

No. 748,275.

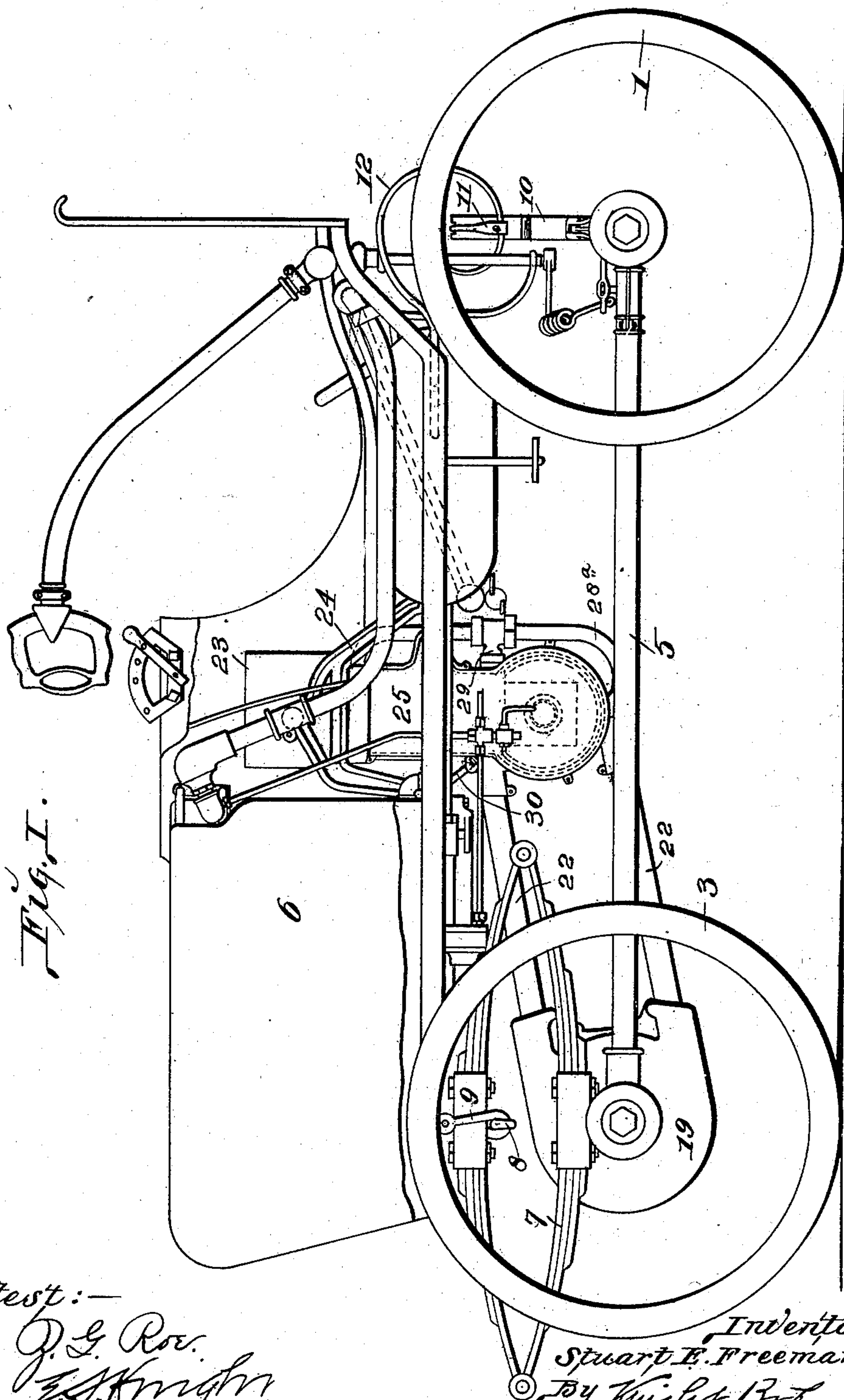
PATENTED DEC. 29, 1903.

