

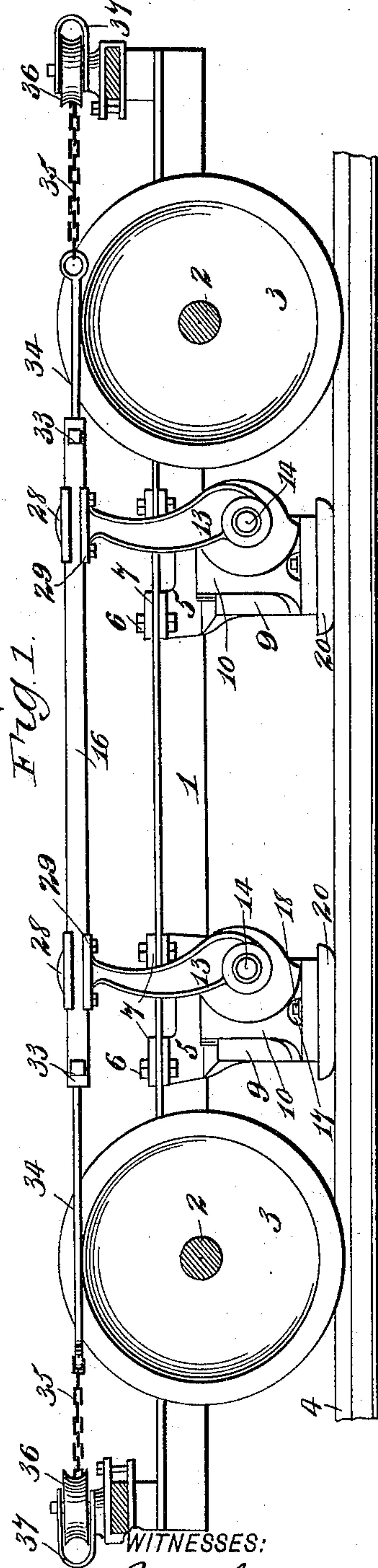
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3 Sheets—Sheet 1.

J. U. ELWOOD.
CAR BRAKE.

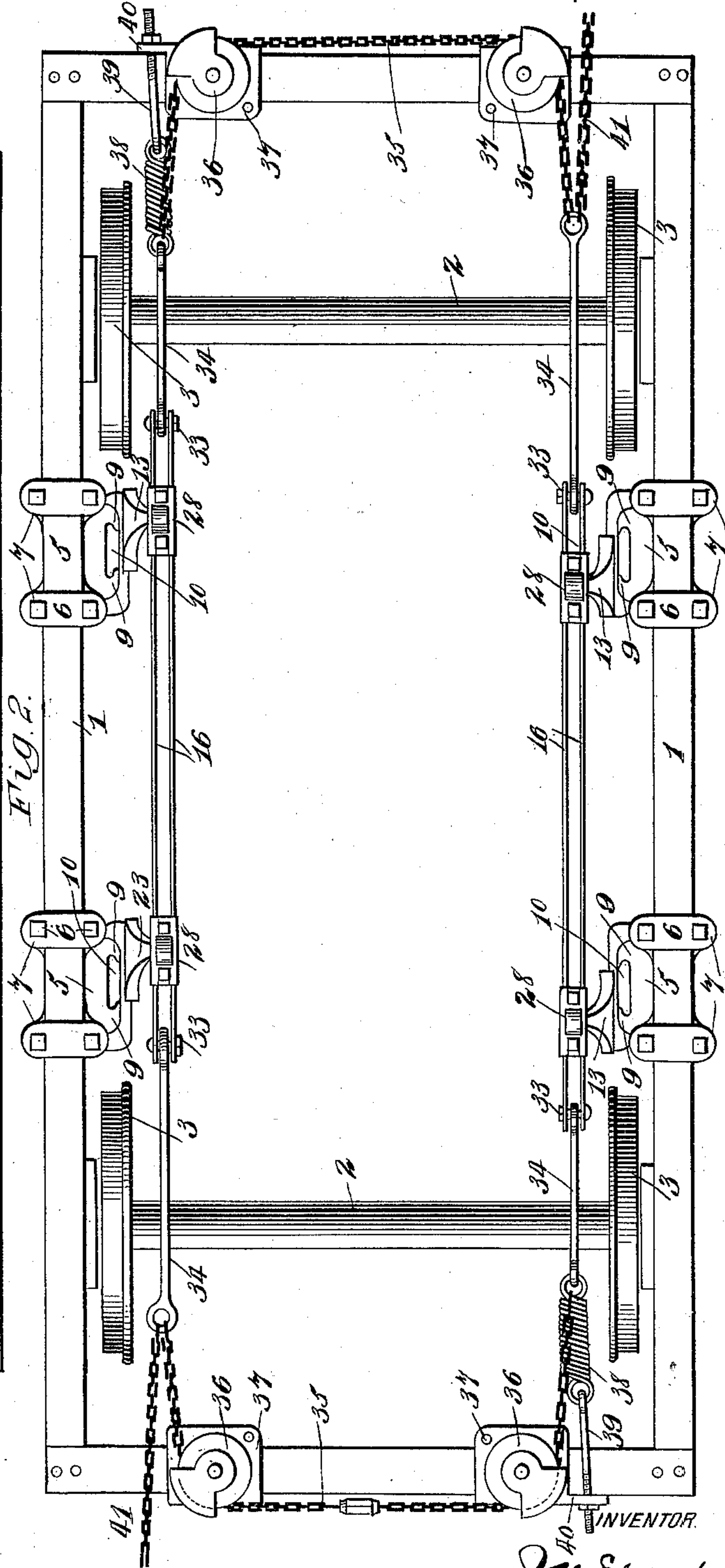
No. 561,502.

Patented June 2, 1896.



WITNESSES:

Paul J. Schott
H. Caplinger



BY

J. U. Elwood
Munn & Co
ATTORNEYS.

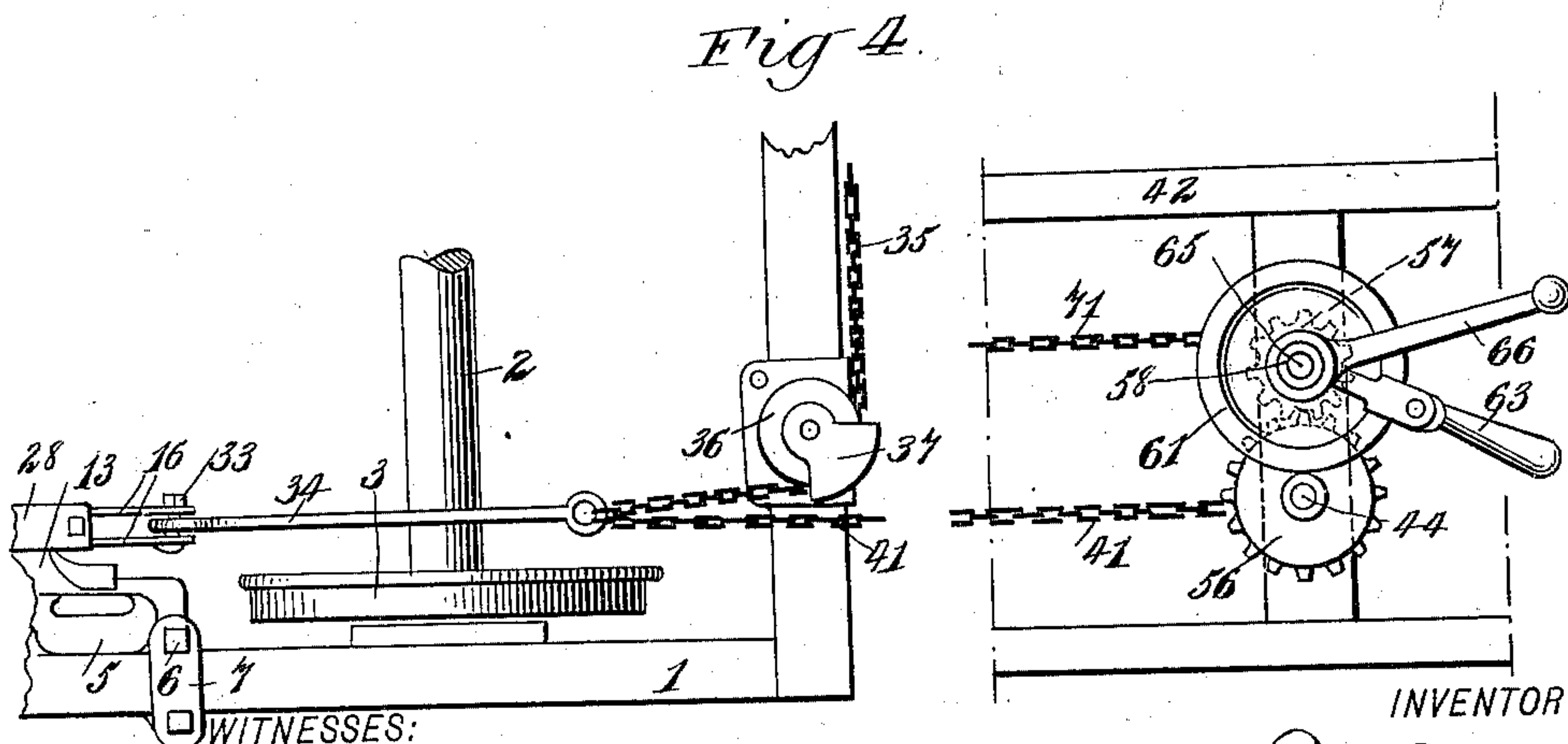
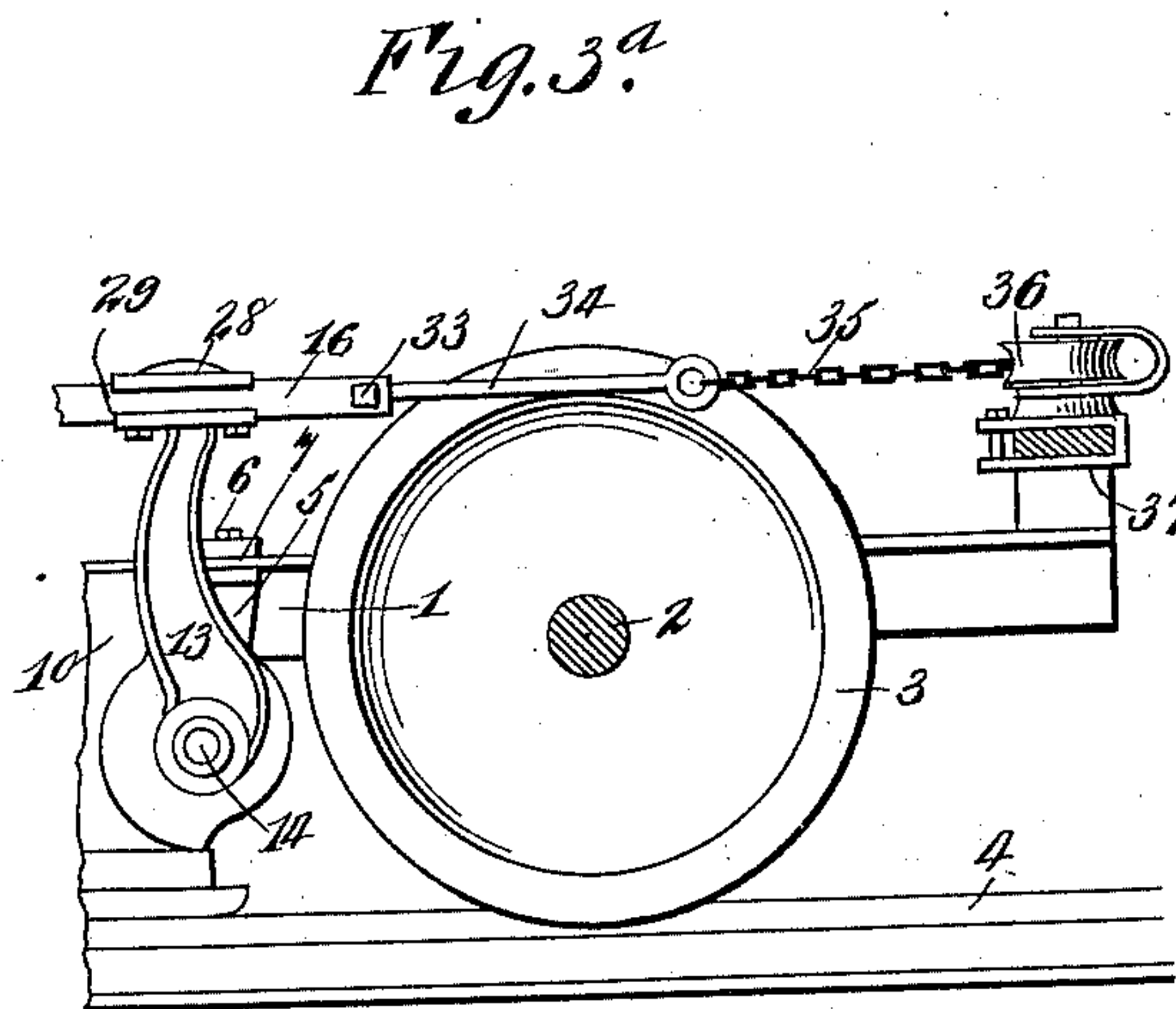
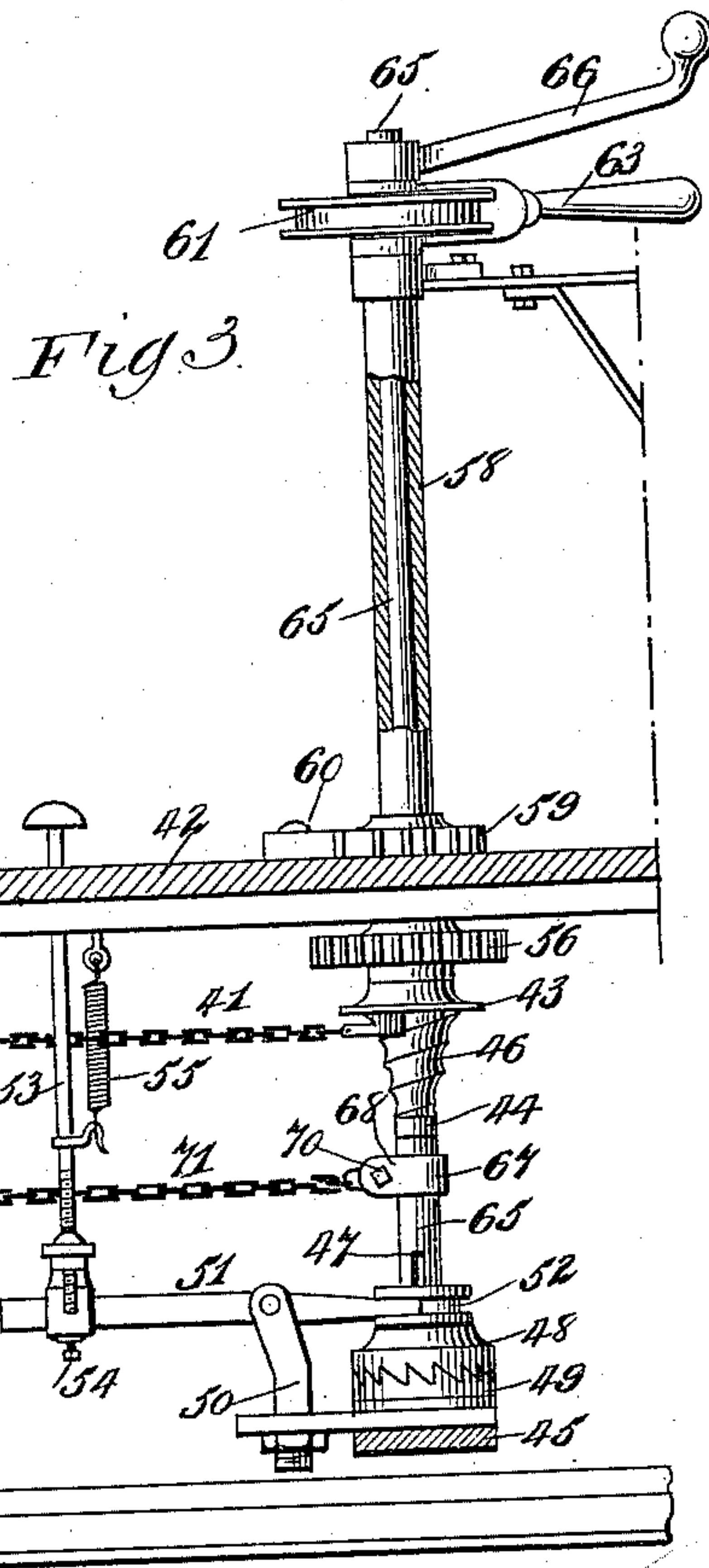
