

No. 748,015.

PATENTED DEC. 29, 1903.

C. E. ROBERTS.
AUTOMOBILE.

APPLICATION FILED SEPT. 17, 1900.

NO MODEL.

8 SHEETS—SHEET 1.

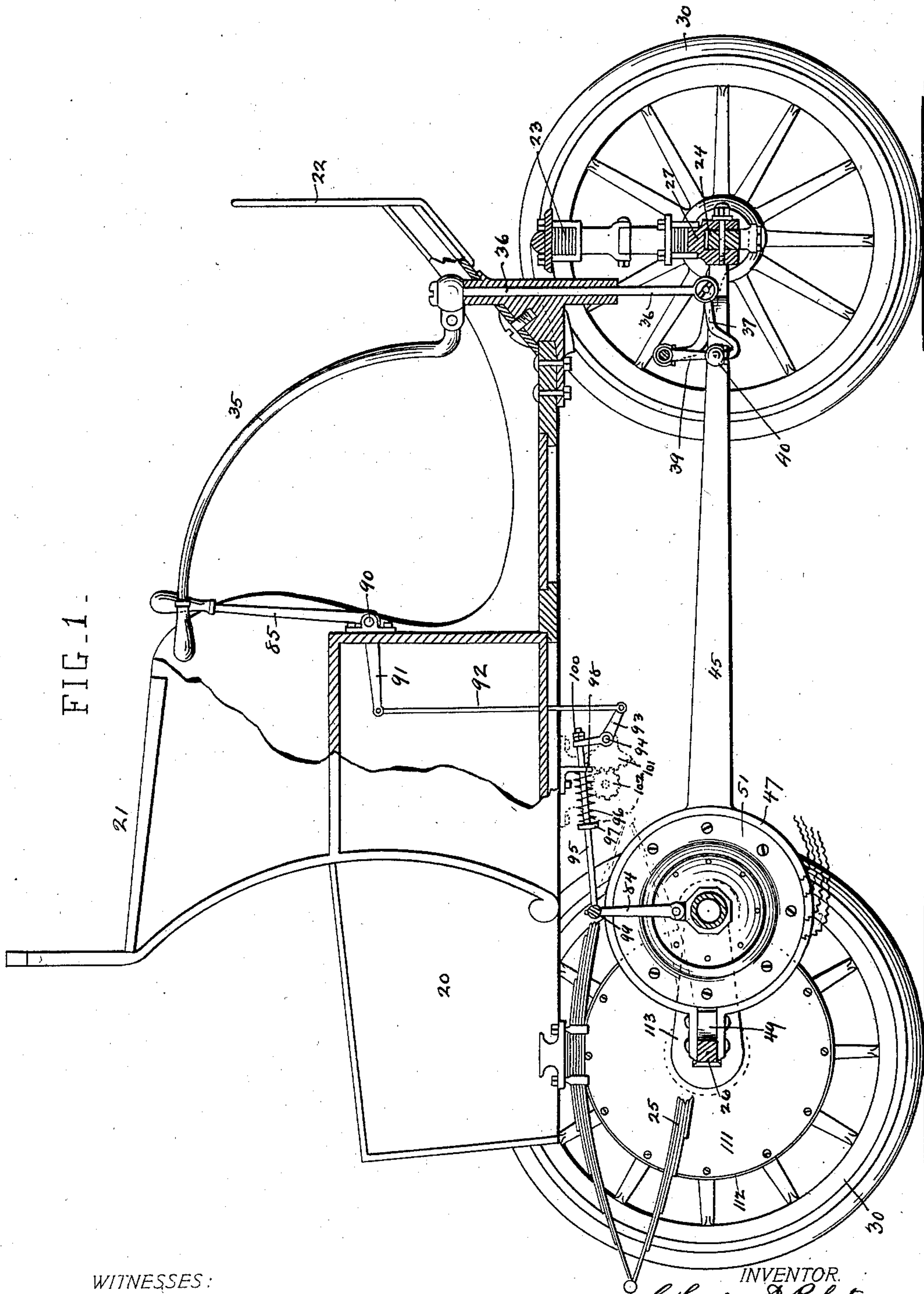


FIG. 1.

