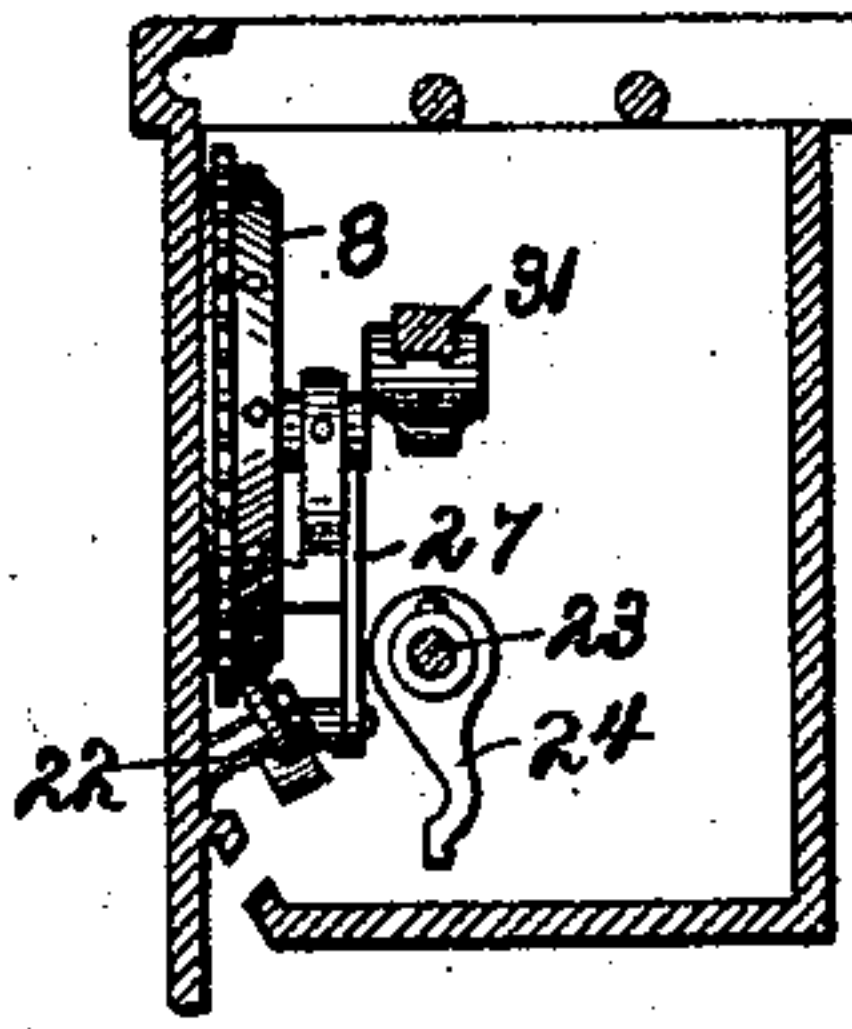


Fig. 16.

