

C. V. ROTE.

CAR BRAKE.

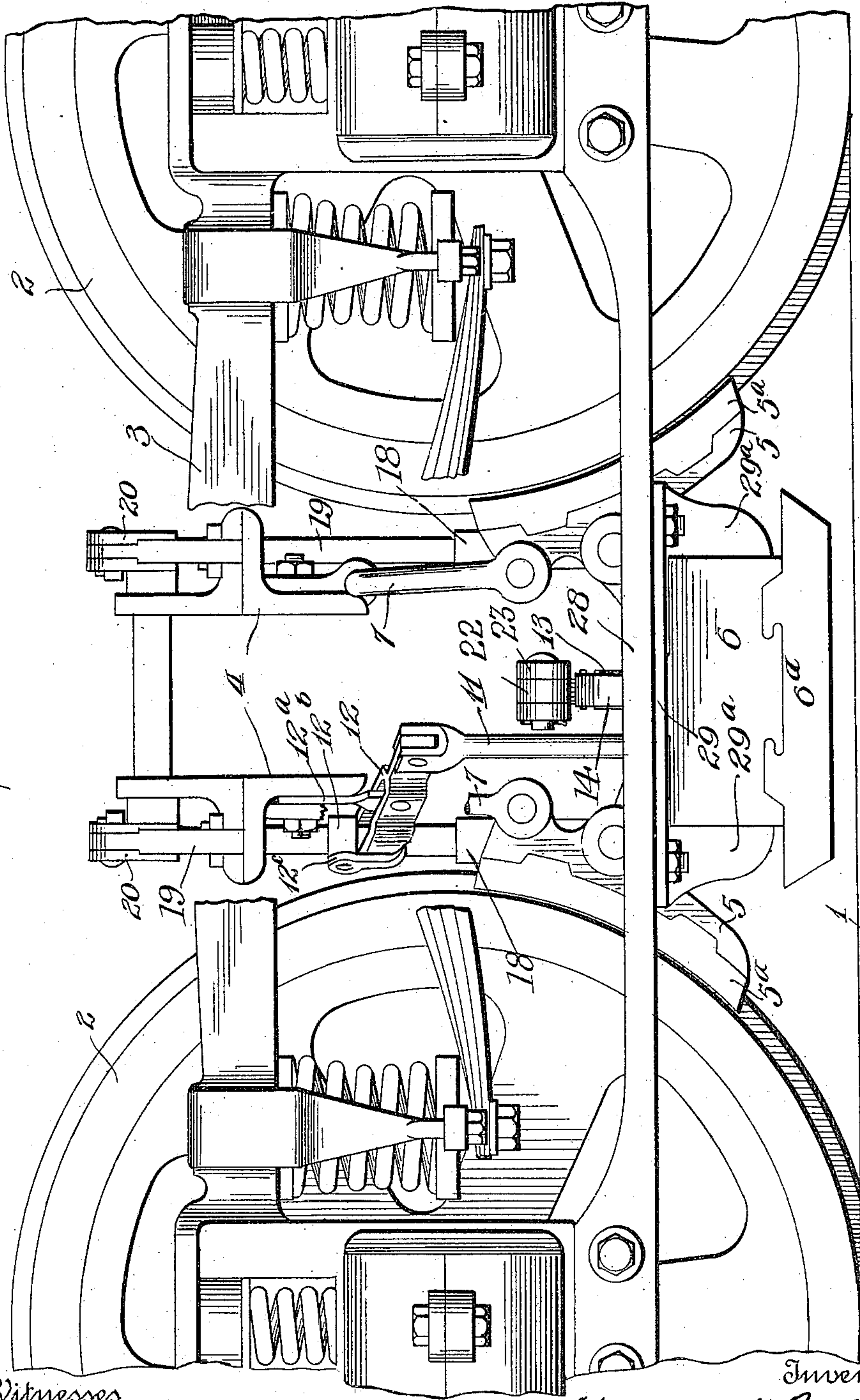
APPLICATION FILED JULY 25, 1910.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 1.

975,893.

FIG. 1.



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5 SHEETS-SHEET 2.

FIG. 2.

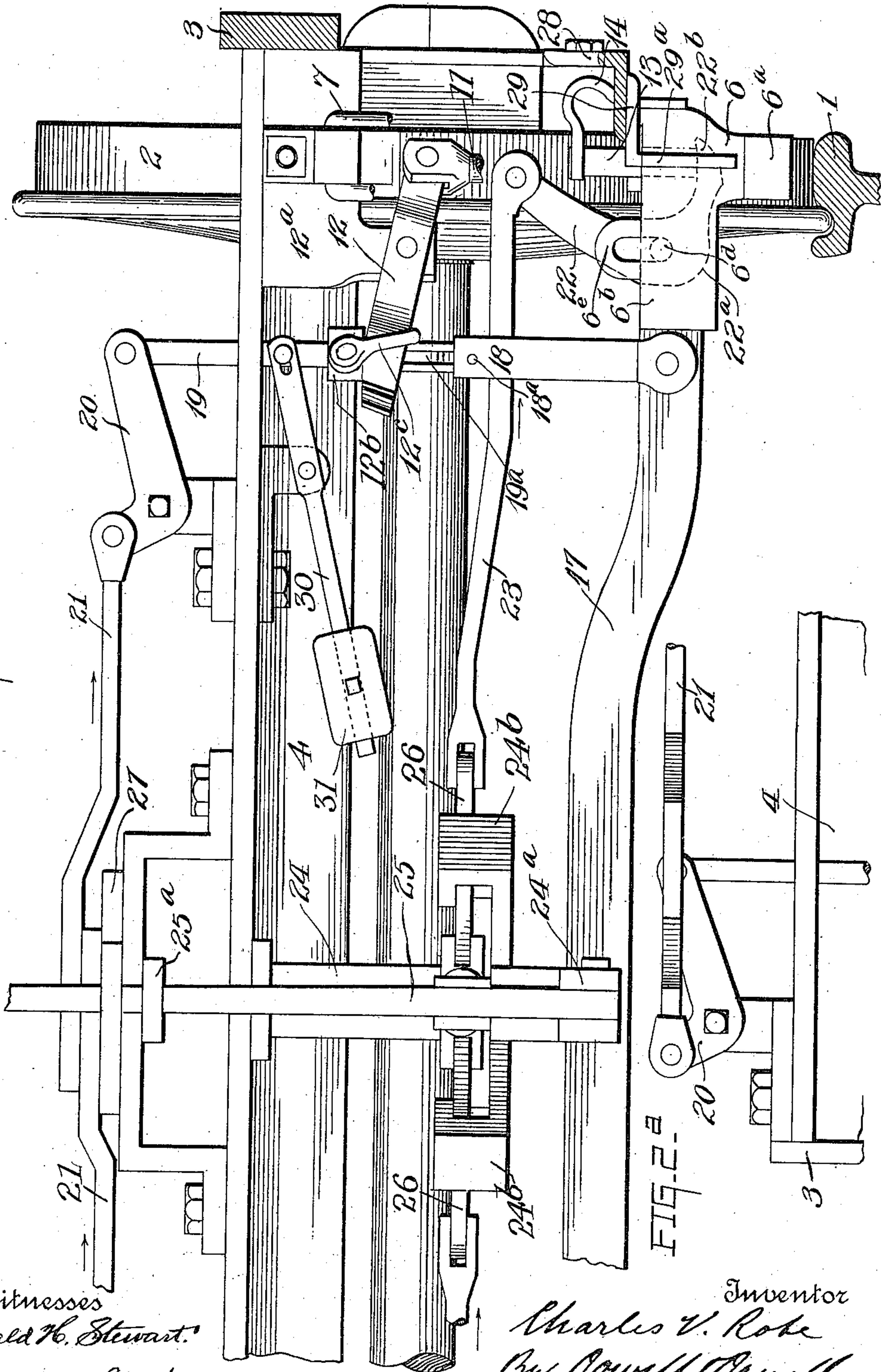


FIG. 2.