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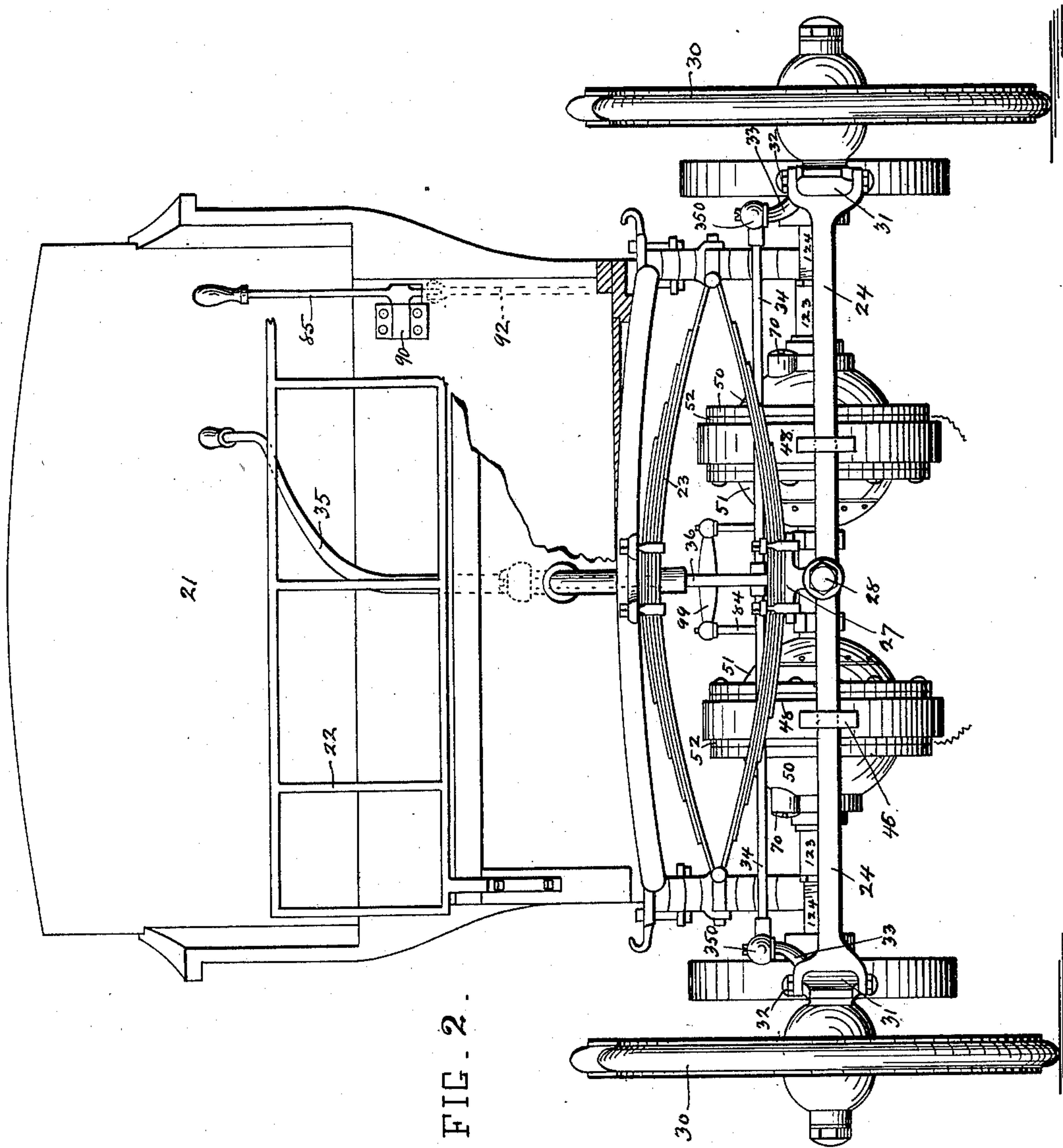
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6 SHEETS—SHEET 2.



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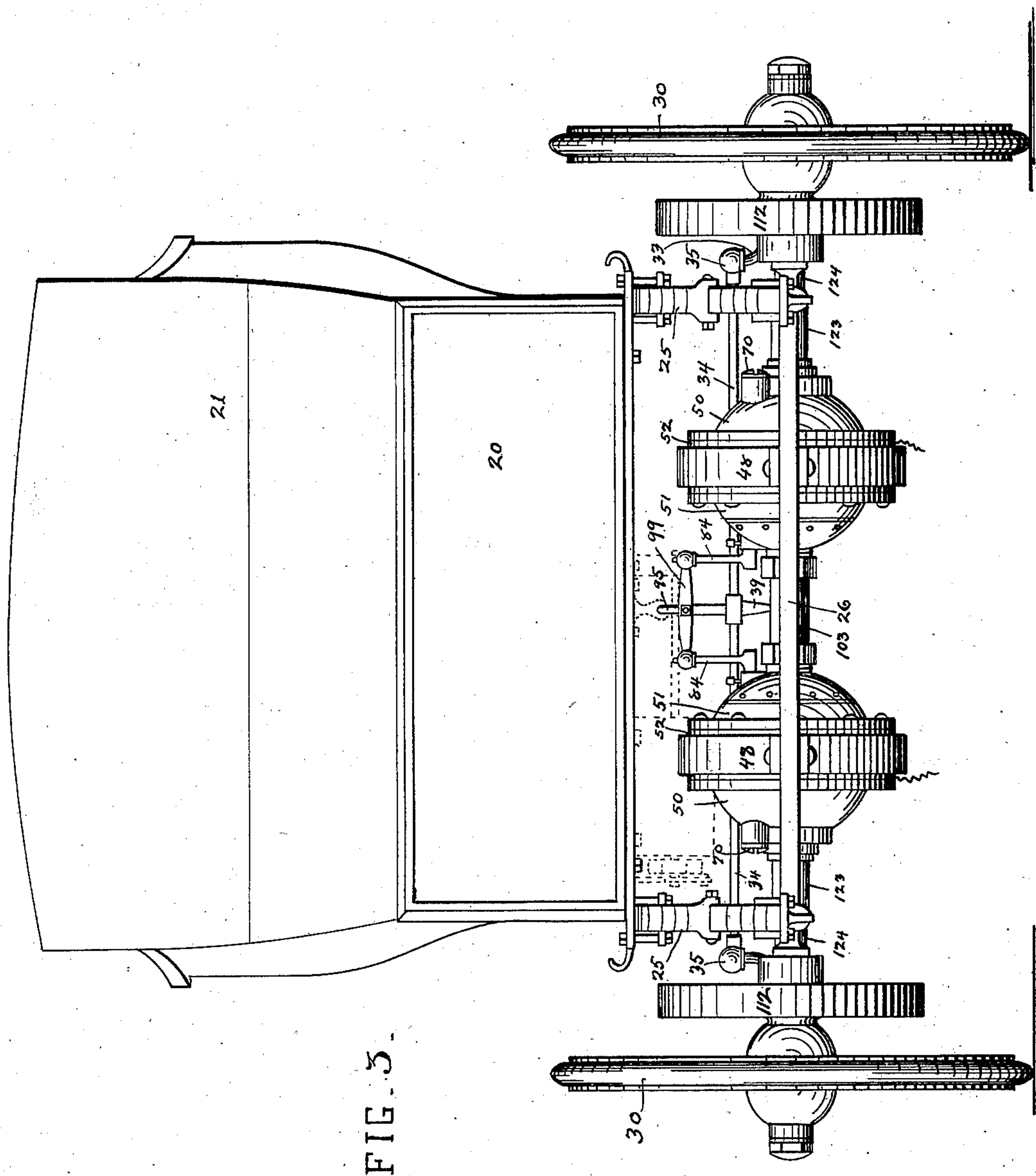
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6 SHEETS—SHEET 3.