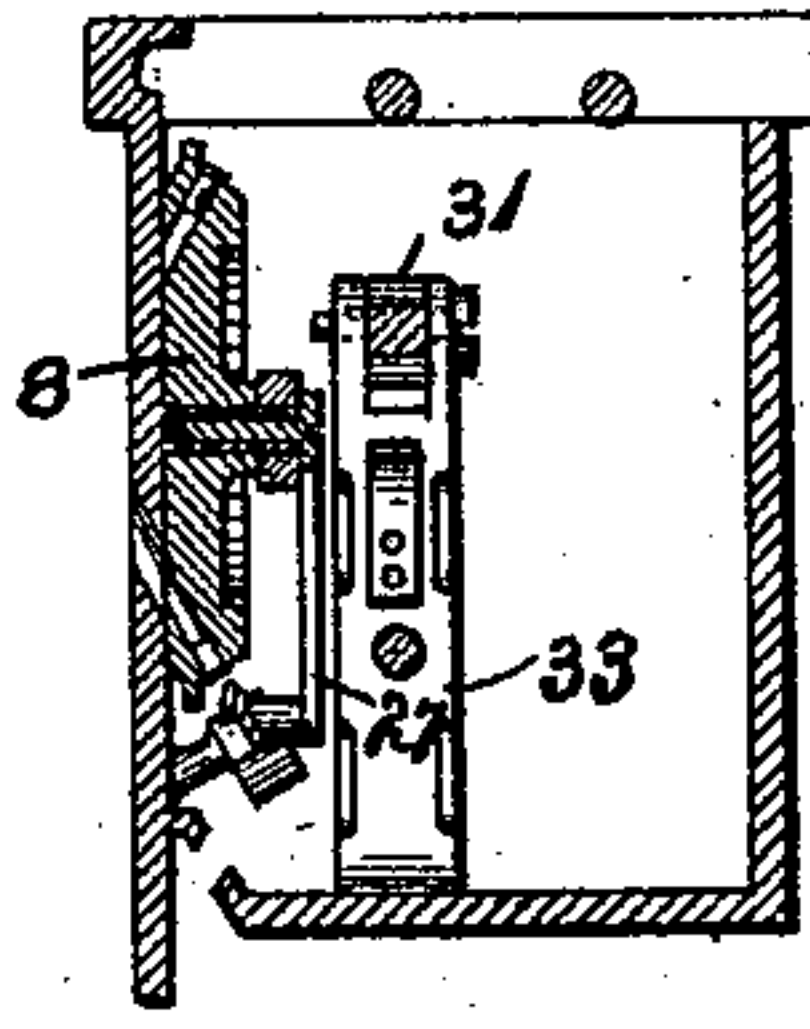


Fig. 17

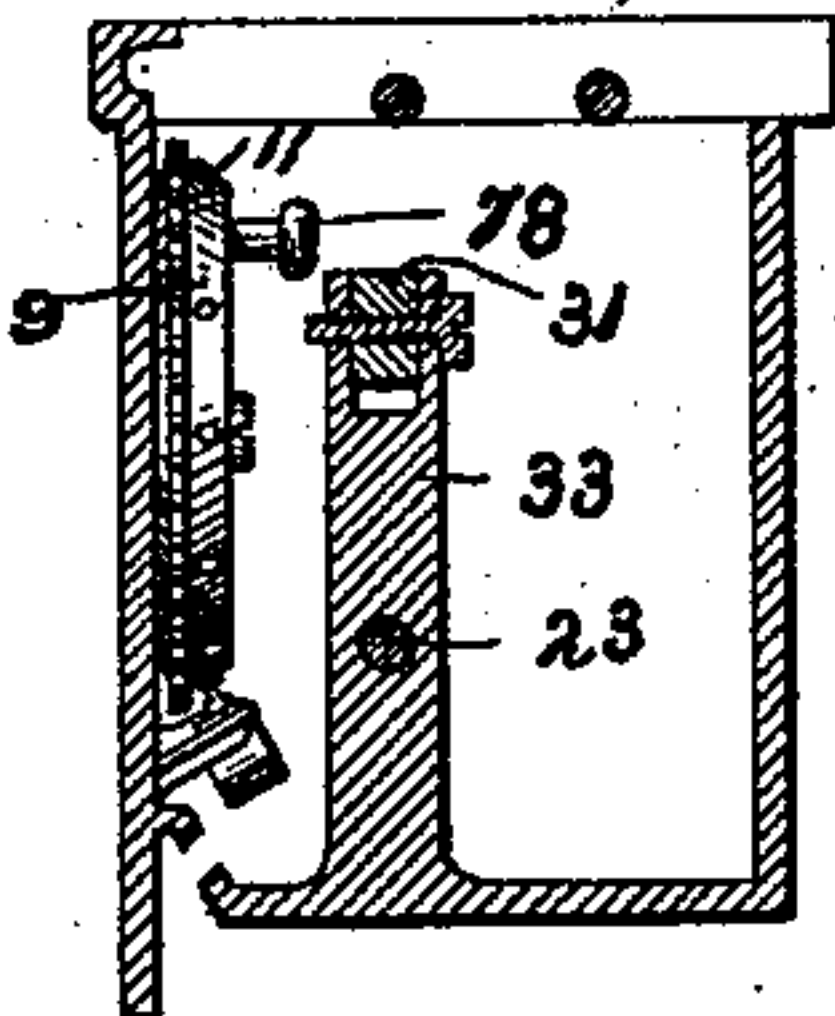