S. E. FREEMAN.
MOTOR VEHICLE.

APPLICATION FILED JUNE 8, 1900.

NO MODEL.

4 SHEETS—SHEET 1.



attest:—

J. G. Roe.
E. S. Knight

Inventor:

Stuart E. Freeman.

By Wm. R. 1378 atty's

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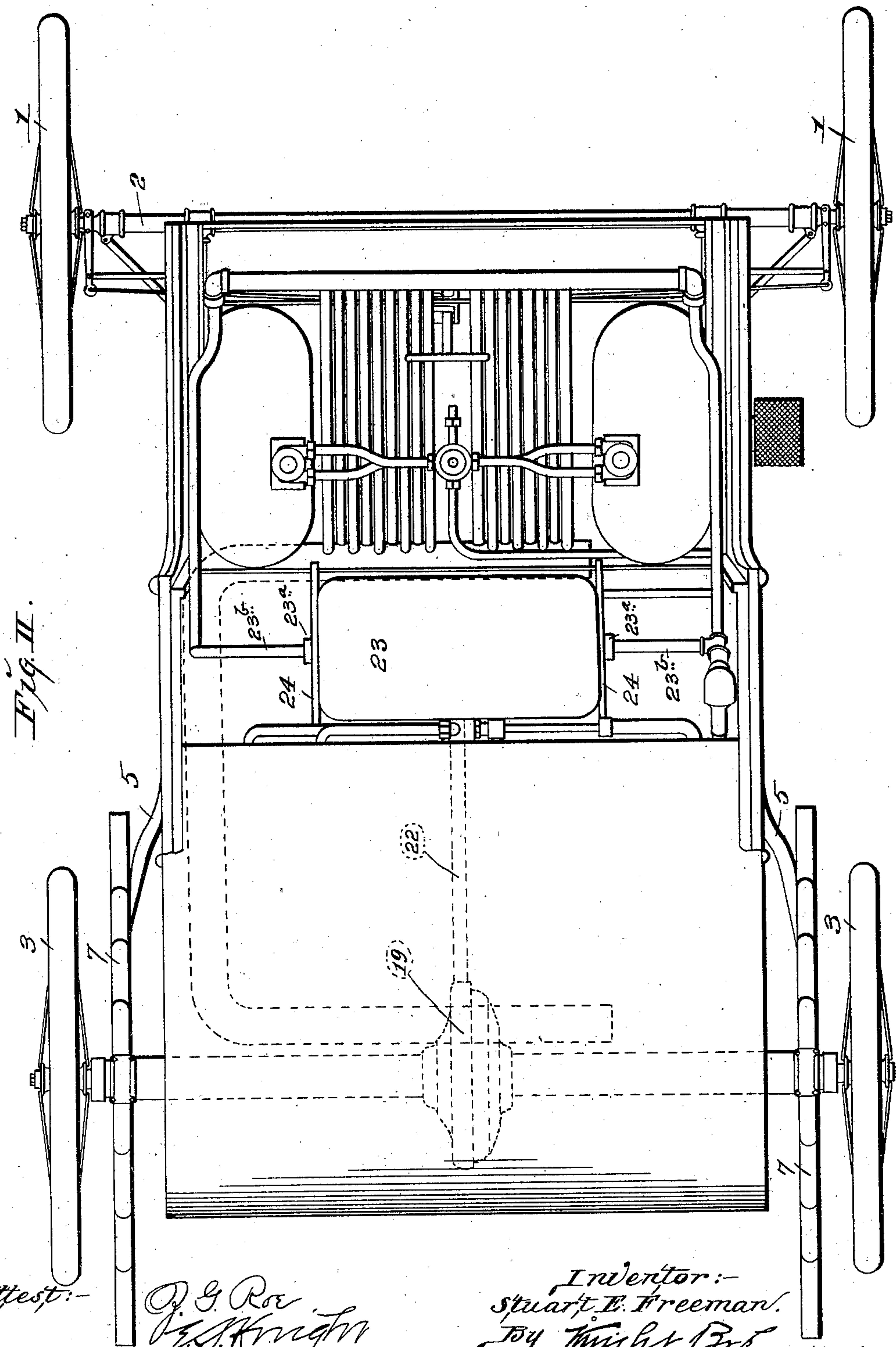
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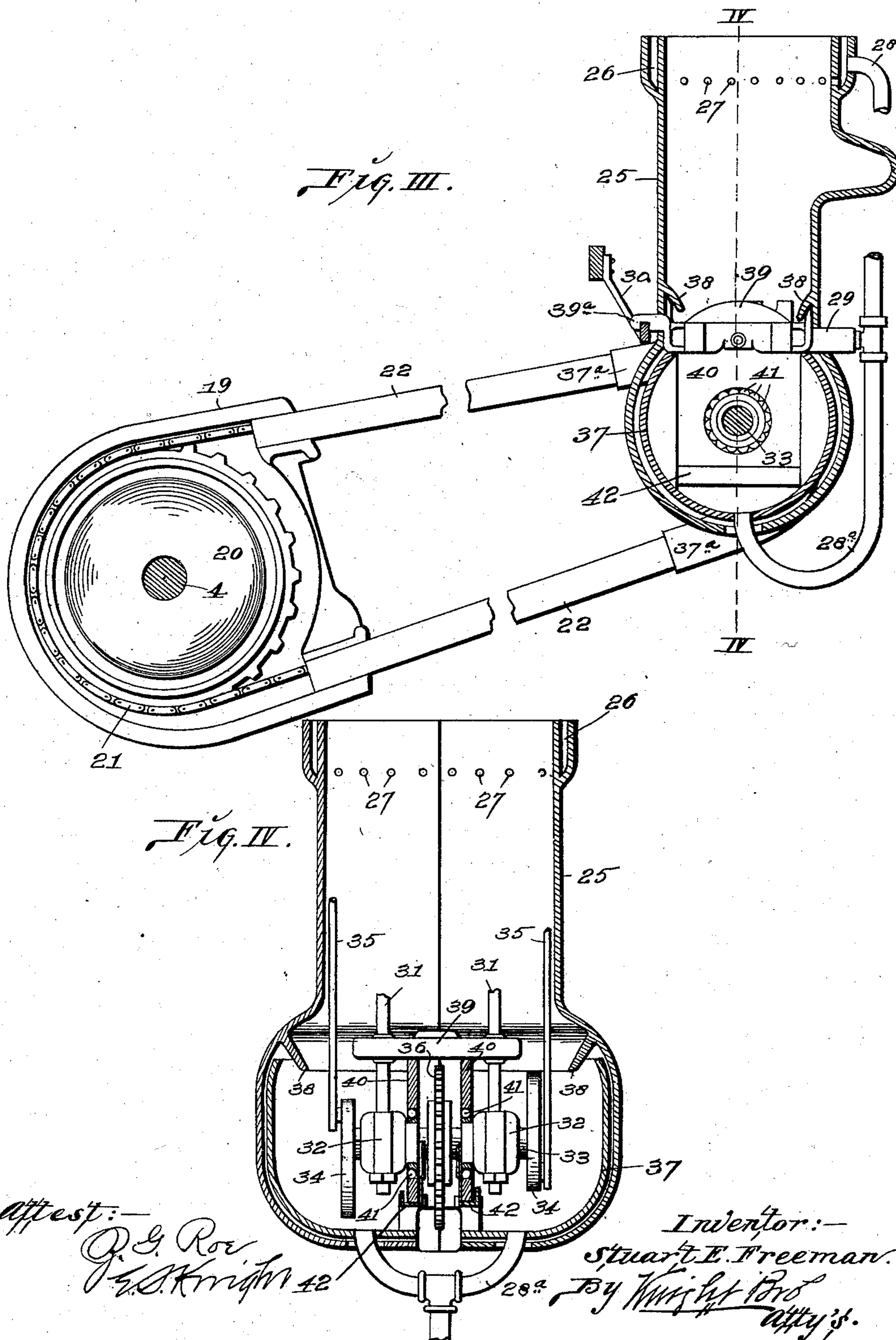
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4 SHEETS—SHEET 3.