FILE

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6 SHEETS—SHEET 4.

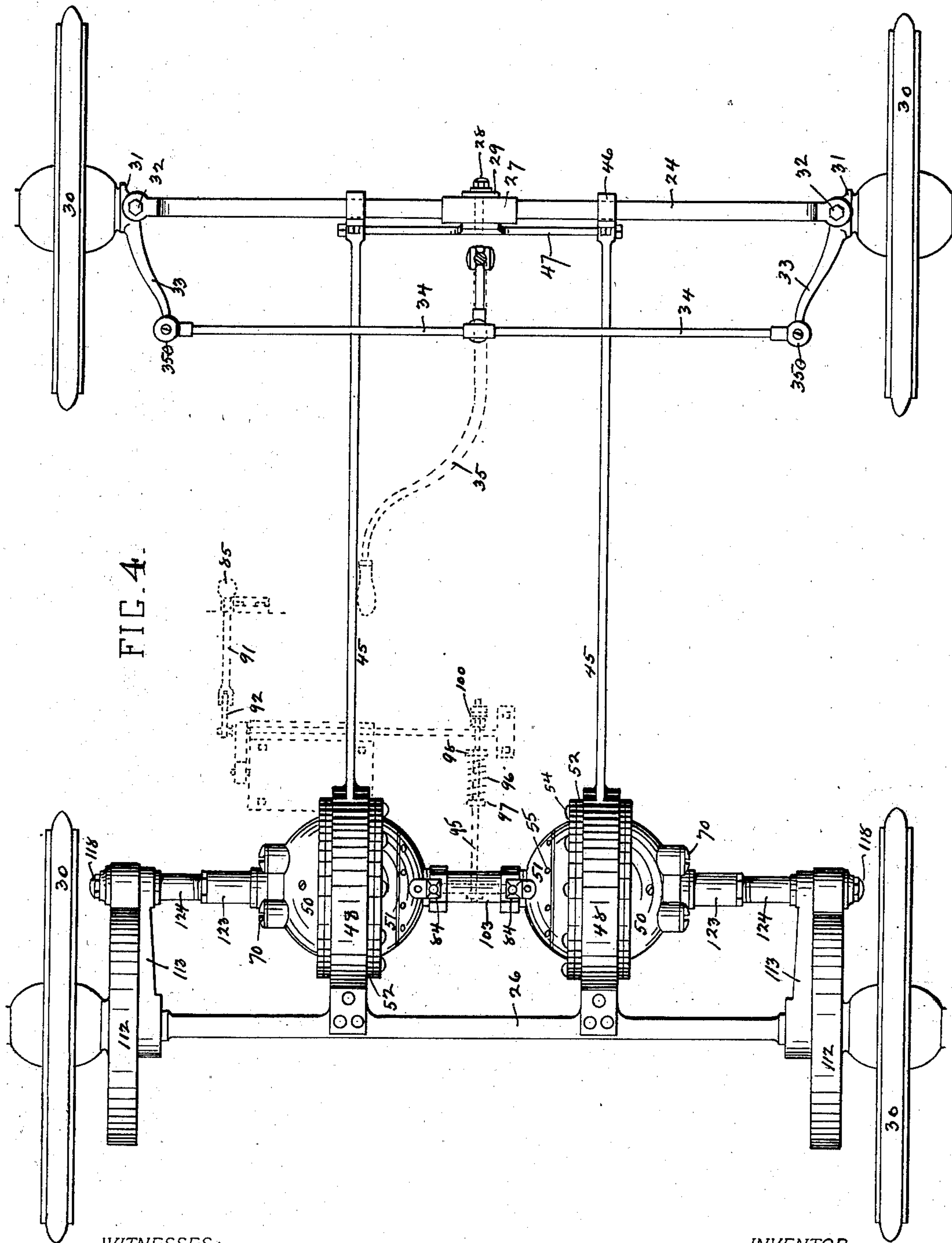


FIG. 4.

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6 SHEETS—SHEET 5.