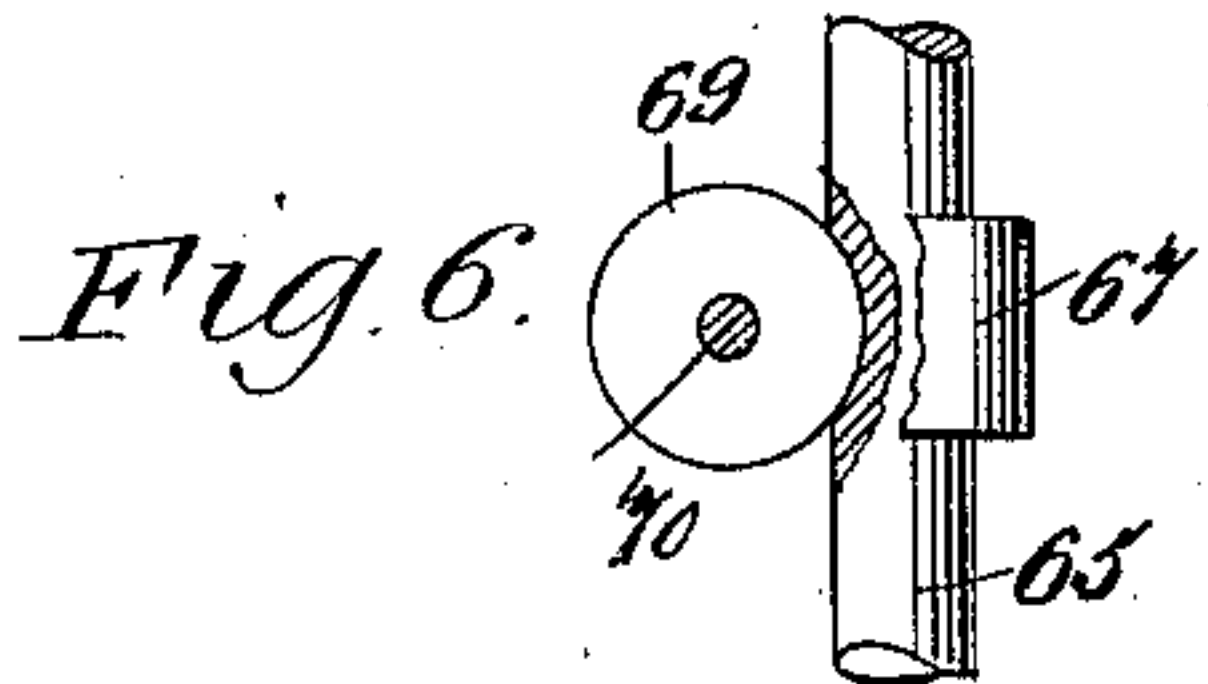
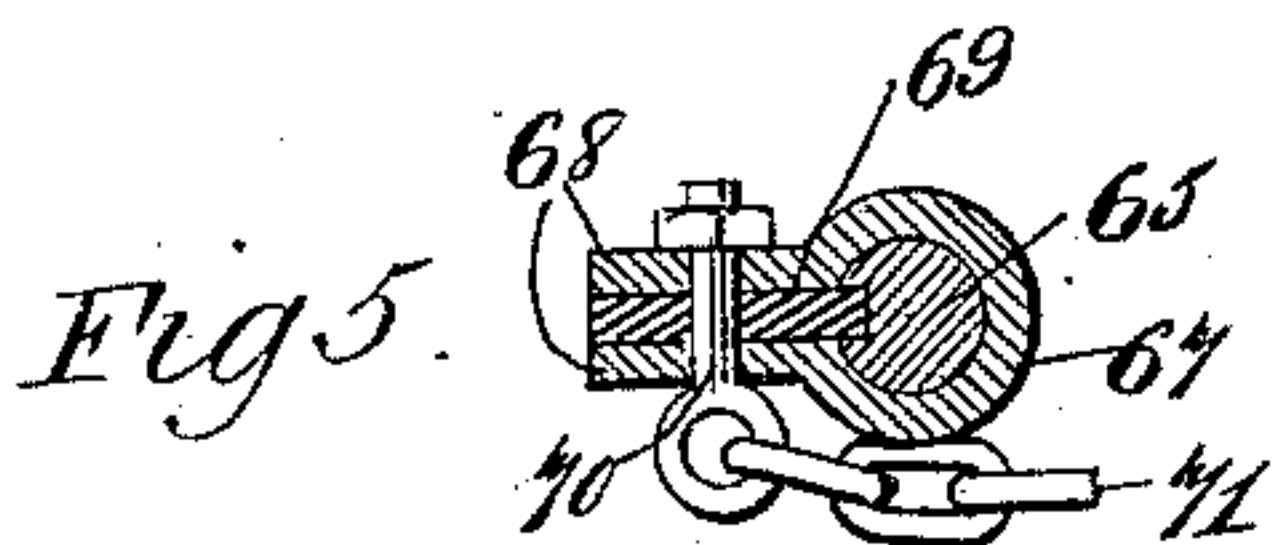
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3 Sheets—Sheet 2.