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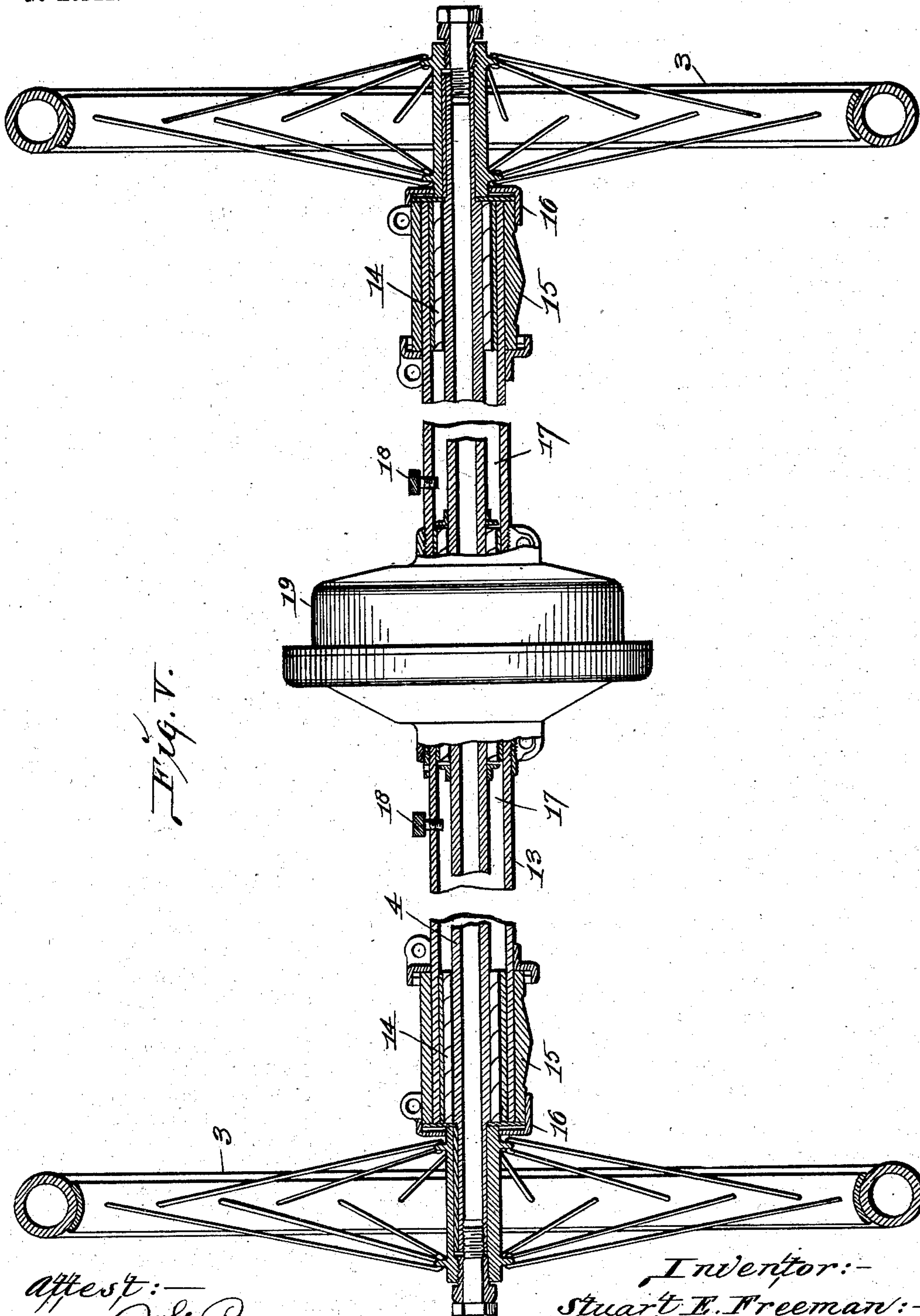
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