Fig. 18

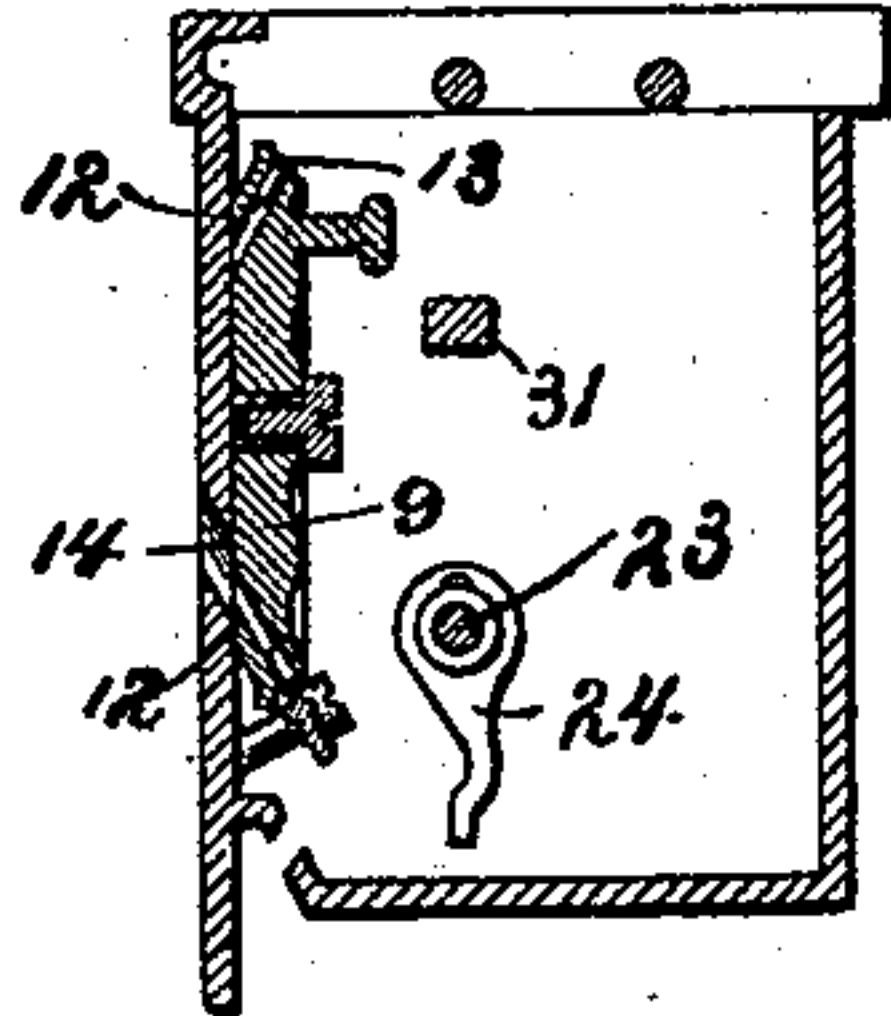


Fig. 19

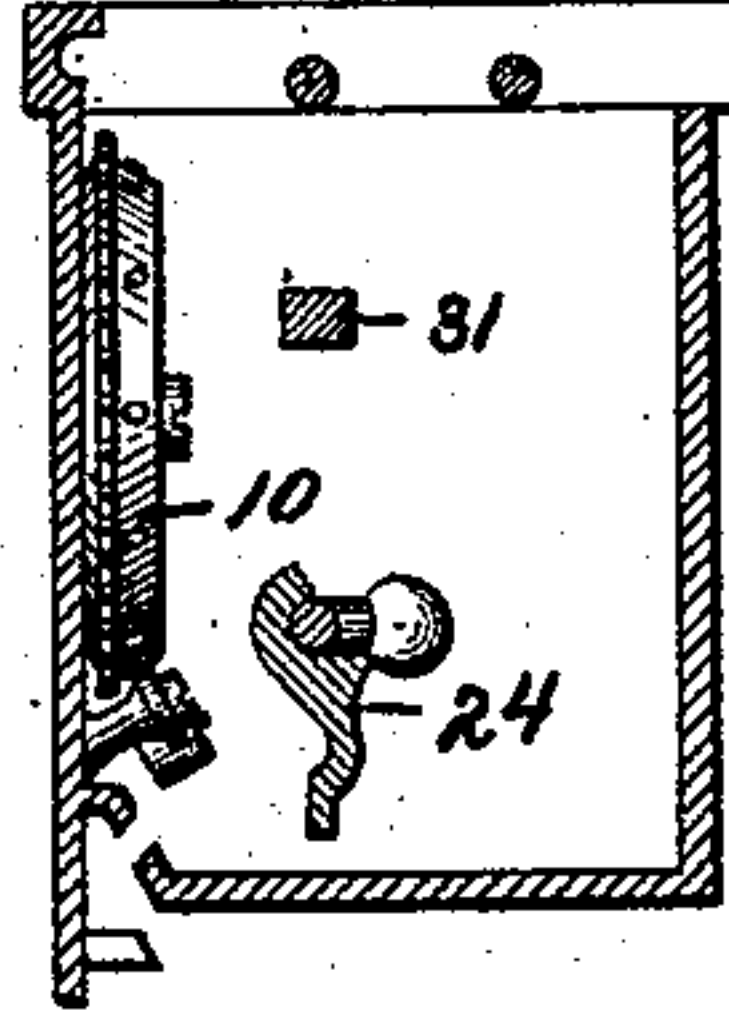