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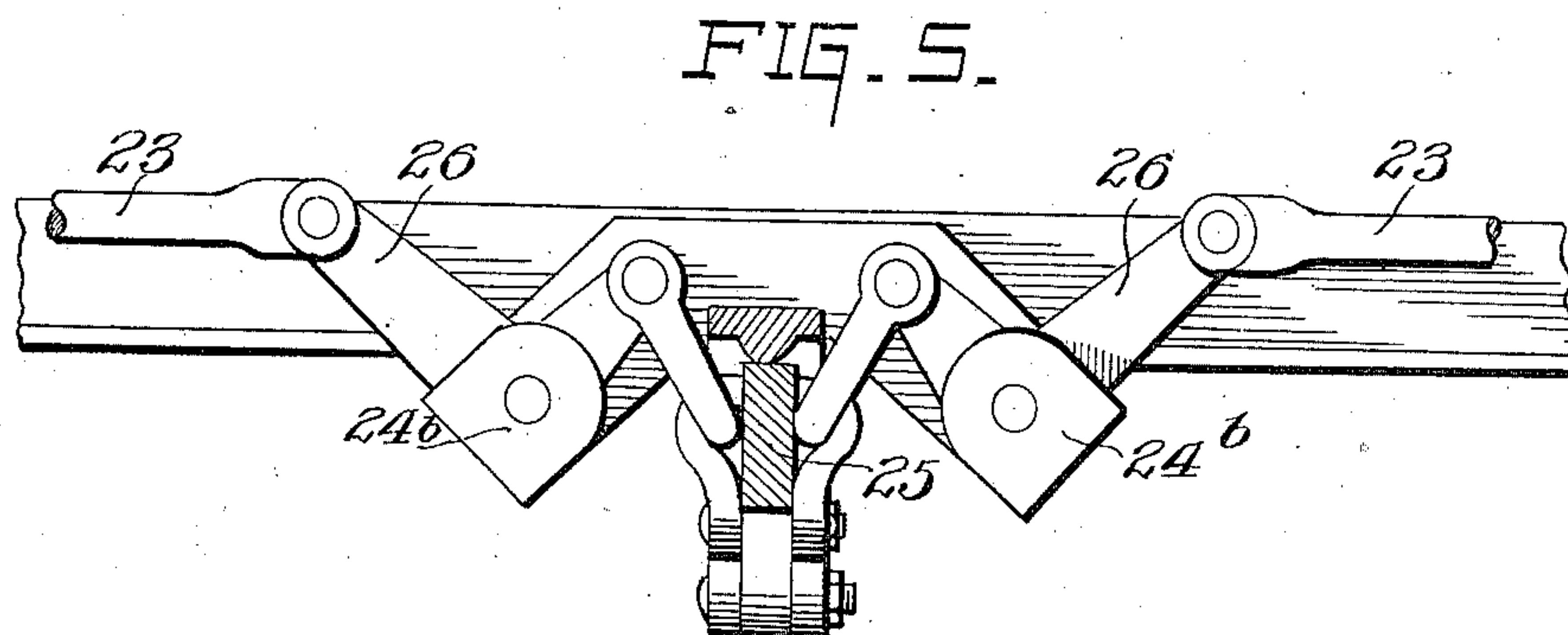
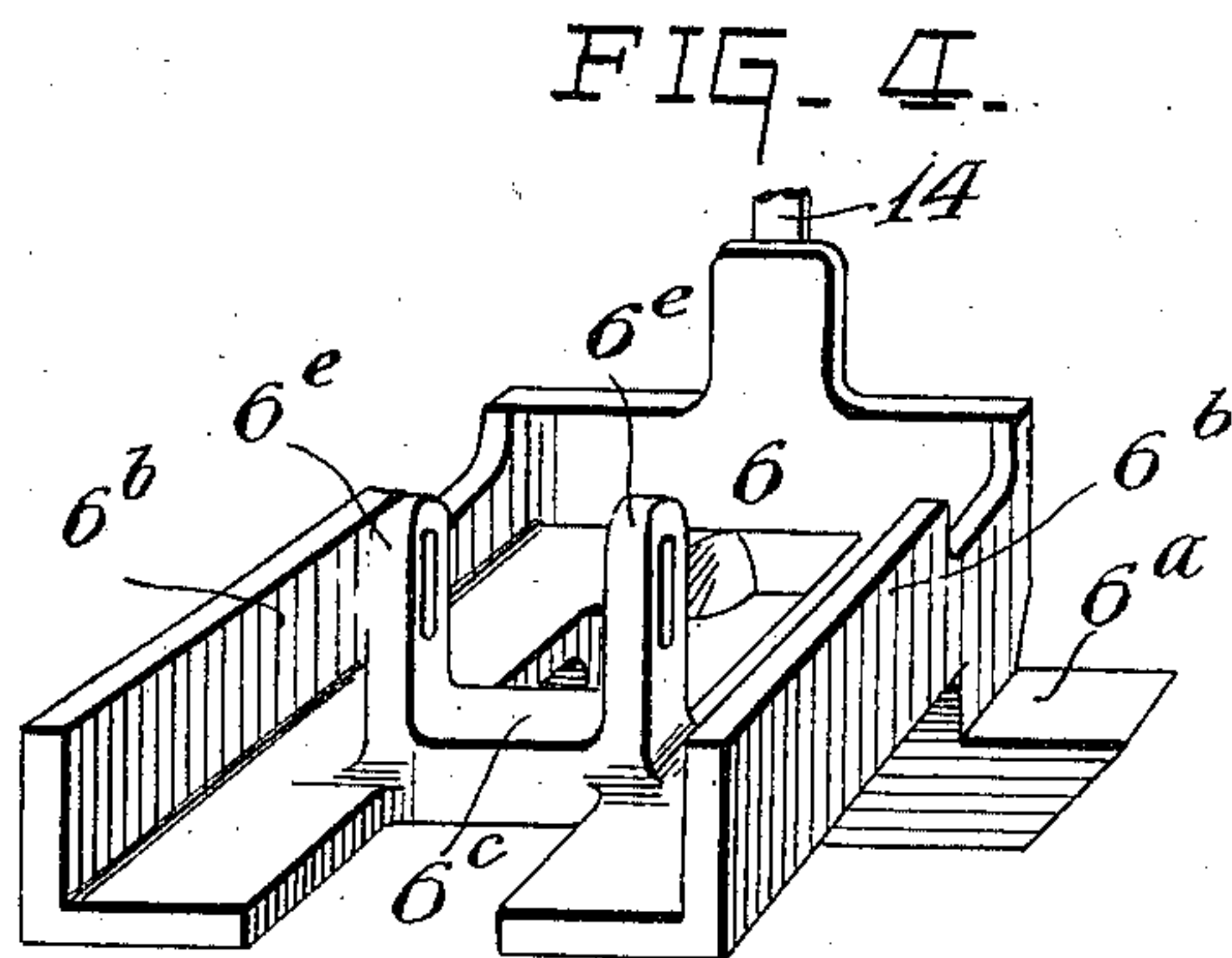
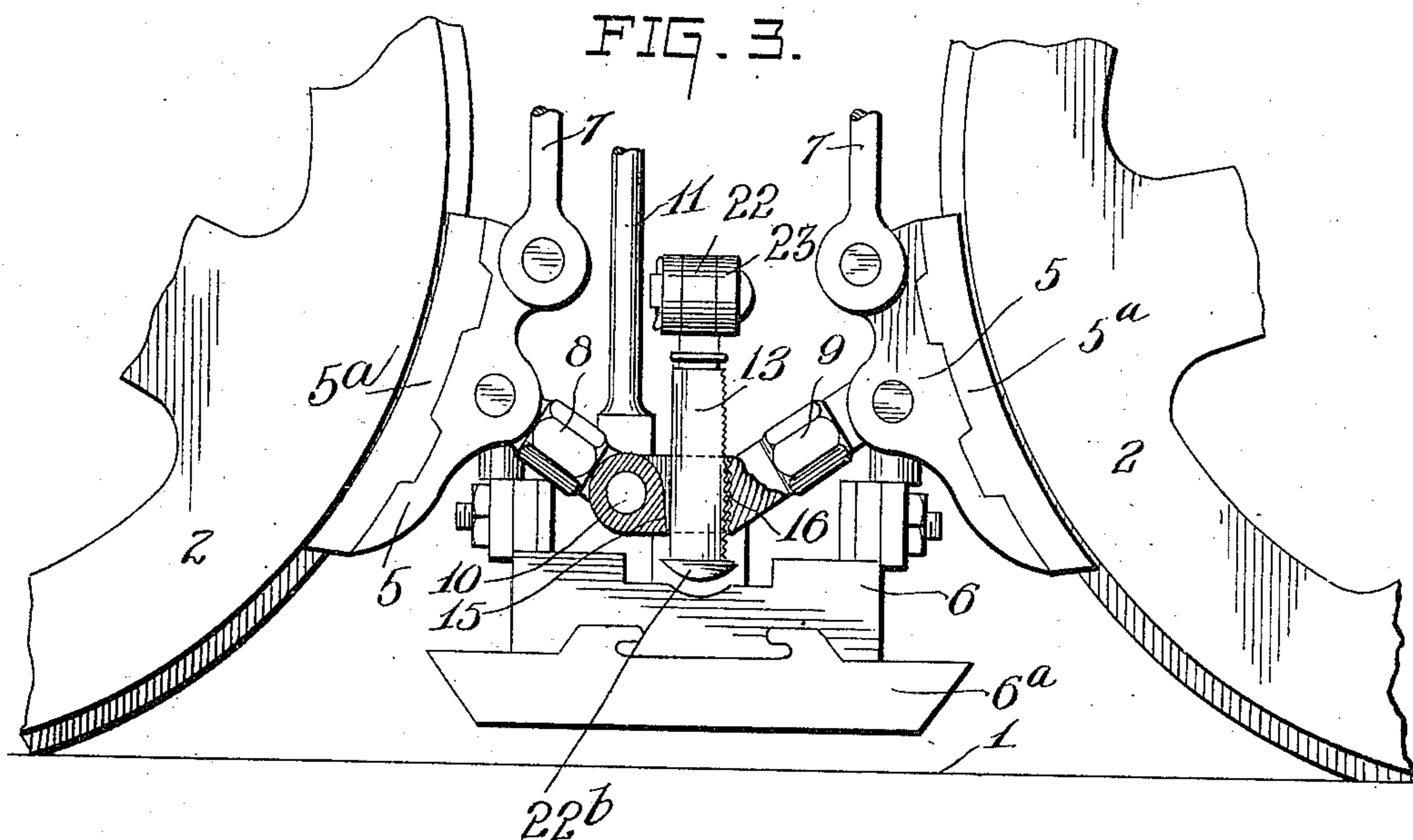
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5 SHEETS—SHEET 3.