STUART E. FREEMAN, OF ST. LOUIS, MISSOURI.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 748,275, dated December 29, 1903.

Application filed June 8, 1900. Serial No. 19,492. (No model.)

To all whom it may concern:

Be it known that I, STUART E. FREEMAN, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have
 5 invented certain new and useful Improvements in Motor-Vehicles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 My invention relates to motor-vehicles, and has reference to means for inclosing or housing the operating mechanism of the vehicle in such manner that the variance of movements between the motor and the driving-
 15 gear of the vehicle is fully compensated for in the arrangement of the construction at the connection of said parts, so that the vehicle-body, its frame, and the motor may move freely and without strain upon the vehicle
 20 driving mechanism; also, to an arrangement of said housing whereby the operating mechanism is protected against the encroachment of dust or dirt; also, means whereby the motor mechanism is adequately oiled; also, strut-
 25 tubes, in which the drive-chain of the driving-gear operates and by which the trussing-gear box and a swiveling-box within the motor-casing are connected.

My invention consists in features of novelty hereinafter fully described, and pointed
 30 out in the claims.

Figure I is a view in side elevation illustrating my vehicle. Fig. II is a top or plan
 view of the vehicle. Fig. III is an enlarged
 35 view of the driving-gear-inclosing housing, partly in vertical section and partly in elevation, one section of the trussing-gear box being omitted. Fig. IV is a vertical sectional
 40 view taken through the engine or motor casing on the line IV IV, Fig. III, with the working parts of the engine shown in elevation. Fig. V is an enlarged view, partly in section
 45 and partly in elevation, of the driving-axle, traction-wheels, and the tubular truss and trussing-gear box on said axle.

1 designates the steering-wheels of the vehicle, and 2 the front axle. The wheels 1 may be guided by any suitable steering device,
 such as that shown in Figs. I and II.

50 3 designates traction-wheels mounted on the rear or driving-axle 4, and 5 represents reaches that connect the axles 2 and 4. The body 6

of the vehicle is mounted on a suitable frame, as seen in Fig. I. The rear end of the body-frame is supported on rearsprings 7, that receive their support from the axle 4, as will
 55 hereinafter appear. The frame of the vehicle-body is connected to said springs by a swinging hanger-bar extending across said frame and having hooked ends 8, that pass
 60 through shackles 9, carried by the springs 7, (see Fig. I,) whereby the body-frame is permitted to swing freely with relation to the springs 7.

10 designates a pair of springs mounted on
 65 the front axle 2, the upper one of said springs having outwardly-projecting ends that receive a pair of shackles 11, to which supporting-coils 12 are pivotally connected, the coils
 70 12 being attached to the vehicle-body frame. By this arrangement the forward end of the vehicle-body frame is spring-supported and at the same time permitted to swing in correspondence with the swingingly-supported
 75 rear end of the body-frame.

13 designates a tubular truss surrounding
 the driving-axle 4 between the traction-
 wheels 3, designed to relieve said axle from strain. This tubular truss 13 contains bearing-
 boxes provided with antifriction-rollers
 80 14, (see Fig. V,) that receive the bearing of the axle 4 as it revolves within the casing on the turning of the traction-wheels 3. Loosely
 mounted on the tubular truss 13 are sleeves
 85 15, to which the axle-connecting reaches 5 are connected, the said sleeves affording supports for the attachment of the rear springs
 7. The truss 13 is closed at its ends by dust-
 caps 16, that exclude dust or dirt from the
 bearing-boxes within said truss and also prevent the lubricating-oil introduced into said
 90 truss from escaping therefrom. A supply of oil to lubricate the bearings within said truss is maintained within pockets 17, the oil being introduced through holes closed by
 95 plugs 18.