Fig. 20

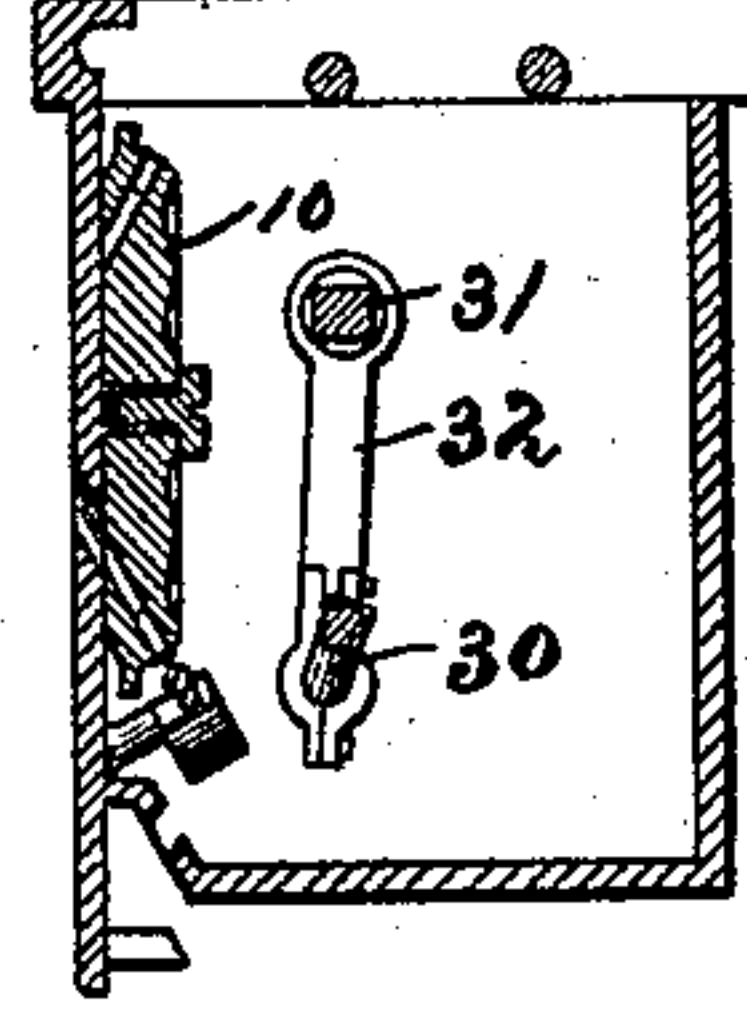
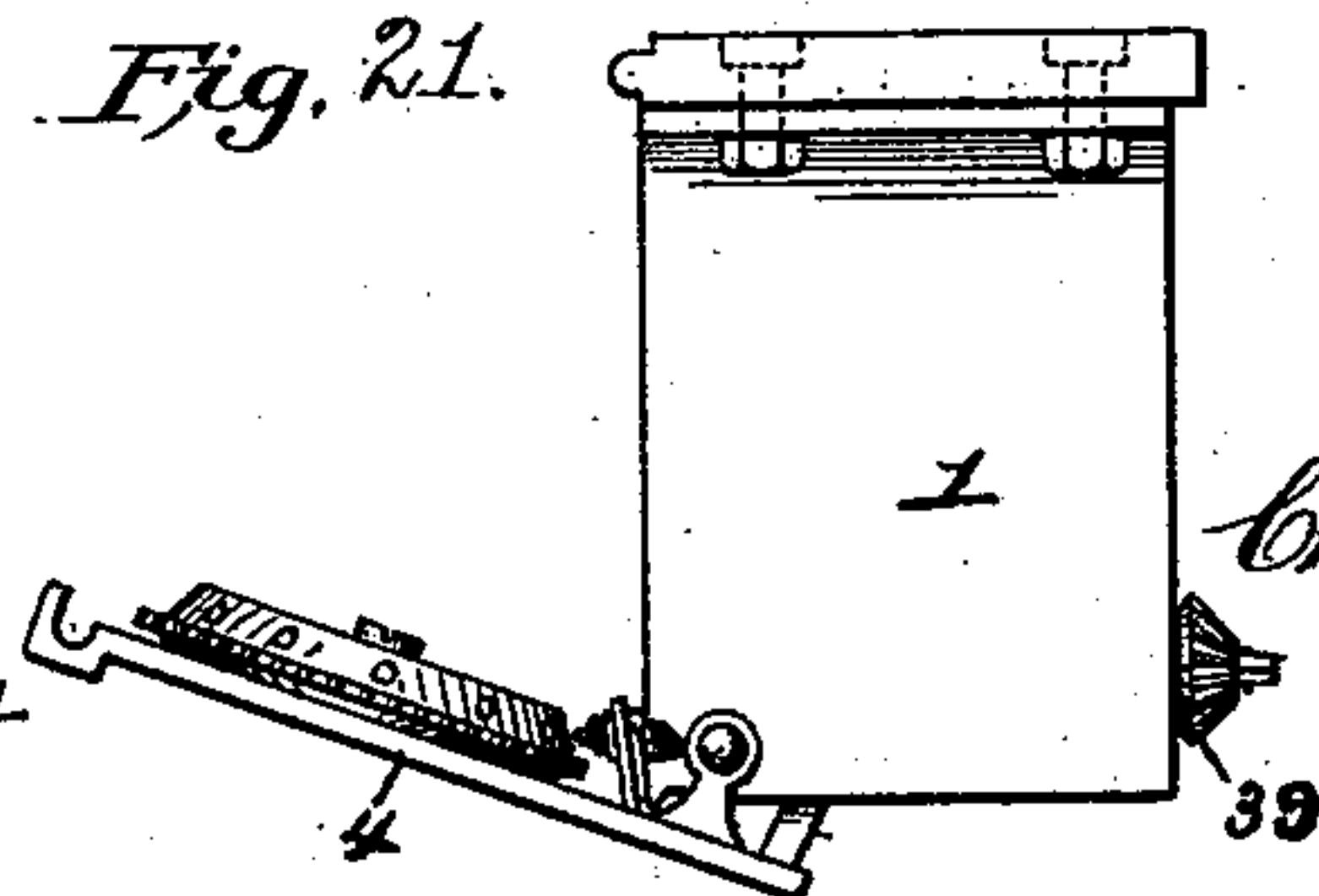