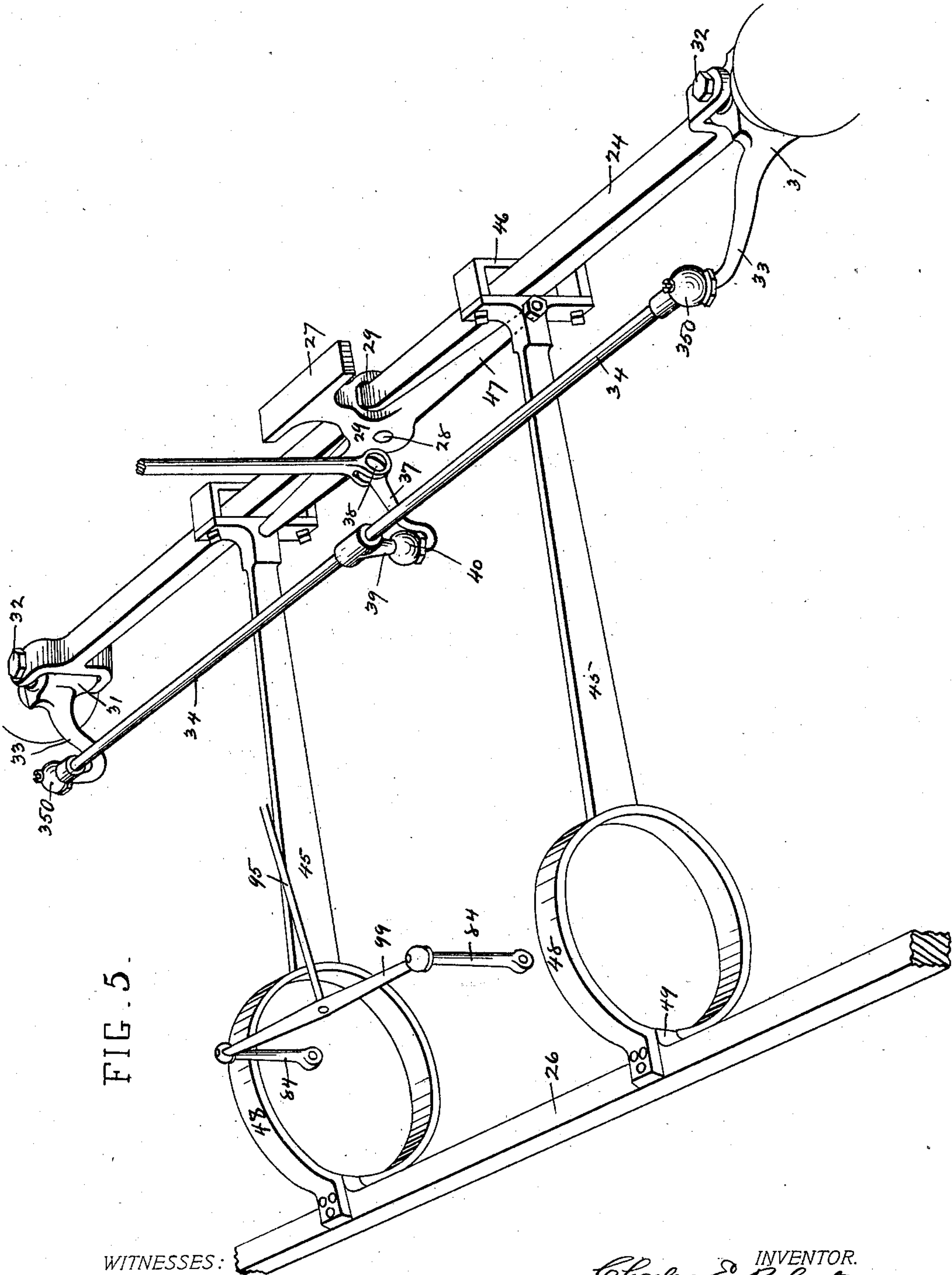


FIG. 5.

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6 SHEETS—SHEET 6.

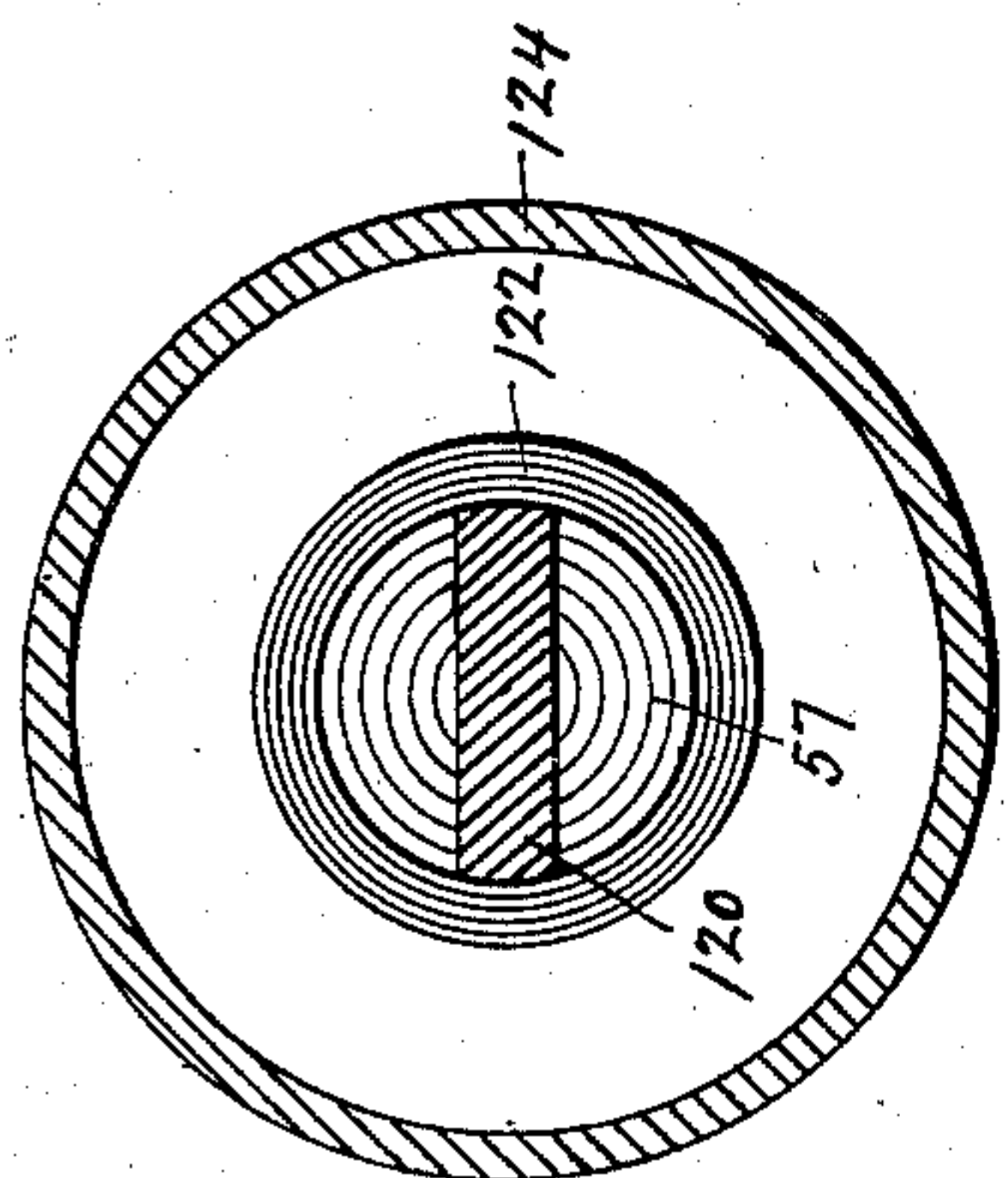


FIG. 7.