19 designates a trussing-gear box fixed to the tubular truss 13. (See Fig. V.) This gear-box trussing the central part of the truss 13
 thereby materially strengthens the truss 13
 100 and relieves it from strain that would otherwise occur thereupon. Within the trussing-gear box 19 and fixed to the driving-axle 4 is a sprocket-wheel 20, that receives an endless

drive-chain 21, that is arranged in driving engagement with the operating mechanism of the engine by which the vehicle is propelled, as will hereinafter appear. The chain 21 operates through a pair of strut-casing tubes 22, each of which is connected at one end to the trussing-gear box 19, while the other ends of the tubes receive connection hereinafter stated.

23 designates the cylinder of an engine that is mounted in A-frames 24, carried by the frame of the vehicle-body, said cylinder being provided with trunnions 23^a, that receive the connection of exhaust-steam pipes 23^b. (See Fig. I.)

Beneath the engine-cylinder 23 is a casing 25, that receives the working parts of the engine. The casing 25 is provided at its upper end with an oil-well 26, (see Figs. III and IV,) and leading from said oil-well into the interior of the casing are ports 27, through which the oil is discharged from said well into the casing to lubricate the working parts of the engine. The oil-well 26 is supplied with oil from a pipe 28, having communication with a pump located at 29, (see Fig. III,) driven by suitable connection with the engine mechanism.

31 designates hanger-rods depending from the engine-cylinder 23 and by which the crank-shaft is supported. Supported by the hanger-rods 31 at the lower ends are bearing-boxes 32, that receive the engine crank-shaft 33. On the crank-shaft 33 are cranks 34, that receive the connecting-rods 35, that are joined at their other ends to the pistons contained by the engine-cylinder.

36 is a sprocket-wheel fixed to the crank-shaft 33, the said sprocket-wheel receiving the engagement of the endless drive-chain 21, which also passes about the sprocket-wheel 20 on the driving-axle 4, as hereinbefore explained.

37 designates a swivel-box loosely arranged within the lower concentric end of the engine-casing 25 and provided with tubular arms 37^a, that pass loosely through the casing 25 and receive the connection of the strut-tubes 22. It will therefore be seen that the trussing-gear box 19, strut-tubes 22, and swivel-box 37 are capable of a swinging movement with respect to the engine-casing 25, as by the arrangement described the swivel-box 37 is free to turn within the engine-casing without in any wise affecting said casing. This arrangement is provided for the purpose of permitting the free movement of the engine-casing 25 in the movement of the vehicle-body and its frame on its springs without causing sudden strain upon the sprocket-wheels 20 and 36 and the drive-chain 21, inasmuch as in such movement of the parts the strut-tubes 22 constantly hold the gear-box 19 and swivel-box 37 equidistant from each other and prevent alteration of their relative positions. As the swivel-box connection within the casing 25 provides for free

movement of the parts to which it is connected and by which it is surrounded, it will be readily seen that all movement of the vehicle-body, its frame, and engine carried thereby are compensated for by reason of the turning of the swivel-box within its inclosure. Therefore in the swinging of the vehicle-body frame and the downward and upward movement thereof the engine-casing 25 moves with said body-frame, and the swivel-box 37 turns sufficiently to permit of necessary movement of the casing without causing strain upon the drive-chain sprocket-wheels or the parts by which said sprocket-wheels are carried, with the exception of the strut-tubes 22. The swivel-box 37 is adapted to receive the oil descending in the casing 25 about the mechanism of the engine, and the oil passes from said box through the flexible branch pipe 28^a of the oil-conducting pipe 28, from which it is again raised to the oil-well 26 by the pump 29.