Fig. 21.



Witnesses:

Daniel D. Laws

Louise Eberhardt

Inventor:

Charles Klettner.

UNITED STATES PATENT OFFICE.

CHARLES KLETTNER, OF CINCINNATI, OHIO.

AUTOMATIC RAILWAY-CAR PROTECTOR.

SPECIFICATION forming part of Letters Patent No. 528,254, dated October 30, 1894.

Application filed November 28, 1892. Serial No. 453,445. (No model.)

To all whom it may concern:

Be it known that I, CHARLES KLETTNER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented an Improvement in Automatic Railway-Car Protectors, of which the following is a specification.

The invention relates to improvements in apparatus for the protection of railway cars.

The object of the present invention is to provide an automatic apparatus designed to be mounted on railway coaches, express, baggage and other railway cars, and adapted to be operated by persons ascending the steps thereof, and capable of delivering a continuous deadly discharge of lead, while the weight of such persons is on the steps to protect effectually such cars from robbery and pillage; and furthermore the object of the invention is to produce such automatic operation while the cars are in motion, and when none of the passengers or employes have occasion to use the steps, and to prevent any accidents when the cars are stationary.

In the drawings:—Figure 1 is a longitudinal sectional view of a portion of a car provided with an apparatus constructed in accordance with this invention. Fig. 2 is a plan view. Fig. 3 is a side elevation. Fig. 4 is a rear elevation. Fig. 5 is a detail view of the rear portion of the steps. Fig. 6 is a detail sectional view, illustrating the construction for throwing the gearing into operation. Figs. 7 and 8 are detail sectional views, illustrating the construction of the adjustable connection or shafting. Fig. 9 is a longitudinal sectional view of the firing mechanism. Figs. 10 and 11 are end elevations of the same. Fig. 12 is a rear elevation of the firing mechanism. Figs. 13 to 20 inclusive, are transverse sectional views of the firing mechanism, illustrating the construction of different portions thereof. Fig. 21 is an end elevation of the firing mechanism, the front of the casing being swung down to afford access to the firing mechanism.

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

1 designates a rectangular casing designed to be secured beneath the top step 2, of a

railway car 3, and provided with a hinged front 4, arranged vertically and located above and in rear of the second step 5, and forming the rear portion or riser thereof. The hinged front of the casing, is normally held closed by a suitable locking mechanism 6, and it has journaled on its inner face, firing wheels 7, 8, 9, and 10, provided with peripheral teeth and meshing with one another, and adapted to rotate simultaneously; and these series of firing wheels, four of which are illustrated in the accompanying drawings, may consist of any desired number. The series of firing wheels are provided adjacent to the cars with beveled or inclined peripheral faces 11, and have series of inwardly and forwardly inclined converging bores 12, of any desired diameter to suit the caliber of cartridges 13, which are located at the inner terminals of the bores, and have their laterally projecting flanges or rims resting against the inclined peripheral faces of the firing wheels.

The cartridge receiving bores of the firing wheels are adapted to register successively with one of a series of firing apertures 14, of the front of the casing, said apertures 14, incline upward and forward, and having the bores at the bottoms of the firing wheels registering with them, whereby when the cartridges are discharged, by means hereinafter described, the bullets will be discharged upward, and a volley will be fired in the direction of the breast of a person standing upon the lower step 15 or the car.

The discharge of the cartridge is effected by means of spring actuated levers 16, arranged in pairs at the bottoms of the wheels and provided at their outer terminals with firing pins or hammers 17, and having their inner ends 18, arranged adjacent to each other. The firing levers 16 are fulcrumed on the inner face of the front of the casing or inclined posts 22, by screws 19, or similar fastening devices, and they are carried into contact with the cartridges by springs 20, mounted on brackets 21, and engaging the lower edge of the firing levers at the outer arms thereof, or at points between the firing pins and the pivots 19.