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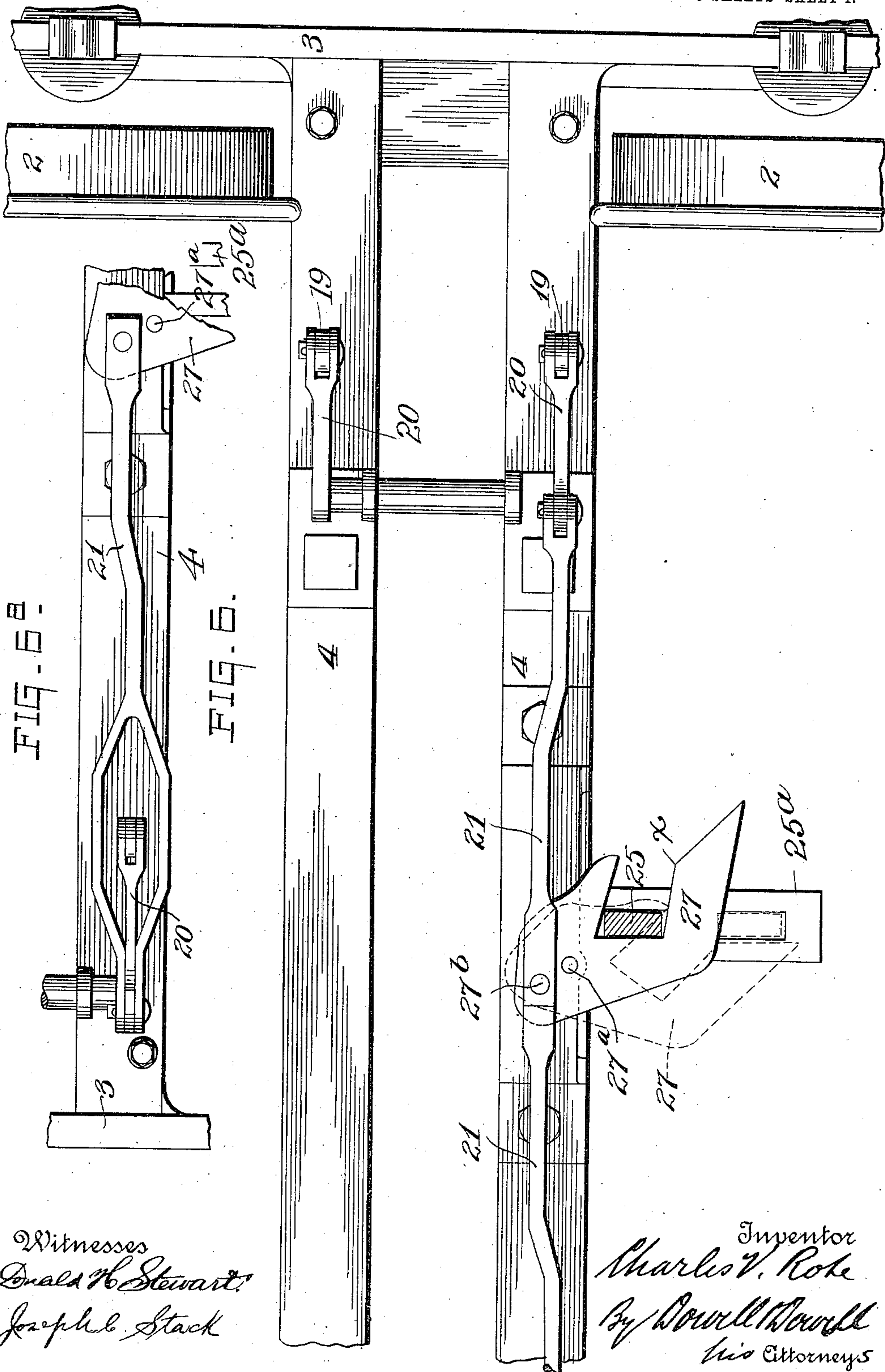
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5 SHEETS—SHEET 4.