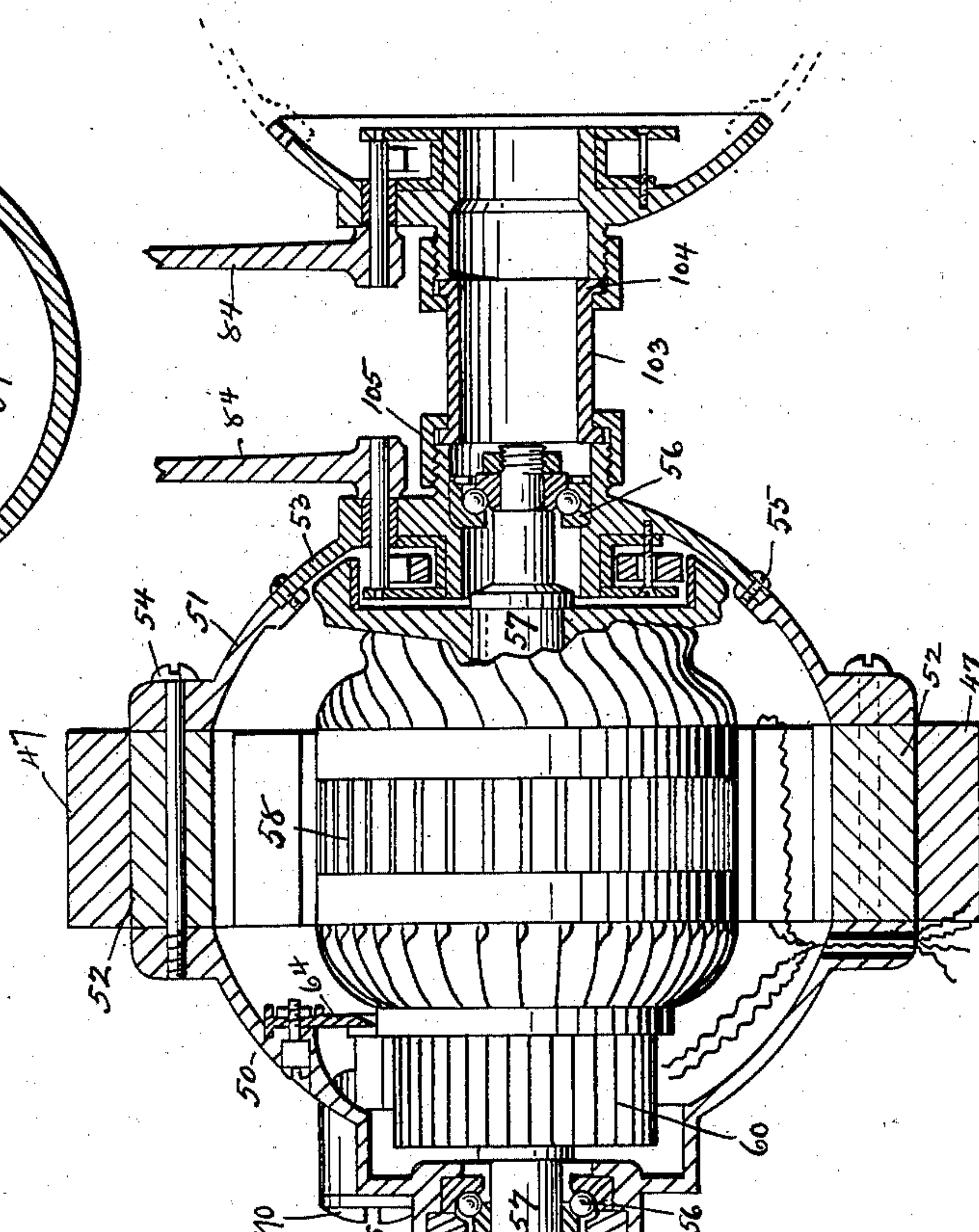
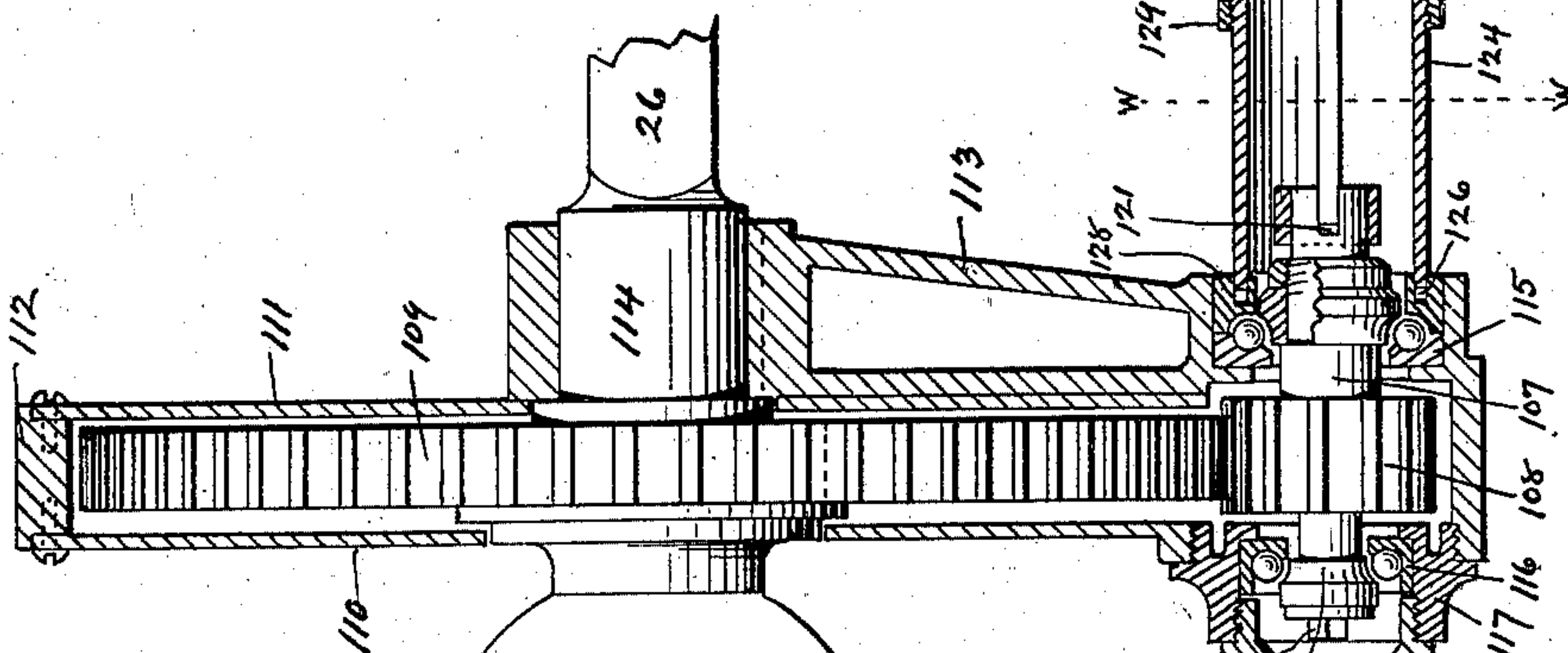