The inner adjacent ends of the firing levers

are depressed by the action of the spring, by means of the horizontally disposed shaft 23, journaled detachably in suitable bearings at the ends of the casing, and provided with depending arms 24, located in rear of the adjacent ends of the pairs of firing levers and adapted to engage the same to throw their outer ends, which carry the firing pins or hammers, away from the firing wheels. This operation is accomplished by a downward and forward movement of the arms 24, of the shaft 23, which swings the inner ends of the levers sufficiently forward in order to separate and pass them, whereby the firing levers are actuated by a spring with sufficient force to explode the cartridges.

The firing wheels are successively rotated, after each discharge to bring a fresh cartridge opposite each hammer or firing pin, by an actuating mechanism, comprising a ratchet wheel 25, mounted on the rear face of the firing wheel 8, a bell crank lever 26, fulcrumed at its angle, at the center of said wheel 8, and having one end connected by a link or bar 27, with an outer terminal of the adjacent firing lever, and carrying at its other end a pivoted spring pressed pawl 28, arranged to engage the shouldered side of the ratchet teeth. The pawl 28, is engaged by a spring 29, at its forward edge, and the lever is provided at the opposite edge with shoulders to stop the rearward swinging of the pawl, whereby when the lever is swung forward by the downward movement of the outer end of the adjacent firing lever, by reason of the arm 24, of the shaft engaging and pressing upward the inner terminal of the firing lever, the wheel 8, will be rotated forward and sufficiently distant to bring a fresh cartridge opposite the adjacent firing apertures, which are slightly enlarged. As the outer ends of the firing levers spring upward to effect a discharge of the cartridges, the bell crank actuating lever is swung rearward and brought into proper position for again actuating the firing wheel 8. The firing wheels mesh with one another as will be readily apparent, and as the firing wheel 8 is successively rotated, the other wheels of the series will be simultaneously operated and the cartridges thereof, will be similarly discharged.

The horizontal shaft 23, is provided adjacent to one end with a crank bend 30, and is connected with one end of an oscillating lever 31, by a pitman or bar 32, which has its upper end attached to the lever 31, and its lower end is connected with the crank bend 30, whereby when the lever 31, is oscillated, the horizontal shaft 23, will be rotated. The oscillating lever 31, is fulcrumed at its center on the top of a post 33, and it is oscillated by a transverse crank shaft 34, located below the adjacent end of the lever, and having its crank 35, connected by a bar or pitman 36, with the adjacent end of the oscillating lever. When the transverse crank shaft is ro-

tated, by means hereinafter described, the horizontally arranged longitudinally disposed lever 31, will be oscillated, and its operation is assisted and cushioned by a spring 37, having the lower end attached to the post 33, and secured at its upper end about midway of the adjacent arm of the oscillating lever 31.

The transverse shafting 34, is journaled in suitable bearings of the rectangular casing 31; and it extends through the rear wall 38, of the casing and carries a bevel pinion 39, arranged on the exterior of the casing and adapted to mesh with a similar bevel pinion 40. The cog wheel 40 is mounted on a sliding section 41, of an adjustable shafting 42, which is composed of a stationary portion journaled in suitable bearings, and provided with a tubular portion 43, and the said sliding section 41, which is arranged in the tubular portion of the stationary section and which extends beyond the bevel pinion 40, and has its outer portion slidably journaled in the bearing 44. The sliding section 41, is provided with opposite splines 45, which fit in grooves 46, of the tubular portion of the stationary section of the shaft, whereby the two sections rotate together. This adjustable shaft is disposed transversely of the car, and is journaled in suitable bearings of a transverse metal supporting frame 47, and it carries at its inner end a bevel gear wheel 48, which meshes with a double or compound bevel pinion 49. The gear wheel 49 is mounted in a yoke 50, on a bolt 51, and meshes with a bevel gear wheel 52, of an adjustable shafting 53, arranged at a slight inclination and having its lower end connected by gearing with an adjacent axle of the truck of the car. The yoke is provided with a bearing 54, to receive the upper end of the adjustable shafting 53, and which is supported by a bracket arm 55. The bracket arm 55, has a horizontally disposed upper portion or end 56, journaled in a suitable bearing of the transverse frame. The central portion of the bracket arm is disposed at an inclination; and the lower end is provided with a sleeve 57, which is located on the bolt 51, and is interposed between the gear wheel 49, and the opposite side of the yoke. This arrangement permits the shafting to yield to the swaying of the truck, without straining or injuring the parts or their connections.