Witnesses
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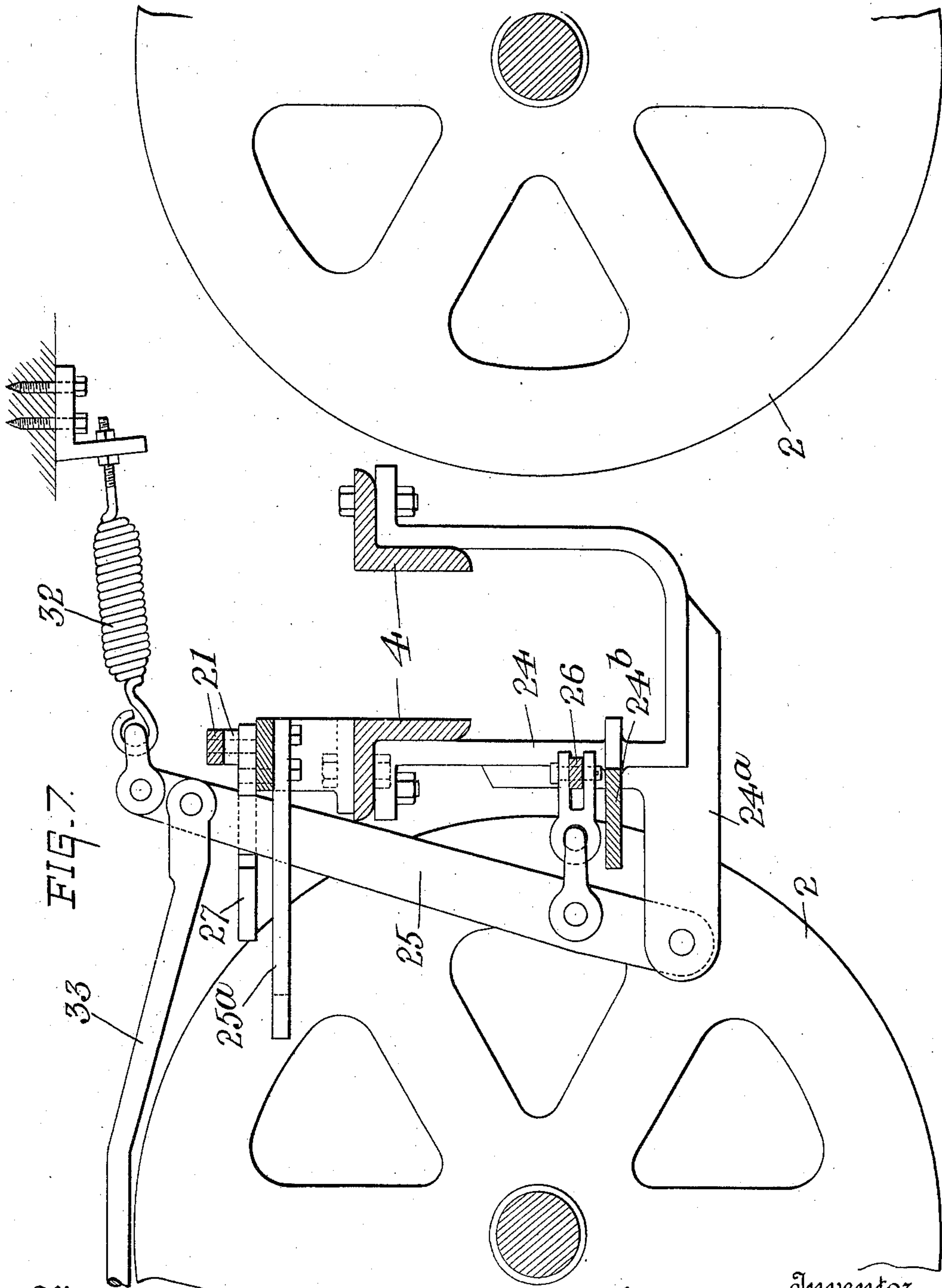
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5 SHEETS—SHEET 6.

975,893.



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UNITED STATES PATENT OFFICE.

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CAR-BRAKE.

975,893.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed July 25, 1910. Serial No. 573,656.

To all whom it may concern:

Be it known that I, CHARLES V. ROTE, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Car-Brakes, of which the following is a specification.

My invention relates to that class of car-brakes in which brake-shoes are applied to the track rails.

The main objects of the invention are: first, to provide a thoroughly efficient, reliable and quick-working brake mechanism by means of which heavy traction cars can be brought quickly but gently to a full stop; second, to provide a brake mechanism of the above-stated character in which the track-brake-shoes are maintained a sufficient distance above the rails to escape uneven rail-joints and other obstructions, while the brakes are applied by a comparatively short motion of the brake-levers; third, to provide improved means for automatically taking up wear of the brake-shoes by a compensating movement in the brake-applying mechanism, whereby the brakes will at all times be applied by the same stroke of the brake-staff lever, drum, air piston, or other device under control of the motorman; fourth, to provide means for steadying the track-brake-shoes when engaging the rails; and, fifth, to provide an improved mechanism at the center of the car truck for transmitting power to the brake-mechanisms associated with the respective sets of brakes at either side of the truck.

The invention will hereinafter be described with reference to the accompanying drawings, which form a part of this specification, and will then be particularly pointed out in the appended claims.