J. U. ELWOOD.
CAR BRAKE.

No. 561,502.

Patented June 2, 1896.



WITNESSES:

Paul J. Hot
J. K. Baplinger

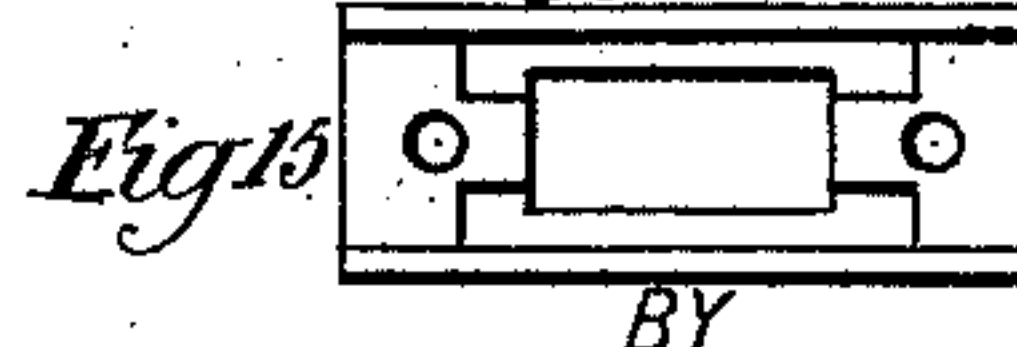
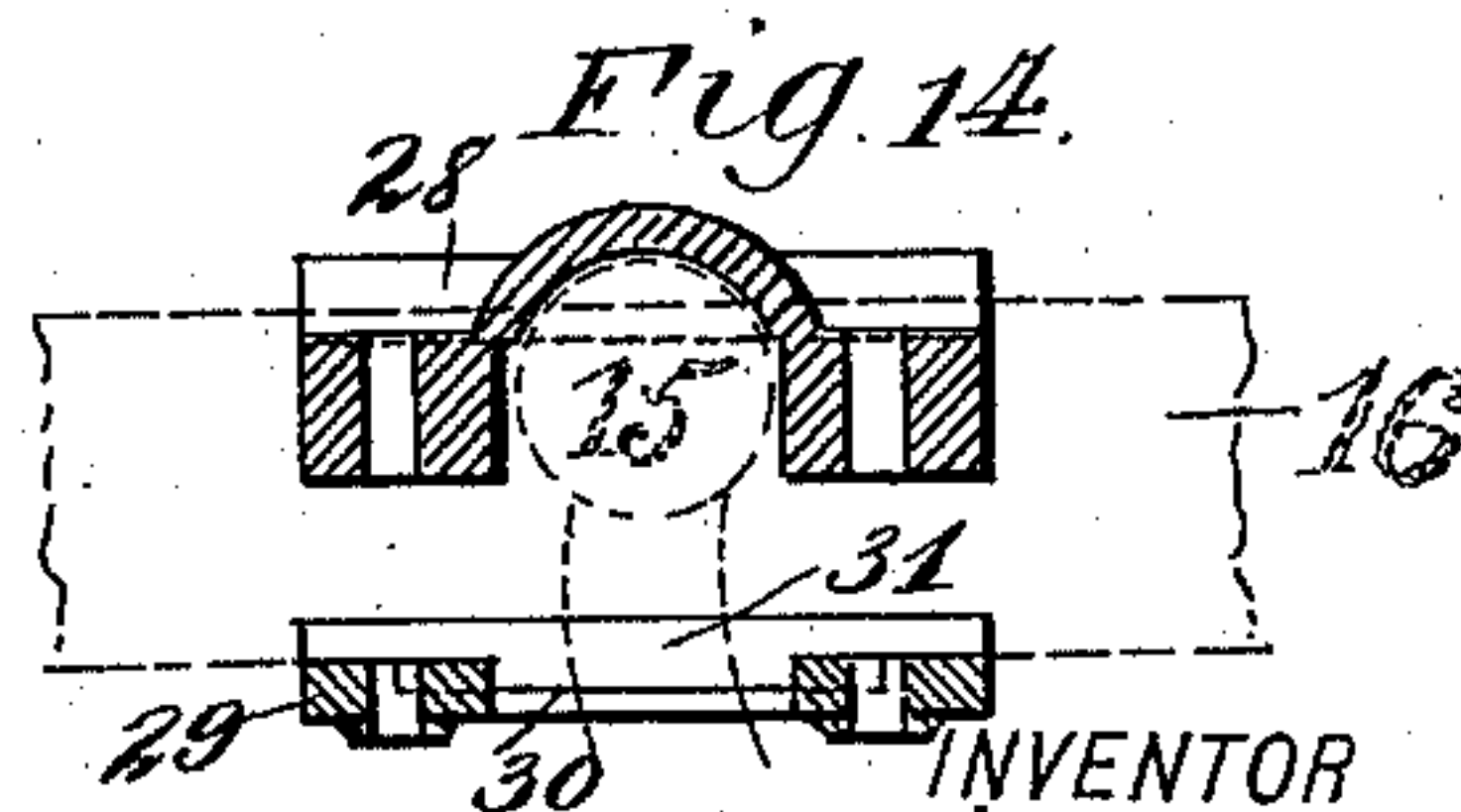
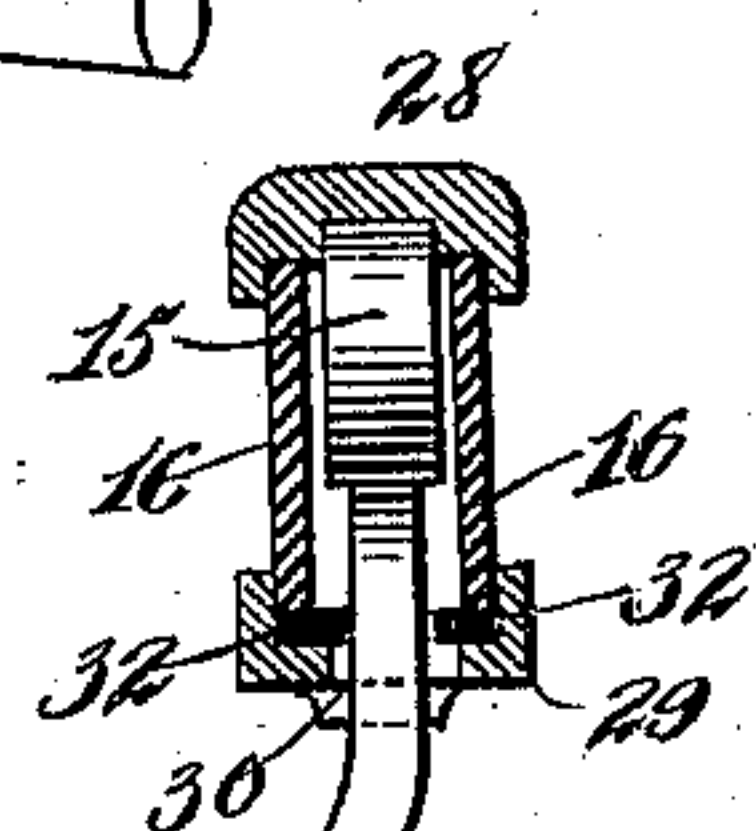