38 designates ledges overhanging the upper edges of the swivel-box 37, from which the oil is shed into the swivel-box and prevented from passing into the space between the engine-casing and said swivel-box. These ledges also serve as supports for the engine-casing 25 by reason of their engagement with a cap 39 on the hanger-rods 31, that prevents the oil descending in the casing 25 from falling onto the gear-wheel 36. The cap 39 is provided with a hooked extension 39^a, (see Fig. III,) that projects through the casing 25 and receives the connection of a bracket 30, attached to the frame of the vehicle and through the medium of which the casing 25 is held from movement in relation to the vehicle-body frame.

40 designates partition and thrust-receiving plates that separate the oil-receiving pockets of the swivel-box 37 from the inclosure within which the sprocket-wheel 36 is contained to exclude oil from obtaining access to said inclosure and therefrom into the strut-tubes 22 to the trussing-gear box 19. The bearings of the crank-shaft 33 pass through these partition-plates 40 and turn freely in antifriction-bearings 41. In addition to excluding oil, as stated, the partition-plates 40 serve to receive the thrust of the crank-shaft 33 in the strain of the coexisting parts.

42 designates guards inclosing the lower parts of the partition-plates 41, that catch any oil that may pass through the antifriction-bearings 41 into the inclosure occupied by the sprocket-wheel 36 and by which the oil is returned to the pockets of the swivel-box exterior of said plates.

In conclusion, I will recapitulate the novel and advantageous features comprising my invention: The swiveling connection provided between the swinging vehicle-body frame and parts carried thereby and the driving-gear of the vehicle having swiveling connection with the engine-casing by the swivel-box 37, located in the engine-casing and car-

ried by the strut-tubes 22, that are in turn connected to the trussing-gear box 19; the housing and inclosure arrangement whereby the operating mechanism of the vehicle is protected against the encroachment of dust or dirt; the arrangement of parts within the swivel-box 37, whereby the oil used to lubricate the operating mechanism of the engine is excluded from access to the driving gear of the vehicle; the trussing-gear box on the tubular truss 13, that trusses said tubular truss against strain; the strut-tubes 22, which serve as casings for the drive-chain 21 and form connections between the trussing-gear box 19 and swivel-box 37, whereby sudden strain upon the driving-chain is obviated; the means for continuously oiling the engine mechanism within its casing 25.

All of the foregoing parts act in harmony and unison with each other, and by the construction of a vehicle containing them I produce a structure wherein there is a minimum of strain effected upon the various parts and in which the operations are of the greatest freedom.

The parts of the vehicle herein shown and described are all connected in simple manner, so that they may be readily separated at any time for repairs or replacement of parts. It will be seen that the connections are all separable and so made as to be removable one from another without interference with other parts. Another advantageous feature of construction lies in the arrangement of the application of the engine-casing 25 and the swivel-box 37 to the operating mechanism of the engine. The casing 25 being of sectional form is readily separated and removed, and the swivel-box 37 may be lowered away from the engine mechanism to expose said mechanism for access.

I have shown and described the body-frame of the vehicle as swingingly supported upon the vehicle-springs and the engine-casing 25 held to the body-frame so as to be incapable of independent movement, and necessarily the swinging of the vehicle-body and frame compensates for the swinging of the swivel-box 37 and strut-tubes 22 in change of position of said parts in relation to the driving-axle of the vehicle. It is obvious, however, that the same result may be accomplished by fixing the body-frame rigidly to the supporting-springs, so that upon dispensing with the casing holding bracket 30 the engine and casing may be permitted to swing with relation to the vehicle-body and its frame, (the engine swinging upon its trunnions 23^a.) and thus the same movement of the parts be obtained with respect to the swivel-box 37, turning within the engine-casing to compensate for the difference of movement between the vehicle-body and its frame and said swivel-box and parts connected thereto. In this connection it may be stated that the pipes connected to the engine must necessarily be flexible.