Figure 1 is a side elevation of a car-truck embodying my invention; Fig. 2 is a transverse vertical sectional view, embracing the center and one side of the truck; Fig. 2^a is a detail belonging to Fig. 2. It represents the left-hand connecting-rod 21 and lever operated thereby: Fig. 3 is a side elevation, partly in section, of the brakes and mechanism associated with one set of wheels. This view may be considered as taken behind the lower tie-bar of the truck frame in Fig. 1, and with a portion of the track-

brake-block broken away; Fig. 4 is a detail view of the track-brake block; Fig. 5 is a plan view of the connections between the opposite brake-lever connecting-rods and main truck lever, the latter being shown here in section; Fig. 6 is a plan view of the main truck lever and cam, with the motion-transmitting devices at one side; Fig. 6^a is a detail belonging to Fig. 6. It shows the motion transmitting devices at the other side; Fig. 7 is a side view of the main central lever.

In the drawings, the numeral 1 refers to the track rails, and 2 designates the car wheels.

3 denotes the side members of the truck frame, the cross bars or members 4 of which may support the truck bolster (not shown).

Between the wheels at either side of the truck are respectively arranged a set of wheel and track brakes. 5 indicates the wheel-blocks equipped with brake-shoes 5^a; and 6 is the track-brake-block having a brake-shoe 6^a.

The wheel-brake-blocks 5 are hung from the cross-bars 4 by links or hangers 7 in a well known manner, and they are connected by a toggle, the respective arms or levers of which are indicated by the numerals 8 and 9. One arm 9 of the toggle is shown longer than the other 8, for a reason hereinafter appearing. As shown in Fig. 3, the connecting pintle 10 of the toggle-arms is suspended by a link or connecting rod 11 from a lever 12 for a purpose hereinafter explained. Said lever 12 is shown fulcrumed on a bracket 12^a attached to one of the cross bars of the truck frame.

Above the track-brake-block, and carried thereby, is a vertically disposed pin 13, shown in Fig. 2 supported by a goose-neck spring 14 attached to the track-brake-block 6 and engaging a groove in the head of a pin. The end of the toggle-arm 9 next the pintle 10 is forked or bifurcated to receive said pin, as shown more clearly in Fig. 3. The other toggle-arm 8 has a cam-shaped end 15 confronting the crotch 16 of the bifurcated end of the toggle-arm 9. The pin 13 is arranged between 15 and 16, which constitute vise-like jaws for clamping said pin when the pintle or knuckle 10 of the toggle is raised by the lever 12 and connect-

ing-rod 11. To insure a firm lock, the side of the pin next to the jaw 16, as well as the said jaw, may be toothed, milled or roughened, although this is not absolutely essential.

While preferring the aforesaid toggle connection between the wheel-brakes and toggle-vise operated thereby, I do not desire to limit my invention thereto; since, for example, I may employ a yoke-bar for connecting the wheel-brake blocks, in combination with a vise associated therewith and operated from the lever 12 or by some other suitable means.

The two track-brake-blocks 6 at opposite sides of the truck are connected by transverse angle bars 17, making a rigid structure, see Fig. 2. Said structure is suspended by pivotally-attached hangers 18 from vertically disposed rods 19, the latter being pivotally-attached to and depending from the longer arms of bell-crank levers 20 mounted on the cross-bars 4 of the truck frame. The track-brake-shoes 6^a are thereby held a sufficient distance above the rails to escape uneven rail-joints, frogs and other obstructions. Levers 20 are operated by connecting-rods 21 from the main brake-lever at the center of the truck. In applying the brakes, the levers 20 are operated to depress the rods 19, first allowing the structure suspended therefrom to drop by gravity until the track-brake-shoes 6^a contact with the rails, after which the rods 19 continue to descend, being suitably connected with the hangers 18 for that purpose. In the illustrated structure, the hangers 18 are tubular and receive the lower ends of the rods 19, which latter are provided with slots 19^a engaged by pins 18^a inserted crosswise through the hangers; so that when the rods 19 are raised the structure 17 carrying the track-brakes is suspended from the pins 18^a, and after the brake-shoes are down on the rails the rods 19 can move farther down into the tubular hangers by virtue of the slots 19^a. Thus the track-brake supporting structure may be said to be suspended from the levers 20 by telescopically-connected rods 18, 19, the relative distension of which is limited by a suitable stop 18^a, 19^a.

As shown in Figs. 1 and 2, one of the rods 19 at either side of the truck has a collar 12^b arranged above and adapted to depress one arm of the lever 12, the other arm of which is connected by the link 11 to the pintle 10 of the toggle-arms, as before stated. When the rods 19 move down, the lever 12 is thereby operated to lift the pintle 10, causing the vise-like jaws 15, 16 of the toggle to securely clamp the pin 13, the latter having been carried downward as the track-brake-shoe 6^a descended to the rail. The collar 12^b on the rod 19 may have at-

tached thereto a stirrup 12^c engaging under the lever 12 to lift it when the rods 19 move upward.

Each set of wheel and track-brakes is applied by a brake-setting or pressure-applying instrumentality operating between the pin 13 and the track-brake-block 6, bearing down upon the latter and lifting the former; for which purpose I employ preferably a bent brake-lever 22 having a form somewhat similar to that of the human leg and foot. See Fig. 2. The heel 22^a of said brake-lever bears as a fulcrum upon the track-brake-block, while its toe takes under said pin 13. Power is applied to the brake-lever 22 from the main lever at the center of the truck, by a connecting-rod 23 or pull bar, and is exerted in an augmented degree upon the track-brake-shoe: the brake-lever 22, in operation, working in a measure as a lever of the first order with its fulcrum at the heel, but principally as a lever of the second order with its fulcrum at the toe and exerting pressure at the heel. The leg of the lever being longer than its toe increases its leverage and pressure upon the track-brake-block.

Of course, the form of the brake-lever may be varied while preserving the principle of a leg-shaped lever; thus any suitable lever mounted upon and rising from the brake-shoe may be pivotally-attached thereto and have a projecting foot-portion or toe taking under the pin 13. In some cases I may employ a horizontally-disposed lever having a short arm taking under the pin and its longer arm adapted to be depressed to bear down upon the brake shoe.

In Fig. 4 the track-brake-block 6 is shown having angular projections 6^b on its rear or inner side to receive the ends of the angle bars 17 which connect the two track-brake-blocks at opposite sides of the truck; and the heel 22^a of the brake lever bears upon a bridge-piece 6^c of the brake-block. To insure keeping the brake-lever 22 in proper position, it may be provided with a pintle 6^d movable up and down in vertical slots in upright projections 6^e on the brake-block. This latter provision, however, is not regarded as essential.

It will be understood that the set of wheel and track brakes and brake-applying mechanism shown in the drawings in association with one pair of wheels, is duplicated at the opposite side of the truck.