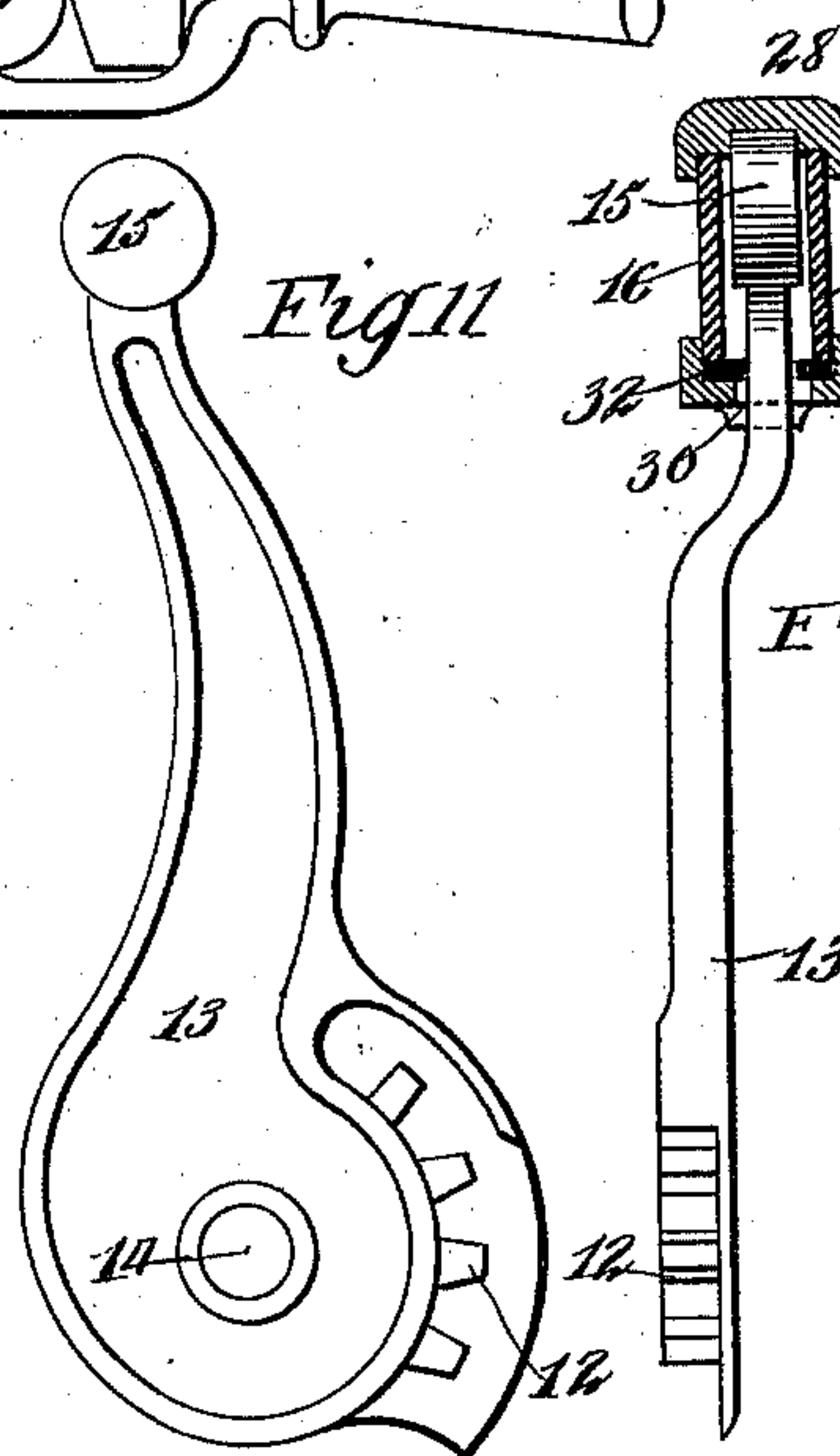
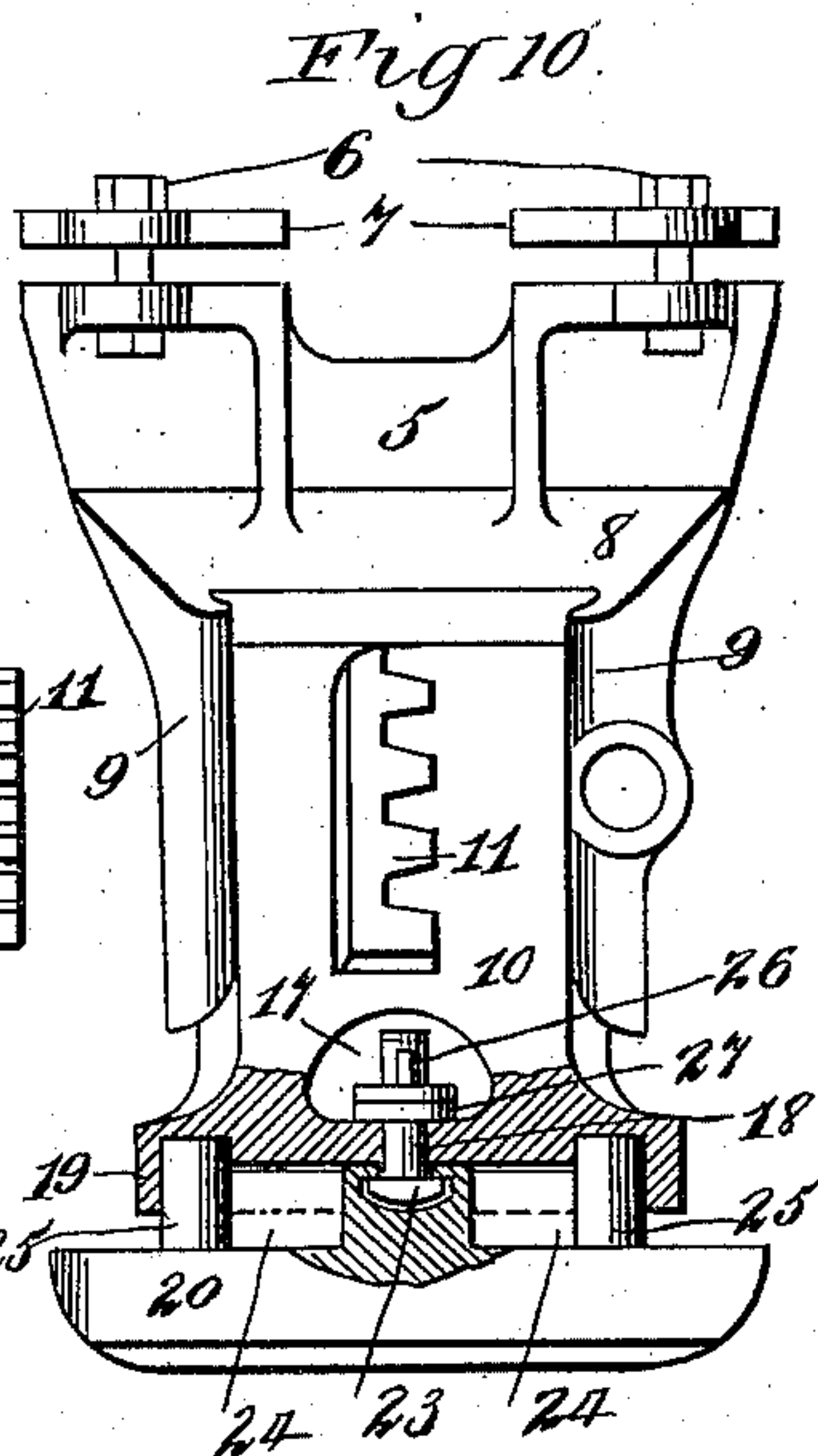
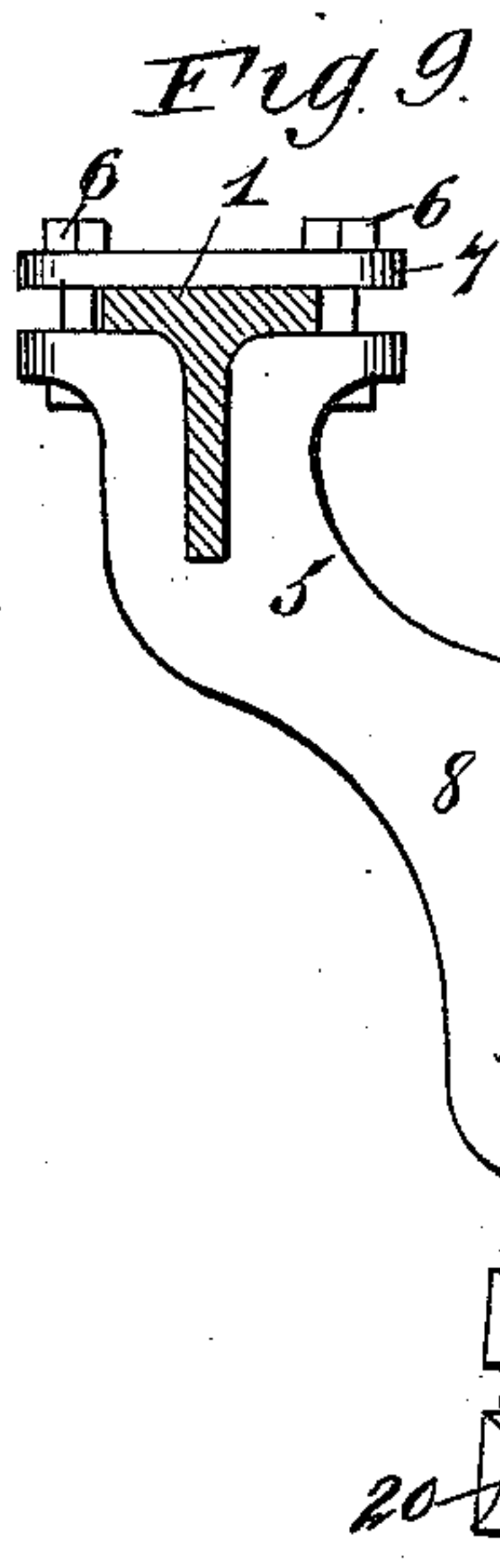
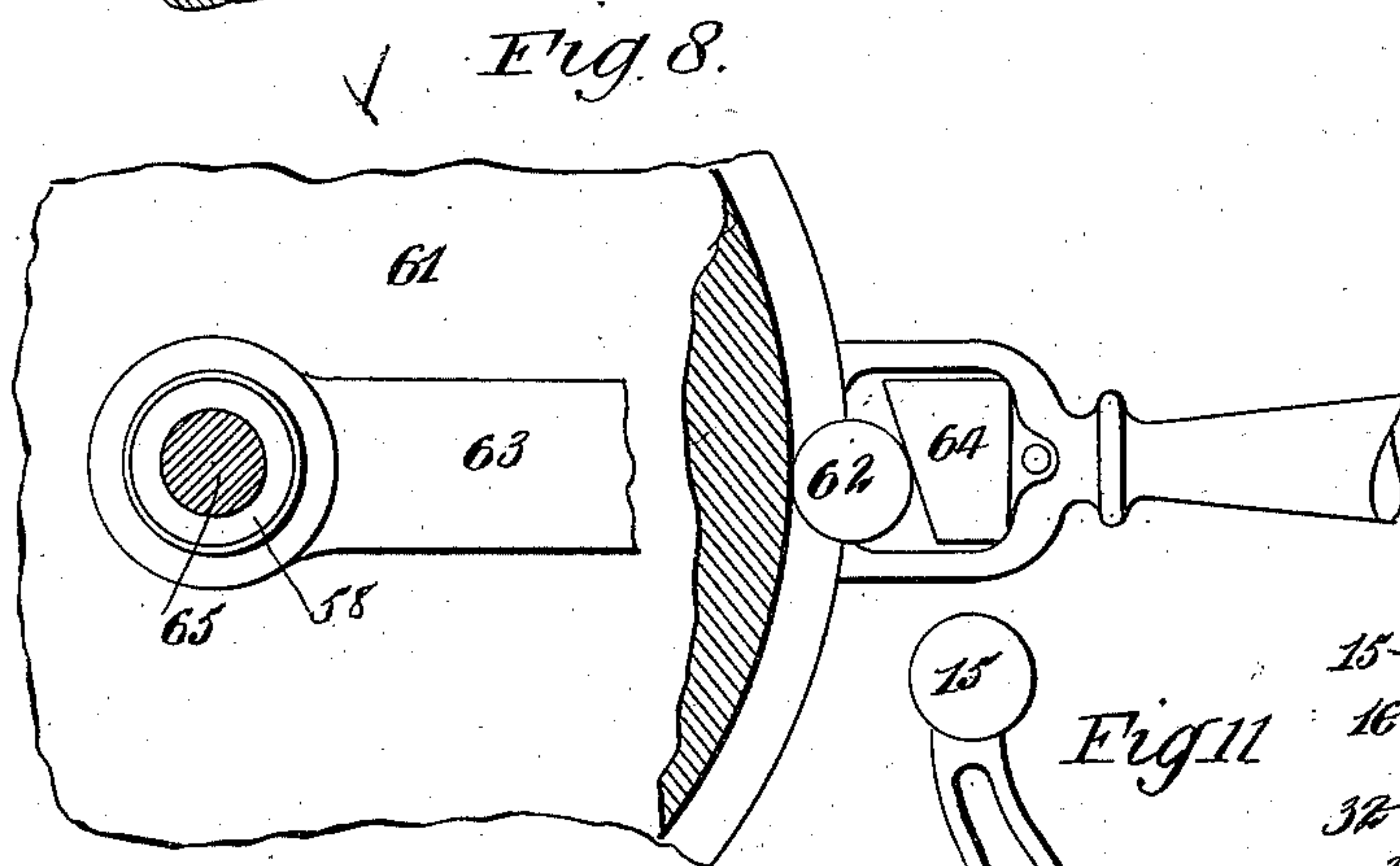
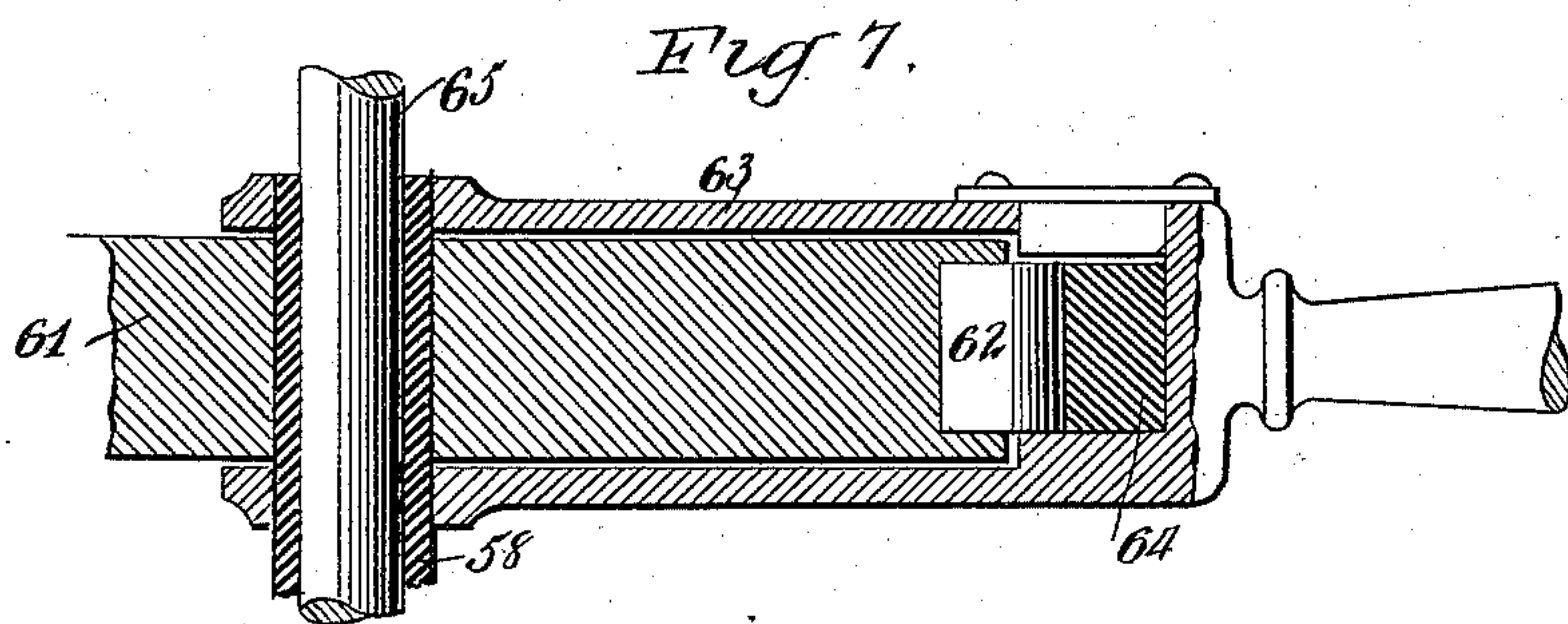
INVENTOR