FIG. 6.



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UNITED STATES PATENT OFFICE.

CHARLES E. ROBERTS, OF OAKPARK, ILLINOIS.

AUTOMOBILE.

SPECIFICATION forming part of Letters Patent No. 748,015, dated December 29, 1903.

Application filed September 17, 1900. Serial No. 30,238. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. ROBERTS, a citizen of the United States, residing in Oakpark, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Automobiles, of which the following is a specification.

My invention relates to "automobiles," which term is herein employed as a generic designation of all motor-vehicles, carriages, or velocipedes, and the improvements have reference more particularly to the means for transmitting the power of the motor to the driver or drivers, also to the frame or running-gear, to means for supporting or carrying the motor or motors, and to means for rendering the mechanism dust-proof.

In my invention the gear or driving member on the axis of the driver and the gear or member which transmits to the power from the motor are all fixed and rigidly held in their respective locations, and the elasticity or torque desirable under such conditions to allow the motor a slight start before it begins to actuate the gears is provided for by a flexible connection between the motor and the motor-pinion. This is one of the main features of the invention.

A further object of my invention is to simplify the running-gear, whereby the same may be made to removably clamp and support one or more motors and will be rigid and strong, permitting the ready removal of either motor independently of the other.

A further object of my invention is to hold the forward axle rigidly against horizontal oscillation while permitting it to oscillate vertically; and a still further object of my invention is to completely incase the gears and, if desired, the motor and all moving connections between the motor and gears.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

The nature of this invention is set forth in the description given below and will be fully understood from such description when read

in connection with the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of my improved automobile. Fig. 2 is a front elevation, partly broken away. Fig. 3 is a rear elevation. Fig. 4 is a plan of the running-gear. Fig. 5 is a perspective of the two axles and the connections between them. Fig. 6 is an enlarged horizontal section of one of the motors and its driving-gears. Fig. 7 is a section on the line W W of Fig. 6.

In said drawings, 20 represents the body of the automobile, having a seat 21 and dashboard 22. The body is supported at front upon a single spring 23, arranged parallel with and over the front axle 24 and at the rear upon side springs 25, arranged over and at right angles to the rear axle 26. The front spring is seated upon and clipped to a block 27, pivotally secured to axle 24 and capable of rocking endwise independently of the axle, being fashioned, as best seen at Fig. 5, to set down over and straddle the axle and secured thereto by a bolt or pin 28, passing through the depending members 29 of the block. The rear springs are clipped to axle 26 in any ordinary manner. The front wheels 30 turn on stub-axles formed on or secured in swiveled heads 31, attached to axle 24 by vertical pivots 32 in the customary way and are controlled in steering by arms 33, connected together by the rod 34, which is united to both of them by spherical or universal joints 35. The rod 34 is actuated longitudinally in steering by the rider through the medium of hand-lever 35, a vertical shaft 36 having a long bearing at its upper end in the body of the vehicle and having its lower end forked, so as to set over the crank 37, which is flexibly joined to it by pivot 38, and said crank being joined to a bracket 39, rigid upon rod 34, by a spherical universal joint 40. In the joints 35 and 40 the spherical shell or outside member is arranged with its opening for receiving the other member at the bottom, so that the shell is adapted to shed rain and dirt falling onto it.

The axles 24 and 26 are connected together by twin reaches 45, rigidly attached to the latter and having loops 46 encircling the former. These loops allow independent rocking by axle 24, being provided with vertical

sides, so that they guide the ends of the axle as they rise and fall without interfering otherwise with the movements. The loops or the ends of the reaches to which they are attached are both joined to the spring-supporting block 27 by arms 47, rigid and preferably integral with the said block, so that the reaches control the rocking of said block and the front spring, while allowing full independent rocking movement to the front axle.

The reaches are fashioned, as plainly shown at Fig. 5, so that their rear ends are adapted to receive and clamp the electric or other motors employed to propel the vehicle. The parts which thus act are upper and lower semicircular arms 48, conforming to the exterior of the motors and adapted to be bolted to the rear axle, as at Figs. 1 and 3. A filling-block 49 may also be used between the turned-out ends of the arms, as shown in Fig. 1. The arms 48 exert such holding power upon the motors that the latter need no other fastening whatever to the vehicle, and the motors are thereby also rendered very rigid with the rear axle. The motors are inclosed in cases, preferably spherical, and each composed of hemispherical sides 50 and 51 and a central ring 52, as will be understood from Fig. 6. The side 51 is provided with a separable portion 53, surrounding the axis and united to side 51 by bolts 55. The parts 50, 51, and 52 are united by bolts 54, and the parts 50 and 53 receive and support the cups 56 of the ball-bearings provided for the shaft 57 of the motor-armature 58. The casing side 50 also supports the brushes 59 in position over the commutator 60.