I claim as my invention—

1. A motor-vehicle comprising an axle operatively connected to a motor to be driven thereby, a casing for said axle arranged to act as a beam and constituting part of the frame of the running-gear, said vehicle comprising a member extending from the axle-casing to the motor shaft or frame for positioning said shaft, and said member being arranged to incase the mechanism for transmitting power from said motor to said axle.

2. In a motor-vehicle having a chain-driven axle, a side-bar running-gear, a casing for said chain and said axle consisting of a central portion for incasing the gearing and tubular extensions for incasing the axle and a portion extending from said axle to said motor for incasing said chain, said tubular extensions being rigidly fixed to the central portion and connected to the side bars of the running-gear, whereby said casing constitutes part of the running-gear frame.

3. In a motor-vehicle, a driving-motor pivotally mounted on the vehicle-body and operatively connected to an axle of said vehicle, a casing for said axle journaled concentric therewith, said casing having a laterally-projecting portion arranged to incase the connecting mechanism, and said projecting portion being pivotally connected to the motor-frame or casing and constituting a strut between it and said axle-casing.

4. In a motor-vehicle, a driving-motor pivotally mounted on the vehicle-body, and a driving-chain for transmitting motion from said motor to an axle of said vehicle, a casing journaled concentric with said axle and having tubular portions projecting laterally therefrom, said tubular projections being pivotally connected to the motor-frame or casing and constituting a case for said chain and a strut between the motor and the axle-casing.

5. In a motor-vehicle, the combination of the housed or incased motor and driving-gear mounted respectively upon the body and running-gear of the vehicle, and having driving connection one with the other, and an inclosure for the said driving connection, permitting relative movement between the housings for said motor and driving-gear.

6. In combination with a motor and its driving-gear, a continuous housing inclosing both said parts, but permitting relative movement between them, whereby they may be respectively mounted on different parts of a vehicle, that move to or from each other in use.

7. In a motor-vehicle, the combination of a swingingly-supported vehicle-body, an engine mounted on said body, a casing inclosing said engine, a swivel-box mounted in said engine-casing, driving-gear, and means for housing said driving-gear having connection with said swivel-box, substantially as described.

8. In a motor-vehicle, the combination of

a swingingly-supported vehicle-body, an engine carried by said body, a casing inclosing said engine, a swivel-box mounted in said engine-casing, driving-gear, a gear-box, and 5 strut-tubes connecting said gear-box and said swivel-box, substantially as described.

9. In a motor-vehicle, the combination with an engine, of a casing carried thereby, driving-gear, a housing inclosing said driving- 10 gear, and having swiveling connection with said engine-casing, and means for continuously supplying lubricant to the interior of said engine-casing, substantially as described.

15 10. In a motor-vehicle, the combination with an engine, of a casing carried thereby, driving-gear, a housing inclosing said driving-gear having swiveling connection with said casing, and means within said casing ar- 20 ranged to prevent the passage of lubricant from said casing into said gear-housing, substantially as described.

11. In a motor-vehicle, the combination

with an engine, of a casing carried thereby, a swivel-box mounted in said casing, driving- 25 gear, means for housing said driving-gear having connection with said swivel-box, and means located within said swivel-box for housing the driving-gear therein, substan- 30 tially as described.

12. In a motor-vehicle, the combination with the engine mechanism, of a separable casing and a swivel-box inclosing said engine mechanism, substantially as described.

13. In a motor-vehicle, the combination of a 35 vehicle-body, an engine carried by said body, a casing inclosing said engine, driving-gear having connection with said engine, means for housing said driving-gear, and means 40 whereby said engine-casing and said driving-gear housing are swingingly connected, substantially as set forth.

STUART E. FREEMAN.

In presence of—

E. S. KNIGHT,

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