J. U. Elwood
BY Munn & Co
ATTORNEYS.

J. U. ELWOOD.
CAR BRAKE.

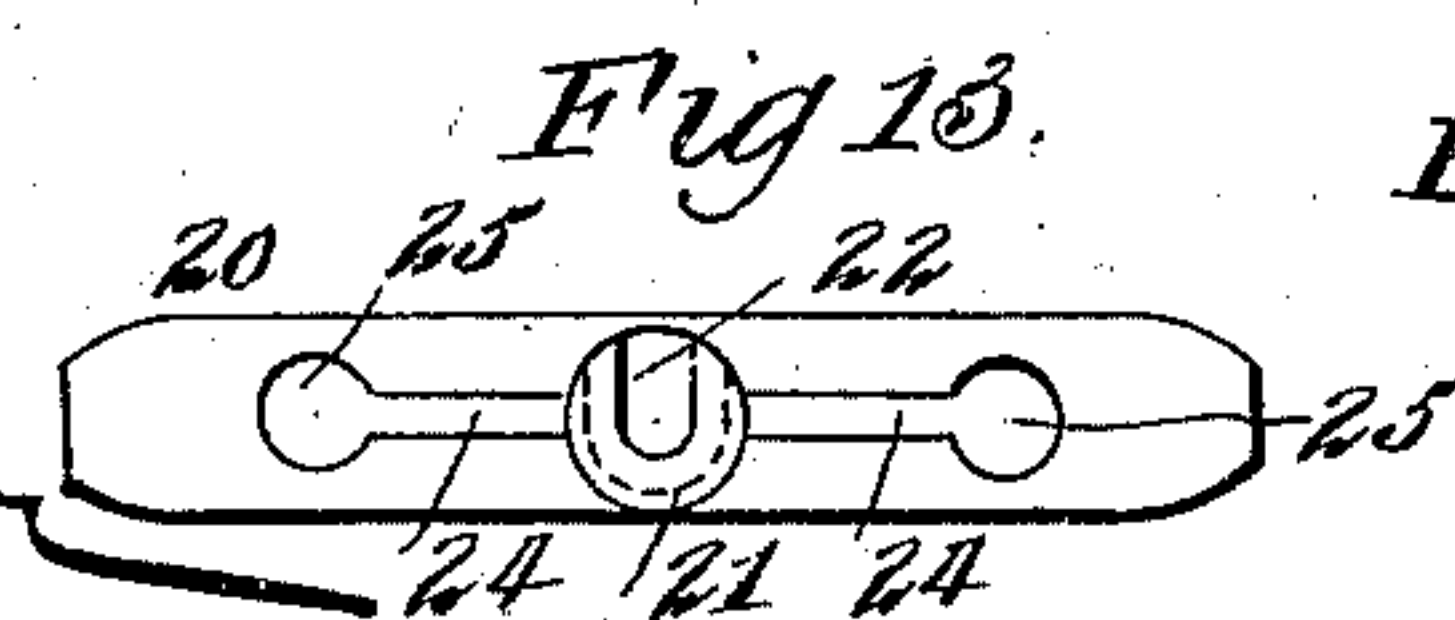
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Patented June 2, 1896.



WITNESSES:

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... ..



INVENTOR

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UNITED STATES PATENT OFFICE.

JEFFERSON U. ELWOOD, OF MCKEESPORT, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND DUANE P. SMITH, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 561,502, dated June 2, 1896.

Application filed July 23, 1895. Serial No. 556,921. (No model.)

To all whom it may concern:

Be it known that I, JEFFERSON U. ELWOOD, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Car-Brake, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in car-brakes, and especially that class of such brakes wherein the brake-shoes are adapted to be forced into engagement with the track-rails when it is desired to stop the car to which the brake mechanism is applied, a type of this variety of brake being shown and claimed in my pending patent application, Serial No. 535,129, filed January 16, 1895; and the object of the invention is to provide a car-brake of this general character of a simple and inexpensive construction and which shall be both strong and durable and be adapted to quickly stop the car when operated, and that without exerting excessive strain on either the car or track-rails.