Improved brake-operating mechanism at the center of the truck is provided as follows, referring to Figs. 2 and 6. Attached to the cross bars 4 of the truck frame is a hanger 24, having at its lower portion an arm 24^a to which is fulcrumed the main central lever 25, working transversely of the car axles. Power for operating the brakes

is applied to this lever 25 through any suitable connections, as by connecting rods or draft bars, or by chains, from the brake staffs or brake drums at the ends of the car, or from the piston-rods or air-brake cylinders under the car; none of which it is necessary to illustrate in connection with the present invention.

25^a is a slotted guide-plate for said lever 25.

As shown in Figs. 2 and 5, said lever 25 is connected by a clevis and links to the inner arms of bell-crank levers 26, the outer arms of which are connected by the aforesaid connecting-rods or pull-bars 23 to the legs of the foot-shaped brake-levers 22. Said bell-crank levers 26 are fulcrumed on arms or brackets 24^b projecting from a hanger 24. As shown in Figs. 2, 6, and 6^a, the upper portion of said main central lever 25 operatively engages a cam or cam-shaped lever 27 fulcrumed at 27^a and connected at 27^b to the connecting rods 21 which in turn are connected to the shorter arms of the before-mentioned bell-crank levers 20 from which the structure carrying the track-brake-shoes is suspended. It will be observed from Figs. 2, 2^a, 6 and 6^a, that the bell-crank levers 20 are arranged to operate in the same direction, one of the connecting rods 21 being a push rod and the other being a pull rod.

In applying the brakes, the main central lever 25 moves the cam 27 from the position shown in full lines in Fig. 6 to or toward the position indicated in dotted lines, which, as will be seen, requires a comparatively short throw of said lever 25.

The movement of the lever 25 to the point *x* (Fig. 6) on the cam is principally taken up in bringing the track-brake-shoes to the rails and clamping the pins 13 in the toggle-vises, while in passing the point *x* of the cam, the brakes are forcibly applied. After passing the point *x* on the cam, the further movement of the lever 25 only communicates power to the brakes, holding the cam 27 and parts controlled thereby stationary.

As the main central lever 25 is operatively-connected to the pull rods 23 near its fulcrum, and to the connecting rods 21 at a greater distance from its fulcrum, the latter are moved correspondingly quicker, and transmit motion to the vertical rods 19 at an increased speed by virtue of the bell-crank levers 20; so that the action of the vertical rods 19 and mechanism controlled thereby is quicker than the action of the bent brake-levers 22.

The mode of operation may be summarized as follows: In applying the brakes, the main central lever 25 communicates motion through the cam 27 and connecting rods 21 to the bell-crank levers 20, operating the latter in a direction to depress the vertical

rods 19. During the first part of this movement, the structure 17 carrying the track-brake-shoes 6^a is lowered by gravity until the track-brake-shoes contact with the rails; and as the said track-brake-shoes drop upon the rails the pins 13 descend therewith, thus automatically adjusting the position of said pins relative to the toggles which connect the wheel-brake-blocks 5. The brake-levers 22 also descend with the track-brake-blocks. After the track-brake-shoes are down on the rails, the rods 19 continue to descend, thereby operating the levers 12 to lift the pintles 10 of the toggle-arms 8, 9, whereby the pin 13 for each set of brakes is clamped between the vise-like jaws 15 and 16 of the corresponding toggle. Meanwhile the main central lever 25 has communicated motion through the pull rods 23 to the brake levers 22, rocking them inward; and, after the track-brake-shoes are down on the rails, and by the time the pins 13 are clamped by their respective vises, the continued stroke of the main central lever 25 exerts power on the brake levers 22 to apply the brakes. As the wheel-brake-shoes 5^a bear against the rims of the wheels, the pin 13 clamped in the vise of the toggle is held from upward movement beyond the play allowed by the toggle itself under force of the brake-lever, so that the power exerted by the brake lever 22 is principally resolved into pressure upon the track-brake-shoe. This operation brings the car gently but quickly to a standstill, without jar or rebound; the track-brake-shoes first frictionally engaging the rails by the weight of the structure 17 carrying them, and then frictionally engaging the rails under the heavy pressure applied by the brake-levers 22 which, as will be appreciated, greatly increases the leverage exerted from the main central lever 25.

As the track-brake-shoes wear away by repeated operations, the structure 17 carrying the track-brake-blocks 6 and track-brake-shoes 6^a will descend correspondingly farther at each operation, in order to bring the track-brake-shoes to the rails. The same varying motion will be imparted to the brake-levers 22 and to the pins 13, thus adjusting the pins relative to the toggles, so that the pins will be clamped by the toggle-vises higher and higher as the track-brake-shoes gradually wear down. By this means, the brake-levers 22 maintain practically a constant effective relation to the points where power is applied respectively on the track-brakes and the toggles, with the result that, notwithstanding wear on the brake-shoes, the brakes are always applied by a substantially constant stroke of the main central lever and device which operates it.

Automatic take-up devices to compensate for wear on the brake-shoes have previously been known in combination wheel and track brakes, but so far as I am aware, the desired result has not been attained as satisfactorily as in my present improvement. With my invention, the car is not only quickly, safely and effectively braked, but after a day's run the brakes are applied by the same stroke of the brake lever at night as in the morning, and by the same stroke after a week's run or more.

My invention is believed to obviate the need of air brakes on heavy cars, since it permits the application of a heavy braking pressure by a comparatively short turn of the brake staff or other controlling device operated by the motor man, and makes this stroke constant. It is also believed to render the air-brake safe and effective, since it permits of a shorter and also constant stroke of the brake-piston of an air-cylinder, obviating the increase of stroke necessary where the brake shoes in the usual equipment wear down. In air brakes, the stroke of a brake piston being limited by the length of the cylinder, it is, of course, unsafe to rely upon any considerable increase of stroke to compensate for wear on the brake shoes.

It may be stated that in the class of car brakes to which my invention relates, the effective braking is accomplished principally by the track-brake-shoes, track-brakes being much more efficient than wheel-brakes in bringing the car quickly to a stop without objectionable vibration and rebounding, as well as advantages in avoiding the flattening of the wheels. The wheel-brakes, while, of course, exerting a braking force, may be relied upon principally to afford resistance to or take the upward thrust of the brake-applying means which forcibly bear down upon the track-brakes; and in this connection, it will be desirable to use hardened iron brake shoes for the wheel-brakes, which are less effective for braking purposes but are very lasting and durable, not being susceptible to any great degree of wear, and to use soft iron shoes for the track brakes where the effective braking is desired. As thus equipped, there will be practically little or no wear upon the wheel-brake-shoes, and only the track-brake-shoes will need to be renewed; and until renewed the wear compensators or take-up devices will maintain a constant movement of the brake-applying mechanism.

For steadying the track-brakes when riding and bearing upon the rails, I provide the sides of the truck frame with tie bars 28, as shown in Fig. 1. These tie bars are preferably made from angle beams, as shown in Fig. 2. At the center of each tie bar there is attached a member or plate 29 having depending guides 29^a embracing the

track-brake-blocks, as shown in Figs. 1 and 2. These guide the vertical movement of the track-brakes and steady them when on the rails.