The adjustable shafting 53, consists of a tubular section 58, provided with grooves 59, and an inner telescoping section 60, provided with splines 61, fitting in the grooves of the tubular section and adapted to cause the sections of the adjustable shafting 53, to rotate together. The section 60, is adapted to slide in and out of the tubular section to accommodate the shafting to the varying distance between the axle of the truck, and the transversely disposed adjustable shafting 42. The lower end of the longitudinally disposed shafting 53, carries a bevel gear wheel 62 fixed

to the sliding section 60, and meshing with a horizontally disposed gear wheel 63, of a vertical shaft 64. The vertical shaft 64, is connected by gear wheels 65 and 66, with an axle 5 67, of the truck. Its lower end is stepped in a suitable bearing 68, of the truck, and its upper end is loosely mounted in a bearing plate 69, a spring 70 being interposed between the lower face of the bearing plate 69, and the 10 upper face of the gear wheel 63, whereby the gearing will accommodate itself to the vertical movement of the truck frame on the axle. The gear wheel 65, is disposed horizontally and is located at the lower end of a 15 vertical shaft 64; and the gear wheel 66, which meshes with the gear wheel 65, is composed of two sections which are bolted together, and thereby clamped on the axle 67.

The apparatus is operated by the rotation of 20 the axle as will be readily apparent, and it cannot operate when the car is stationary, whereby when a train is stopped, there is no danger of the battery firing. It is thrown in operation by the weight of a person attempting to ascend the steps when the car is in motion, and the weight of a person on the lower 25 step, will depress the lower step 15, which is mounted on the outer portion of an operating lever 71, which is fulcrumed between the 30 sides of the steps. The inner end of the operating lever 71, is connected by a link or bar 72, with the adjacent ends of toggle levers 73 and 74, respectively connected with the transverse frame 47, and the sliding section 35 41, of the transversely disposed adjustable shafting 42, whereby when the inner adjacent ends of the toggle levers are forced upward, by reason of the depression of the step 15 the gear wheel 40, will be moved outward and 40 carried into mesh with the gear wheel 39, thereby communicating motion to the firing mechanism to operate the latter as before described. The outer end of the lever 74, is pivotally connected to a depending arm 75, 45 of the sliding section 41, of the shafting, and the other lever 73 is similarly secured to a depending arm 76, of the transverse frame 47. As soon as the weight is removed from the step 15, the wheels 39 and 40, are thrown out 50 of gear, and the parts are returned to their normal position, to stop the firing and prevent an unnecessary waste and discharge of the cartridges, by a spring 77, having its ends connected to eyes of the arms 75 and 76. 55 When the arms 75 and 76, are separated, the spring is distended and is of sufficient strength to return the movable arm to its normal position.

One of the firing wheels is provided with a 60 knob 78, to enable the series of firing wheels to be rotated by hand for the purpose of loading them.

It will be seen that the apparatus is simple and comparatively inexpensive in construction, that it is positive and reliable in operation, and that it is adapted to be readily ap-

plied to the ordinary construction of railway cars. It will also be seen that the mechanism is capable of adjusting itself to the movements of truck and the car body, to prevent 70 the parts from being strained or otherwise injured, and that it is capable of readily firing effective volleys into persons attempting to mount the steps, while the car is in motion and to prevent any liability of persons intent 75 on robbery entering the car.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention. 80

What I claim is—

1. In an apparatus for protecting railway cars, the combination of a casing designed to be located at the steps of a car and to form 85 one of the risers thereof, and provided with a series of apertures, a series of firing wheels mounted in the casing and provided with a series of cartridge-receiving bores arranged to register successively with the apertures of 90 the casing, firing mechanism for discharging the cartridges, actuating mechanism for rotating the firing wheels, and gearing for connecting the firing mechanism with a car axle, whereby the firing will be automatic, substantially as described. 95

2. In an apparatus for protecting railway cars, the combination of a casing provided with apertures and designed to be located at the steps of a car, a series of firing wheels 100 provided at their peripheries with teeth and meshing with one another and having a series of cartridge receiving bores arranged to register successively with the apertures of the casing and the firing mechanism, substantially as described. 105

3. In an apparatus for protecting railway cars, the combination with the steps of a car, of a casing having its front wall forming one of the risers of said steps and provided with 110 a series of apertures, a series of firing wheels arranged within the casing and provided with cartridge receiving bores arranged to register successively with the apertures of the casing, firing mechanism, and means for automatically operating the firing mechanism, and 115 for rotating the firing wheels, substantially as described.

4. In an apparatus for protecting railway cars, the combination of a casing provided 120 with a series of apertures, a series of firing wheels provided with peripheral teeth and meshing with one another and having cartridge receiving bores arranged to register successively with the apertures of the casing, spring actuated levers fulcrumed on the casing and provided at their outer ends with firing pins, and a shaft carrying arms arranged to engage the inner ends of the levers, substantially as and for the purpose described. 125 130

5. In an apparatus for protecting railway cars, the combination of a casing, firing wheels

provided with peripheral teeth and meshing with one another, spring actuated firing levers arranged in pairs, a ratchet wheel mounted on one of the firing wheels, a bell crank lever
5 fulcrumed at its angle and provided at the outer end of one of its arms with a pivoted pawl arranged to engage the ratchet wheel, and connections between the other arm of the bell crank lever and the adjacent firing
10 lever, substantially as described.