This invention consists principally in certain improvements in the arrangement and operation of the brake-shoes, whereby the same are arranged to bear in diagonally opposite directions against the track-rails, so that the power required to stop the car is considerably lessened, and liability of breaking the rail-tread or spreading the rails, so as to throw the car from the track, is greatly reduced.

The invention also contemplates certain novel features in the construction, combination, and arrangement of the various parts of the improved car-brake, whereby certain important advantages are attained and the device is made simpler, more easy in action, and is otherwise better adapted for use than other similar forms of track-brake heretofore devised, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a vertical sectional view taken longitudinally through the truck-frame and

running-gear of a car, showing my improved brake mechanism applied thereto. Fig. 2 is a plan view of said truck-frame and running-gear provided with my improved brake mechanism. Fig. 3 is a vertical section taken through the car-platform and one end of the truck-frame, showing certain features of construction of the brake-staff and its connected devices, to be referred to hereinafter; and Fig. 4 is a plan view showing the same parts. Fig. 5 is a horizontal section taken through the brake-shaft, showing the construction of the clip for securing thereto the brake-chain. Fig. 6 is a sectional view taken at right angles to Fig. 5, and also showing the construction of said clip. Fig. 7 is a vertical sectional view showing the friction-disk on the brake-shaft and the lever and connected devices for engaging said friction-disk, and Fig. 8 is a sectional plan view of the same parts. Fig. 9 is an end elevation showing the form and arrangement of the brakes carried on the truck-frame and supporting the brake-shoe, and Fig. 10 is a side elevation of the same parts. Fig. 11 is a side elevation showing the construction of the lever for operating the brake-shoes; and Fig. 12 is an edge elevation of said lever, showing the connection between the upper end thereof and the side rod of the brake-actuating mechanism. Fig. 13 is an under-side view of the slide-block, showing the device employed for securing the removable brake-shoe thereto. Fig. 14 is a longitudinal section showing the clip for connecting the upper end of the lever to the side rod of the brake-actuating mechanism, and Fig. 15 is a plan view showing the lower member of said clip.

In the views, 1 represents the truck-frame of the car, wherein are mounted the axles 2, having wheels 3 to run on the tracks 4 in the usual manner. The side bars of the truck-frame 1 have, as clearly shown in Fig. 4, a depending web formed centrally on their under sides, and to the said side bars are clamped, as seen in said figure, the brackets 5, having lateral flanges projecting from opposite sides of their upper ends, through which flanges pass bolts 6, the upper ends of

which engage clamping-plates 7, arranged over the upper side of the side bars of the truck-frame 1, as clearly seen.

The lower parts 8 of the brackets 5 are bent laterally inward and are provided along their opposite sides with cheeks 9, the adjacent inner faces of which are dovetailed or undercut, as clearly shown in Figs. 2 and 10, to form guides inclined slightly outward away from each other toward their lower ends, wherein are arranged slide-blocks 10, having projecting from their inner sides vertical rack-surfaces 11, adapted to be engaged by curved rack-surfaces 12, formed on the lower enlarged ends of levers 13, pivoted at 14 to the sides of the respective brackets 5 and having at their upper ends rounded or circular enlargements 15, adapted for connection to the side rods 16 of the brake-actuating mechanism, as will be presently explained.

The under side of the slide 10 is provided in its lower part with a recess 17, extending through it, thereby forming a foot or base, through the central part of which is formed an aperture adapted to receive the shank of a headed bolt or pin 18 and connecting with a longitudinally-arranged recess or seat 19, formed in the under side of said foot and conforming in shape and adapted to receive an upward projection formed on the top of the brake-shoe 20, as seen in Fig. 13, which shows said shoe in plan. Said projection on the shoe 20 comprises a circular central portion 21, having an undercut slot or recess 22 formed in it and opening at one side thereof to receive the head 23 of the bolt or pin 18, straight wings 24, extending parallel to each other on opposite sides of said circular portion 21, and plugs 25 of circular cross-section at the ends of said wings 24 and of greater length than the same, being arranged to engage sockets formed at the ends of the recess or seat 19 in the slide 10, as seen in Fig. 10. By this construction the head of the pin or bolt 18 is inserted in the recess or slot 22 in the projection on the slide and passed up through the aperture in the foot of the slide, the plugs 25 being engaged with their sockets at the same time, and the upper end of the bolt 18 is provided with a pin 26, extending through it, between which and the upper face of the foot of the slide 10 are arranged washers 27, so that the shoe is held firmly against the under side of the slide. In case the shoe 20 wears so as not to properly engage the rail 4 when the brakes are set it may be removed and wearing-pieces inserted in the plug-sockets at the ends of the seat 19, so as to hold said shoe farther down, one or more of the washers 27 being also omitted in reassembling the parts, as will be readily understood. By this construction the shoes 20 may be kept in use without replacement until they are almost entirely worn away.

The side rods 16 are arranged in pairs slightly spaced apart, as clearly seen, and the

levers 13 are connected to the said side rods by means of clips, each consisting of an upper plate 29, held together by means of bolts 30 between said side rods at each end of each clip, the said plates 28 and 29 being longitudinally grooved or recessed on their adjacent faces to receive said side rods 16.

The lower plate 29 has its central part recessed, as seen at 30, to permit the head 15 of the lever 13 to pass through it between the side rods 16, and in order to hold said lever against disengagement from the clip and side rods the said lower plate 29 is provided on opposite sides of said recess 30 with longitudinal grooves 31 (seen in Figs. 14 and 15) to receive keys 32, adapted to be held under the side rods 16, which engage their upper faces, as seen in Fig. 12, and to extend beyond the opposite sides of the aperture 30 into position to engage under the projecting side portions of the head 15 of said lever 13.

The side rods 16 are connected at their opposite ends by bolts 33, whereon are pivoted links 34, the links 34 at adjacent ends of the side rods at opposite ends of the truck-frame being connected together by chains 35, passing over sheaves 36, mounted on brackets 37, secured on the end bars of the truck-frame, as clearly seen in Fig. 1. At each end of the truck-frame 1, and at opposite sides of the same, are arranged springs 38, secured to bolts 39, connected to projections 40 on the brackets 37, and at their opposite ends said springs are connected to the ends of the adjacent links 34 at opposite ends of the respective side rods and at opposite sides of the car, as clearly seen in Fig. 2.

The links 34 at the ends of the respective side rods opposite to the springs 38 are connected to chains 41, which extend under the platforms 42 of the car, as seen in Figs. 3 and 4, and are each connected to the under side of a flange 43, formed on a shaft 44, mounted vertically under the car-platform, being journaled at its upper end in said platform 42, and said shaft 44 is provided below said flange 43 with a spirally-grooved conical drum 46, into the spiral groove of which said chain 41 is adapted to enter when said shaft is turned to wind up the chain in the usual manner.

The shaft 44 is provided with a gear-wheel 56, fixed to its upper end and meshing with a similar gear 57, (seen in dotted lines in Fig. 4,) fixed to the lower end of a tubular shaft or sleeve 58, below the car-platform 42, and having its upper end extending above the car-platform and provided with a ratchet-wheel 59, arranged to be engaged by a pawl 60, mounted on the car-platform. At its upper end the shaft 58 has fixed to it a friction-wheel 61, (seen in Figs. 3, 4, 7, and 8,) having a grooved periphery adapted to be engaged by a roller 62, carried by a forked arm 63, having a socket at its fork in which the roller is seated. The arm is mounted loosely on the said shaft, embraces the wheel, and is

adapted to be manipulated by the motorman or driver in applying the track-brake. In the socket of the arm 63 and behind the roller 62 is arranged a cam-piece 64, having an inclined face arranged next to said roller, whereby when said arm is turned in one direction said roller will be wedged firmly between the cam-piece and the periphery of the friction-disk, so as to cause the tubular shaft 58 to turn with the arm 63, while when said arm is turned in the reverse direction said roller will run free and the handle and shaft 58 will move free of each other.

Inside the tubular shaft 58 is arranged the main brake-staff 65 of the wheel-brake, provided at its upper end with an operating-handle 66 and having its lower end extending below the car-platform and journaled in a bracket 45, secured below the same, and the lower end of the said brake-staff 65 is provided with a longitudinal rib or feather arranged to be engaged in a slot or groove formed in the bore of a sliding clutch member 48, loosely mounted on the lower end of said brake-staff 65 and provided with a toothed under side to engage teeth formed on the upper face of a fixed clutch member 49, carried by the bracket 45.