64 represents an adjustable plate supporting the brushes, and 70 the head of a plug closing an opening giving access to the brushes. These features are not fully described or illustrated, as they form no part of the claims herein.

The preferred construction of the mechanism connecting hand-lever 85 with the levers 84, by which the brakes are set, is that illustrated, the lever 85 being on the end of a shaft 90, carrying a crank 91, connected by a vertical rod 92 to an elbow-lever 93, pivoted at 94 and having its further end forked or otherwise adapted to embrace a horizontal rod 95, adjacent to the nut 100 on the end of the rod. When the rider moves lever 85 backward, the parts described will cause a forward longitudinal movement of rod 95, and as said rod is joined to the center of a cross-bar 99, connecting the operating-levers 84 of the brakes of the two motors, it will be seen that the brake-shoes of both brakes will be set in operation thereby. The movement just mentioned of the rod 95 will also store up power in the spring 96, which encircles the rod and is confined thereon between the collar 97, secured to the rod, and the stationary stop 98, so that when the driver releases the lever 85 said spring will return the parts to normal position. The electric currents

may be and preferably are controlled by the same lever 85, and a portion of the mechanism for that purpose may consist of the segment 101 on the shaft 94 and the pinion 102. This mechanism is not completely shown, as its construction is well understood.

Not only are the motors rigidly held by the reaches, so that they have no movement independent of the rear axle, but I also couple them together, so that neither can move independently of the other and so they will remain in alinement with each other. This is done by means of a tubular connection 103, having outstanding flanges 104 and flanged nuts 105, threaded on the exteriors of the axial projection 106 of the parts 53 of the casings of the two motors and engaging the flanges 104.

The armature-shaft 57 of each motor actuates a shaft 107, carrying a pinion 108, meshing with and driving the gear 109, mounted loosely on the rear axle 26, but rigidly joined to one of the rear wheels. These gears are inclosed in a casing consisting of side plates 110 and 111 and a rim 112, and the shaft 107 is stayed from the axle 26 by a strong metal bracket 113, fitting the enlargement 114 on the axle and also inclosing the shaft and supporting the cups 115 and other outer parts of one of the ball-bearings provided for said shaft 107. The cup of the ball-bearing at the other or outer end of said shaft is shown at 116 and is supported in a nut 117, threaded into the shaft-cavity and formed partly between the bracket 113 and partly by the side plate 110. The cone opposed to cup 116 is shown at 116^a and is locked in its adjustable positions by a screw 116^b. The shaft-cavity is made large enough to admit pinion 108 and is closed by cap 118, so as to exclude all dirt and moisture at that point.

The shafts 57 and 107 are not made absolutely rigid with each other, but, on the contrary, are coupled together in a manner which not only provides the necessary elasticity or torque permitting the motor to move slightly in advance of the driving-gears, notwithstanding both are rigidly held so that they cannot change their locations with respect to each other, but which also permits the very ready disconnection of the two when necessary for repairs or other reason. The coupling device is a flat bar of metal 120 let into slots 121, formed in the proximate ends of the two shafts. The bar is loose in the slots, but cannot escape therefrom so long as the retaining-rings 122, which are placed over the shafts and close the edges of the slots, are in place. To disconnect the shafts, it is only necessary to take off one of the rings, when the bar slips out of its slots very easily.

The casing of each motor is also joined to the adjacent bracket 113 by connections adapted to be readily separated and to prevent access of water and dirt to the ends of the motor and pinion shafts and the coupling-bar just described. These connections con-

sist of two tubular and telescoping sections 123 and 124, each entering one of the annular grooves 125 or 126, formed in the retaining-rings 127 and 128 of the ball-bearings. After
 5 being entered in the grooves a ring-nut 129, threaded on the smaller section, is turned up against the larger section and keeps the sections expanded, so that they cannot escape from the grooves. It will be noticed that these
 10 covering-sections are easily positioned and as easily disconnected from the casing and bracket.

By connecting the operating-levers 84 of the brakes of the two motors by the equalizing-bar 99 I am enabled to apply the hand-power equally to both brakes by the use of a
 15 single hand-lever, and the mechanism also permits the setting of the brakes very quickly.

I hereby expressly reserve for a divisional
 20 application, filed December 14, 1900, as Serial No. 39,846, any claims to which I may be entitled based upon the brake mechanism herein shown.

I claim—

25 1. The automobile provided with a motor rigidly supported from the axle, a pinion for actuating the wheel also rigidly supported from the axle, and a single power-transmitting device of an elastic nature connecting the
 30 motor-shaft with said pinion, substantially as specified.

2. The automobile having the shaft of its motor and the shaft of the pinion for actuating the gear of the supporting-wheel connected
 35 by the bar 120 let into slots in the proximate ends of the shafts, both shafts being rigidly held so they cannot change position relatively, substantially as specified.

3. The automobile having the shaft of its
 40 motor and the shaft of the pinion through which the motor actuates the gear of the supporting-wheel, made separate and rigidly held in alinement with each other, and having a removable and flexible flat bar as the sole device for transmitting power from one to the
 45 other of said shafts, substantially as specified.

4. The automobile having the shaft of its motor and the shaft of the pinion for actuating the gear of the supporting-wheel, made
 50 separate and connected by a removable bar confined in slots in the proximate ends of the shafts by removable and separate rings, substantially as specified.

5. The automobile having the shaft of its
 55 motor and the shaft of the pinion for actuating the gear of the supporting-wheel, made separate and connected by a detachable connection, and also having a detachable device independent of said connection for protecting the same from dirt and water, substantially
 60 as specified.