6. In an apparatus for protecting railway cars, the combination of a casing, the firing wheels provided with peripheral teeth and meshing with one another, and a ratchet
15 wheel mounted on one of the firing wheels, an actuating lever provided at one end with a pivoted pawl engaging the ratchet wheel, and the firing levers, one of the said firing levers being connected with the actuating
20 lever, substantially as described.

7. In an apparatus for protecting railway cars, the combination of a casing, of toothed firing wheels journaled on the casing and meshing with one another, spring actuated
25 levers, a shaft provided with a crank bend and carrying arms arranged to engage the firing levers, an oscillating lever fulcrumed intermediate of its end and having one end connected with the crank bend of the shaft
30 to rotate the latter, a transverse crank shaft having a crank bend connected with the other end of the oscillating lever and gearing for communicating motion from an axle of the car to the transverse shaft, substantially as
35 described.

8. In an apparatus for protecting railway cars, the combination of a casing, toothed firing wheels meshing with one another and journaled on the casing, spring actuated firing
40 levers arranged in pairs and provided at their outer terminals with pins, a ratchet wheel mounted on one of the firing wheels, an actuating lever having one end connected with the outer terminal of a firing lever and pro-
45 vided at its outer end with a pivoted pawl engaging the ratchet wheel, a longitudinal shaft having a crank bend and provided with arms arranged to engage the inner terminals of the firing levers and adapted to pass be-
50 tween the same, a transverse shaft having a crank bend, an oscillating lever fulcrumed intermediate of its ends, and a pitman connecting the oscillating lever with the crank bend of said shaft, substantially as described.

9. In an apparatus for protecting railway cars, the combination with a car, of a casing mounted at the steps of the car, firing levers journaled in the casing, firing mechanism, a
55 shaft connected with the firing mechanism and carrying a gear wheel, an adjustable shafting composed of a sliding section and a stationary section, a gearing wheel carried by the sliding section and arranged to mesh with the said gear wheel, an operating lever
60 fulcrumed intermediate of its ends and hav-

ing one of the steps mounted on the outer portion, toggle levers having their outer ends connected with the sliding and stationary sections of the adjustable shafting and con-
70 nected at their inner terminals with the operating lever, and gearing communicating motion from an axle of the car to the adjustable shaft, substantially as described.

10. In an apparatus for protecting railway cars, the combination of an adjustable shaft-
75 ing composed of telescoping sections toggle levers connected at their outer ends with the sections of the adjustable shafting, and an operating lever carrying a step at its outer end and connected at its inner end with the
80 toggle levers, substantially as described.

11. In an apparatus for protecting railway cars, the combination of an adjustable shaft-
ing composed of telescoping sections, one of the sections being provided with grooves and
85 the other sections having splines fitting in the grooves, a movable arm depending from the sliding section of the shafting, a stationary arm, a spring connecting the arms, toggle
90 levers having their outer terminals connected with said arms, and an operating lever connected with the inner terminals of the toggle levers, substantially as described.

12. In an apparatus for protecting railway cars, the combination with a car, of the firing
95 wheels, firing mechanism, and transversely disposed adjustable shafting, the longitudinally disposed adjustable shafting, gearing connecting the adjacent ends of said shaft-
ing, a vertically disposed shaft located above
100 an axle of the car and adjustably mounted, gearing for connecting the vertical shaft with the axle and with the adjacent end of the longitudinal shaft, and means for connecting the transverse shafting with the firing mechan-
105 ism, substantially as described.

13. In an apparatus for protecting railway cars, the combination with a car, of the lon-
gitudinally disposed adjustable shafting composed of telescoping sections, a yoke pro-
110 vided with a bearing receiving the adjacent end of said shafting, a bolt connecting the sides of the yoke, a gear wheel mounted on the bolt, a bracket arm journaled on the car and provided with a sleeve arranged on the
115 bolt and interposed between the gear wheel and the opposite side of the yoke, gearing for connecting the longitudinally disposed shafting with an axle of the car, a gear wheel carried by the longitudinal shafting and mesh-
120 ing with that of the yoke, firing mechanism, and means for connecting the firing mechanism with the gear wheel of the yoke, substantially as described.

14. In an apparatus for protecting railway
125 cars, the combination with a car truck, of a gear wheel mounted on one of the axles thereof, a bearing plate located at the top of the truck, a vertical shaft journaled at its lower end on the truck and having its upper
130

end loosely arranged on said bearing plate, a gear wheel disposed horizontally on the vertical shaft and arranged intermediate of the ends thereof, a spring interposed between
5 the gear wheel of the vertical shaft and the bearing plate, a pinion connecting the lower end of the vertical shaft with the gear wheel of the axle, and a longitudinally disposed shaft carrying a gear wheel connected with

that of the vertical shaft, substantially as described.

Witness my hand, at Cincinnati, Ohio, this 19th day of November, A. D. 1892.

CHARLES KLETTNER.

In presence of—

GUSTAV R. WERNER,
SARAH LAZARUS.