The bracket 45 has an arm 50, to the upper end of which is pivoted a lever 51, having one end arranged to engage a groove 52 in the sliding clutch member 43, and the other end of said lever is connected to a vertically-sliding foot-rod 53, having a threaded lower end screwing through a bracket 54, adjustable on said lever 51, as seen in Fig. 3, said foot-rod extending above the platform 42 and having a head to be depressed by the foot of the driver or motorman, and being normally upheld by a spring 53, connected to it. In this way it will be seen that the brake-staff 65 is normally held against rotation in such a direction as would unwind the chain and release the wheel-brakes, whereby when said brakes are applied they may not be released until the foot-rod is depressed in such a way as to release the sliding clutch member 48 from the fixed clutch member 49; but at the same time, the teeth of said clutch members being formed beveled on one side, the brake-staff may be turned freely to wind up the chain to set the brakes, the clutch members being moved apart sufficiently to permit said teeth to pass over one another. Said main brake-staff 65 has at its lower part a clip, (seen in Figs. 3, 5, and 6,) whereby the chain 71, leading to the ordinary wheel-brakes with which the car will of course be provided is connected to and adapted to be wound thereon. Said clip consists of a strip of metal having its central portion bent to form a loop 67 to encircle the brake-staff and having its end portions 68 spaced apart and perforated to receive between them a centrally-perforated metal disk or washer 69, one edge of which is adapted to engage a

kerf or slot formed in the brake-staff, as clearly shown in Figs. 5 and 6, said washer being held in place and the clip being secured to the brake-staff by means of an eyebolt 70, set through the perforations in the washer and also in the ends of the band, the eye of said eyebolt being connected to one end of the chain 71, as clearly seen. In this way it will be seen that when the brake-staff 65 is turned by means of its handle 66 the wheel-brakes are applied and when the tubular shaft 58 is turned the track-brakes are applied. When it is desired to release the track-brakes, the pawl 60 is disengaged from the metal wheel 59, and when it is desired to release the wheel-brakes the foot-rod 53 is depressed, so as to release the brake-staff 65 and permit the same to be turned backward.

The construction of the brake mechanism as above set forth is extremely simple and inexpensive and is well adapted for the purpose for which it is intended, since the parts are put under comparatively little strain when the track-brakes are applied, whereby the liability of damage resulting therefrom is considerably lessened. Moreover, the brake-shoes 20 being arranged to move diagonally down and outward into engagement with the track-rails the danger of breaking the rails or throwing the car from the track is also lessened. The construction of the spiral grooved sheave 46 is such that in taking up the slack in the chain at the beginning of the application of the brakes said chain will be rapidly wound up, while as the slack in the chain is wound up and the greatest force is necessary to set the brakes the leverage of the handle over the drum will gradually increase.

From the above description of my improved brake mechanism it will be obvious that considerable modification may be made in the form and arrangement of the various parts without material departure from the principles and spirit of my invention, and for this reason I do not wish to be understood as limiting myself to the precise construction of the device as herein set forth.

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

1. The combination in a brake mechanism, of a side rod consisting of two members spaced apart and connected to move together, a movable brake-shoe, a lever connected to said brake-shoe and adapted to actuate the same, said lever having a head arranged between the members of the side rod, and a clip for securing said head against removal, substantially as set forth.

2. The combination in a brake mechanism, of a side rod, a movable brake-shoe, a lever connected to the brake-shoe and adapted to actuate the same, a head for said lever, a clip secured to said side rod and provided with an opening to receive the head of the lever,

and means for preventing the removal of said head through said opening, substantially as set forth.

3. The combination in a brake mechanism, of a side rod, a movable brake-shoe, a lever connected to the brake-shoe and provided with a head, a clip secured to said side rod and provided with an opening to receive the head of the lever, and a key carried by said clip to engage said head when inserted through said recess and prevent the removal of the same, substantially as set forth.

4. The combination in a brake mechanism, of a side rod, a movable brake-shoe, a lever connected to the brake-shoe and provided with a head projecting at opposite sides thereof, a clip secured to said side rod and provided with an opening to receive the head of the lever, and keys carried by said clip at opposite sides of said opening, to engage the projecting portions of the head and prevent the removal of the same, substantially as set forth.

5. The combination in a brake mechanism, of a side rod consisting of two members spaced apart and connected to move together, a movable brake-shoe, a lever connected to the brake-shoe and provided with a head, a clip secured to the side rod and having an opening to receive the head of the lever, said head being arranged to pass through said opening into the space between the members of the side rod, and keys carried between said clip and side rod on opposite sides of said opening, adapted to engage the head of the lever when the same is in place and prevent the removal of the same, substantially as set forth.

6. A clip, comprising an upper plate and a lower plate adapted to be secured together and having their adjacent faces grooved longitudinally, one of said plates having an opening formed through its central part and being provided with recesses at opposite sides of said opening, and keys arranged in said recesses with their inner edges extending beyond the edges of the said opening, substantially as set forth.

7. The combination of a slide having an opening, a brake-shoe having an undercut slot, a pin having a head to engage said undercut slot in the brake-shoe and adapted to extend through said opening in the slide, and means for securing said pin against removal from said slide when in place in said opening, substantially as set forth.

8. The combination of a slide having an opening, and provided with a recess in its face, a brake-shoe having a projection to engage said recess in the slide and provided with an undercut slot, a pin having a head to engage the undercut slot in the brake-shoe and adapted to extend through the opening in the slide, and means for securing said pin against removal when in place in said opening, substantially as set forth.

9. The combination of a slide having an

opening and provided with an elongated recess in its face extending on opposite sides of said opening and provided at the ends with sockets, a brake-shoe having a projection to enter said recess in the slide and provided at the ends of said projection with plugs to enter said sockets and at the central part thereof with an undercut slot, a bolt having a head to engage said undercut slot and adapted to pass through the opening in the slide, a pin passed through the end of said bolt on the opposite side of the slide to the brake-shoe, and a series of washers held on said bolt between the said pin and the slide, substantially as set forth.

10. A clip for attachment to a brake-staff or the like, consisting of a piece of metal having its central portion bent to form a loop and having perforated parallel ends, a washer having a central perforation and held between the ends of said piece of metal, with its edge in position to engage a kerf in the brake-staff, and a bolt passed through the perforations in the piece of metal and washer, substantially as set forth.

11. A clip for attachment to a brake-staff or the like, consisting of a piece of metal having a bent central part and parallel ends, and a washer secured between said parallel ends with one edge in position to engage a kerf in the brake-staff, substantially as set forth.

12. The combination in a brake mechanism, of a truck-frame, brake-shoes, levers to move the same, side rods extending along the sides of the truck-frame and connected to the levers, chains connecting the adjacent ends of the respective side rods together and extending over sheaves on the truck-frame, the said sheaves, and means for actuating one of said side rods, substantially as set forth.

13. In a brake, the combination of a mounted brake-shoe, a lever connected to operate the same, a side rod composed of two sections and two clips arranged one above and one below the said sections, the lower clip having a slot through which the lever is passed and the upper clip having a socket receiving one end of the lever, substantially as described.

14. In a brake, the combination of a mounted brake-shoe, a lever connected to operate said brake-shoe, a side rod and a clip on said side rod and having a socket receiving one end of the lever, substantially as described.

15. The combination with a car and brake mechanism, of a hollow shaft mounted revolutely on the car, a brake-staff loose within the hollow shaft, two operating-handles respectively connected to the hollow shaft and staff, a drum moving with the hollow shaft, a chain connected to the drum and to brake mechanism, a second chain connected to the staff and also to brake mechanism, a rigid clutch member, a movable clutch member on the staff, and spring-controlled actuating mechanism for the movable brake member, substantially as described.

16. In a vehicle-brake, the combination with
a truck-frame, of a bracket secured thereto
and projecting downwardly therefrom, the
bracket having at one side two parallel cheeks,
5 a slide reciprocal between said cheeks and
having a rack-bar thereon, a brake-shoe con-
nected to the slide, and an operating-lever ful-

crumed on the bracket and having a toothed
sector engaging with the rack, substantially
as described.

JEFFERSON U. ELWOOD.

Witnesses:

R. W. EKin,

WM. J. GORMAN.