6. The automobile having its motor and driving-pinion both rigidly fixed in their respective locations and with their shafts in
 65 alinement and connected by a device permitting elasticity or torque in operation, substantially as specified.

7. The automobile having its motors rigidly held, and also having the motor-casings coupled rigidly together, substantially as
 70 specified.

8. The combination with the motors of an automobile, of twin reaches each encircling and rigidly holding one of the motors, substantially as specified. 75

9. The combination with the motors of an automobile, of twin reaches, each encircling and rigidly holding one of said motors, and both rigidly connected to the rear axle and connected to the front axle by an attachment
 80 permitting a rising-and-falling movement to the ends of that axle without imparting any movement to the reaches, substantially as specified.

10. The combination with the axles and motors of twin reaches each rigidly attached to the rear axle, and attached to the front axle by means permitting the up-and-down movement of the axle, and each reach supporting
 85 one of the motors, substantially as specified. 90

11. The combination with the rear axle and the motors of twin reaches fashioned to encircle and rigidly clamp the motors, and to be attached to the axle, substantially as specified. 95

12. In an automobile, the motor having an inclosing case in combination with a reach having the embracing and clamping arms 48 acting to hold the motor without other fasten-
 100 ing, substantially as specified.

13. The combination with the motor of the inclosing case consisting of the parts 50, 51, 52 and 53, substantially as specified.

14. The combination with the motor and the driven pinion and their shafts and connection, of the inclosing tubes 123 and 124, and the ring-nut 129 threaded on one of the tubes and preventing their telescoping movement, substantially as specified. 105

15. The combination with the motor and pinion-support 113, both having grooves to receive the tubes, of telescoping tubes 123 and 124 and means for holding them from telescoping, substantially as specified. 110

16. An automobile having in combination a motor, a gear, a driver driven by said gear, one of the two first said parts having a slot-
 115 ted shaft and a flexible blade secured at one end to the other of the two first said parts and having its other end held in said slotted shaft, substantially as set forth. 120

17. An automobile having in combination a motor, a driver, a train of gears one of which is connected with for driving said driver and a flexible blade loosely connecting the other
 125 of said gears with said motor, substantially as set forth.

18. An automobile having in combination a motor, a driver, a train of gears one of which is connected with for driving said driver, a
 130 shaft to which the other of said gears is secured and a flexible blade having its ends loosely connected with said shaft and motor respectively, substantially as set forth.

19. An automobile having in combination a motor, a driver, a train of gears one of which is connected with and drives said driver, a shaft upon which the other of said gears is mounted having a slotted end, a flexible blade having one end secured to the motor and the other end fitting in said slotted shaft and means for holding said blade in place in said slot, substantially as specified.
20. An automobile having in combination the pinion-shaft, the pinion on said shaft, a socket in which said pinion is located having an open end of sufficient size to admit the pinion, a removable portion closing said open end, antifriction bearing devices carried in said removable portion and coöperating with said pinion-shaft, a motor for driving said pinion and a driver geared to said pinion-shaft, substantially as specified.
21. An automobile having in combination the pinion-shaft, the pinion thereon, a socket in which said pinion is housed having an open end of sufficient size to admit the pinion, a bushing closing said open end, antifriction bearing devices carried in said bushing, means for adjusting said antifriction bearing devices, and a cap secured in said bushing and inclosing the last said means, a motor for driving said pinion-shaft and a driver geared to said pinion, substantially as set forth.
22. An automobile having in combination an axle, a driver thereon, a bracket-arm secured to said axle, a gear secured to said driver adjacent to said bracket-arm, a pinion mounted in said bracket-arm and partially inclosed thereby, a gear-casing incasing said gear and secured to said bracket-arm, a removable portion secured to said bracket-arm, and coöperating therewith for completely inclosing said pinion and a motor connected with said pinion, substantially as specified.
23. An automobile having in combination an axle having a shoulder thereon, a driver having its hub journaled on said axle contiguous to said shoulder, a bracket-arm rigidly secured to said shoulder at one end and having a pinion-socket at the other end, a gear secured to said driver, a ring secured to said pinion-socket and surrounding said gear, a plate secured to one side of said ring between said bracket-arm and gear, a plate secured to the other side of said ring and surrounding said hub, a pinion located in said socket and meshing with said gear, and means

for closing said socket, substantially as specified.

24. An automobile having in combination a motor, a motor-casing, a driver, a bracket-arm supporting one of said gears, a flexible connection between the motor and one of said gears, and a two-part telescopic sleeve incasing said flexible connection and extending between the arm and the motor-casing, substantially as set forth.

25. An automobile having in combination an axle, a motor, a reach having a divided band clamped to said axle and also embracing and clamping the motor, substantially as set forth.

26. An automobile having in combination a motor frame or casing, an axle, and a reach having a divided band embracing and clamping said motor-frame, the ends of said divided band being bolted to the axle, substantially as set forth.

27. An automobile having in combination the front and rear axles, a pair of reaches secured to the rear axle and abutting against the front axle and having vertical yokes embracing the front axle, and a bar connecting the forward ends of said reaches together, substantially as set forth.

28. An automobile having in combination a motor, a driver, a train of gears one of which is connected with for driving said driver, a shaft upon which the other of said gears is mounted having its end transversely slotted and screw-threaded, a flexible blade having one end secured to the motor and the other end fitting in said slotted shaft and a collar screwed on the end of said shaft over and embracing the inserted end of said blade, substantially as specified.

29. An automobile having in combination the front and rear axles, a pair of reaches rigidly secured to said rear axle and abutting against the front axle, a yoke on the forward end of each reach embracing the front axle for holding it against horizontal but permitting of vertical movement, a bar connecting the forward ends of said reaches together, the forward spring of the vehicle-body and a pivotal connection between said spring, and said bar and axle having a horizontal axis, substantially as set forth.

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Witnesses:

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