The vertical rods 19 are or may be normally held uplifted by weighted levers 30 as shown in Fig. 2, said levers having adjustable weights 31 on their inner arms. This arrangement counterbalances the weight of the beams 17 and track-brake-blocks and relieves or reduces the tension on the release spring 32 at the top of the main lever 25 (Fig. 7) which spring restores the parts to normal position after application and release of the brakes, 33 indicates a draw-bar connected with the lever 25 for working the same to apply the brakes.

My improvements are susceptible of embodiment in other constructions, and of various modifications in details of arrangements of structural parts, so that I do not desire to be understood as restricting myself to the specific construction herein shown and described.

I claim as my invention and desire to secure by Letters Patent:

1. In a car-brake, the combination of a track-brake suspended above and adapted to be lowered upon the rail, a brake-applying device and a take-up device, both movable with the track-brake whereby they maintain a constant relation at each application of the brake, and means for locking said take-up device in a substantially fixed position when the track-brake is on the rail, said brake-applying device exerting pressure upon the track-brake and having its reaction taken by said take-up device.

2. In a car-brake, the combination of a track-brake supported above and adapted to be lowered to the rail, a wear-compensator or take-up device movable with the track-brake to maintain a constant relation thereto, means for locking said take-up device in a substantially fixed position when the track-brake is on the rail, and a brake-lever mounted upon the track-brake and having a projection taking under said take-up device, said brake-lever being operable to bear down upon the track-brake.

3. In a car-brake, the combination of a track-brake supported above and adapted to be lowered to the rail, a wear-compensator or take-up device movable with said track-brake, means for locking said take-up device in its lowered position, and a leg-formed brake-lever supported upon the track-brake and having a foot-portion or toe adapted to engage under said take-up device, said brake-lever being operable so that its heel portion bears upon the track-brake.

4. In a car-brake, the combination of a track-brake, and brake-actuating mechanism including a pressure-applying device and a wear-compensator, said pressure-applying

device bearing upon the track-brake and having opposed pressure taken by said wear-compensator, the latter being automatically adjustable in proportion to the increased distance the brake-shoe has to travel to the rail as it wears away.

5. In a car-brake, the combination of a track-brake and a brake-actuating mechanism including a pressure-applying device and a wear-compensator, said pressure applying device bearing upon the track-brake and under said wear-compensator, the latter being automatically adjustable in proportion to the increased distance the brake-shoe has to descend as it wears away.

6. In a car-brake, the combination of a track-brake, a brake-applying device resting thereon, actuating means therefor, and a wear-compensator automatically movable with the brake-shoe as it descends upon and ascends from the rail, and means for locking said wear-compensator in operative position, said wear-compensator receiving the upward thrust of said brake-applying device.

7. In a car-brake, the combination of a track-brake shoe, an automatically adjustable wear compensator or take-up device, and a bent brake-lever operating upon the brake-shoe and having its short arm taking under said take-up device.

8. In a car-brake, the combination of a track-brake and a wheel-brake, a brake-applying device bearing upon the track-brake, and means receiving the upward thrust of said brake-applying device and imparting pressure to the wheel-brake, said means including an automatically-adjustable device for taking up wear.

9. In a car-brake, the combination of opposed wheel-brakes and a track-brake, a brake-applying device bearing upon the track-brake, connecting means between the wheel-brakes, and an automatic wear-compensator resisting the movement of said brake-applying device and transmitting the thrust received thereby to the connection between the wheel-brakes, said connection being adapted to transmit pressure to the wheel-brakes.

10. In a car-brake, the combination of connected wheel-brakes and a track-brake, a brake-applying device bearing upon the track-brake and whose opposed thrust is received by the connected wheel-brakes, the connection between the latter including a take-up device which is automatically adjustable to compensate for wear.

11. In a car-brake, the combination of opposed wheel-brakes and a track-brake, a brake-applying device operating upon the latter, and connecting means between said wheel-brakes including a device sustaining thrust from said brake-applying device, said thrust-sustaining device being automatically adjustable in proportion to the increased

movement of the track-brake as its shoe wears away.

12. In a car-brake, the combination of opposed wheel-brakes and an intermediate track-brake, connecting means between the wheel-brakes, and a wear-compensator which descends with the track-brake as it is lowered to the rail, means for locking said device when lowered with the connection between the wheel-brakes, and a brake-applying device bearing upon the track-brake and under said device.

13. In a car-brake, the combination of wheel-brakes and a track-brake, said wheel-brakes having a connection whereby to resist pressure applied to said connection, an automatic take-up device movable with the track-brake in descending to the rail, means associated with said connection for locking said device thereto when the track-brake descends, and a brake applying device operating oppositely upon said track-brake and take-up device.

14. In a car-brake, the combination of wheel-brakes and a track-brake, said wheel-brakes having a connection whereby to resist pressure applied under the connection, a pin and a vise therefor associated with said connection, said pin being movable with the track-brake as it descends to the rail, said vise being operable to clamp said pin when the track-brake descends, and a brake-applying device bearing upon the track-brake and under said pin.

15. In a car-brake, the combination of opposed-wheel-brakes, a toggle connection between them, a track-brake, a brake-applying device operating thereon, and a take-up device through which said brake-applying device operates on said toggle, said device being automatically adjustable to preserve a constant relation of the track-brake, take-up device and brake-applying device.

16. In a car-brake, the combination of opposed wheel-brakes and a track-brake, a toggle connecting said wheel-brakes, said toggle being provided with a vise, a pin in said vise, means whereby said pin adjusts its position in proportion to the increasing movement of the track-brake as its shoe wears away, means for operating said vise to clamp said pin when the track-brake is ready to be applied, and a brake-applying device bearing said track-brake on the rail and applying pressure to said toggle through said pin.

17. In a car-brake, the combination of a track-brake, opposed wheel-brakes, a connection between said wheel-brakes, having a vise, a pin in said vise, connecting means between the track-brake and pin, whereby the latter is adjusted as the wear of the brake-shoe requires an increasing movement of the track-brake, means for operating said vise to clamp said pin when adjusted, and a

brake-applying device bearing the track-brake upon the rail and applying pressure to the wheel-brake connection through said pin.

18. In a car-brake, the combination of a track-brake and opposed wheel-brakes, a toggle connecting said wheel-brakes, the toggle-arms being provided with vise-like jaws, a pin attached to the track-brake, means for operating said toggle to cause said jaws to clamp said pin, and a brake-applying device bearing upon the track-brake and under said pin.

19. In a car-brake, the combination of opposed wheel-brakes connected by a toggle, an intermediate track-brake, a pin associated with the toggle and movable with the track-brake, the toggle being constructed to operate as a vise for clamping said pin, and a brake applying device bearing upon the track-brake and under said pin.

20. In a car-brake, the combination of a track-brake supported above the rail and adapted to be lowered thereto, wheel-brakes, a toggle connecting the latter, a pin movable with the track-brake, the toggle being constructed as a vise for clamping said pin, means for operating said toggle to clamp said pin when the track-brake is lowered to the rail, and a brake-applying device supported on the track-brake and arranged to bear down thereon and life up on said pin.

21. In a car-brake, the combination of a track-brake supported above and adapted to be lowered to the rail, wheel-brakes, a toggle connecting the latter, a pin carried by the track-brake, the arms of the toggle having vise-like jaws, means operating said toggle to cause said jaws to clamp said pin when the track-brake is lowered, and a brake-lever supported by and arranged to bear down on the track-brake, said lever having a foot portion projecting under and arranged to apply a lifting force on said pin.

22. In a car-brake mechanism of the character described, the combination with a take-up pin, of a vise therefor comprising a toggle, the arms of which have their adjacent ends formed as jaws for clamping said pin.

23. In a car-brake mechanism of the character described, the combination with a take-up pin, of a vise therefor comprising an unequal-armed toggle, the longer arm having a forked end pivoted to the shorter arm, the latter having a cam-shaped end confronting the crotch of said forked end, said pin being arranged in said forked end, substantially as described.

24. In a car-brake, the combination of a track-brake supported above and adapted to be lowered to the rail, a brake-applying device and a take-up pin movable with the track-brakes, said brake-applying device operating after the track-brake is down to ap-

plying opposing pressures thereon and on said pin, wheel-brakes, a toggle connecting the latter, and means connected with the pintle of the toggle for moving the same when the track-brake is lowered, the toggle having a vise operated thereby to clamp said pin.

25. In a car-brake, the combination of a track-brake and wheel brakes, the latter having a connection provided with a vise, suspension means for said track-brake including a vertical rod and hanger depending therefrom, said rod and hanger being telescopically-connected, a brake-applying device supported on the track-brake, a take-up device movable with the track-brake, and associated with said vise, means operating said suspension means to depress said rod, thereby lowering the track-brake by gravity until it touches the rail, whereafter said rod continues to descend, operative connections between said rod and vise to cause the latter to clamp said take-up device, and means for operating said brake-applying device, the latter bearing down on said track-brake and up against said take up device.

26. In a car-brake, the combination of a track-brake, suspension means therefor including a rod and hanger telescopically-connected, said suspension means operative to lower the track-brake to the rail and continue the descent of said rod, wheel-brakes, a toggle connecting them, said toggle provided with a vise, a pin in said vise, said pin connected to the track-brake for movement therewith, connections between said rod and vise for operating the latter to clamp said pin, and a brake-applying device supported by the track-brake and operating when the same is on the rail, said brake-applying device bearing up under said pin and down on the track-brake.

27. In a car-brake, the combination of a track-brake, suspension means therefor including a rod and hanger telescopically-connected, said suspension means operative to lower the track-brake to the rail and continue the descent of said rod, wheel-brakes, a toggle connecting them, a lever operated by said rod and connected to the pintle of the toggle, the arms of said toggle being provided with vise-like jaws, a pin between said jaws, said pin carried by the track-brake, and a brake-lever supported by and arranged to bear down upon said track-brake, said lever having a projecting foot-portion which takes under said pin.

28. In a car-brake, the combination of a track-brake, suspension means therefor including a telescopically-connected rod and hanger, said suspension means operative to lower the track-brake to the rail and continue the descent of said rod, a brake-applying device carried by the track-brake, and

means resisting opposed pressure from said brake-applying device, the last named means being set in position by said rod, there being operative connections for such purpose.

29. In a car-brake, the combination of a track-brake, wheel-brakes, a toggle connecting the latter, a lever having a suspended link connected to the pintle of said toggle, a rod operating said lever to lift said pintle, the toggle-arms being provided with the jaws of a vise operated by lifting said pintle, a pin in said vise, and a brake-lever mounted on said track-brake and operating to bear down thereon and apply pressure to said toggle through said pin.

30. In a car-brake, the combination of suspended track-brakes carrying brake-levers, wheel-brake mechanism associated therewith and adapted to receive pressure from said brake-levers, and suspension means for said track-brakes including telescopically-connected rods and hangers, said suspension means operative to lower said track-brakes to the rails by gravity and continue the descent of said rods, the latter being operatively-connected with said wheel-brake mechanism to adjust the same in position to take power from said brake-levers, and means for operating said brake-levers to cause them to bear down on the track-brakes when the latter are on the rails.

31. In a car-brake, the combination of track-brakes, suspension means therefor operative to lower said track-brakes to the rail, brake-applying levers carried by said track-brakes, and means for operating the same when the track-brakes are down on the rails.

32. In a car-brake, a suspended structure carrying track-brakes, and brake-operating mechanism including means for lowering the track-brakes to the rails and instrumentalities for applying pressure thereto when lowered.

33. In a car-brake, the combination of a suspended structure carrying track-brake-shoes, and brake-applying devices supported thereby, and brake-operating mechanism including means for lowering the track-brake-shoes to the rails, and means for operating said brake-applying devices when the shoes are lowered.

34. In a car-brake, the combination of track-brakes, means suspending the same above the rails and adapted to lower the track-brakes for applying the same, automatic wear-compensators arranged above the track-brakes and movable therewith, and brake-applying instrumentalities supported upon the track-brakes and adapted to operate between the same and wear-compensators, and operating means therefor.

35. In a car-brake, the combination of

wheel-brakes and suspended track-brakes, brake-applying instrumentalities associated with the respective sets of wheel and track-brakes, a main central lever, power transmission connections between the same and said instrumentalities, and connections between the same and said track-brakes for lowering them to the rails previous to the application of the brakes.

36. In a car-brake, the combination of track-brakes, means supporting the same above and adapted to lower them to the rails, brake-applying mechanism, and means for steadying the track-brakes when in contact with the rails, said steadying means comprising rigid guides attached to the truck-frame of the car-truck.

37. In a car-brake, the combination with wheel and track-brakes and power applying mechanism associated therewith, said mechanism requiring an adjustment previous to each application of the brakes, of a main truck lever, a cam operated thereby, connections between the cam and said power applying mechanism for adjusting the latter, and connections between said lever and power applying mechanisms for transmitting power to forcibly apply the brakes.

38. In a car-brake, the combination with wheel and track-brakes, and power applying mechanism associated therewith, said mechanism requiring an adjustment previous to each application of the brakes, of a main truck lever, a cam operated thereby, connections between the cam and said power applying mechanism for adjusting the latter, and connections between said lever and power applying mechanisms for transmitting power to forcibly apply the brakes, said cam being free to be held stationary by said lever after the preliminary adjustment of said brake-applying mechanism.

39. The combination of a main truck lever, a cam operated thereby, bell-crank levers on the truck-frame, connecting rods between said cam and one arm of each of the bell-crank levers, rods suspended from the other arms of said bell-crank levers, brake shoes, power applying mechanism associated therewith, means for adjusting said power applying mechanism, said means being operated by said rods when the bell-crank levers are operated to depress the latter, and connections between the main truck-lever and said brake applying mechanism for applying power thereto.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES V. ROTE.

Witnesses:

ALLAN A. HERR,
J. W. HOLMAN.