

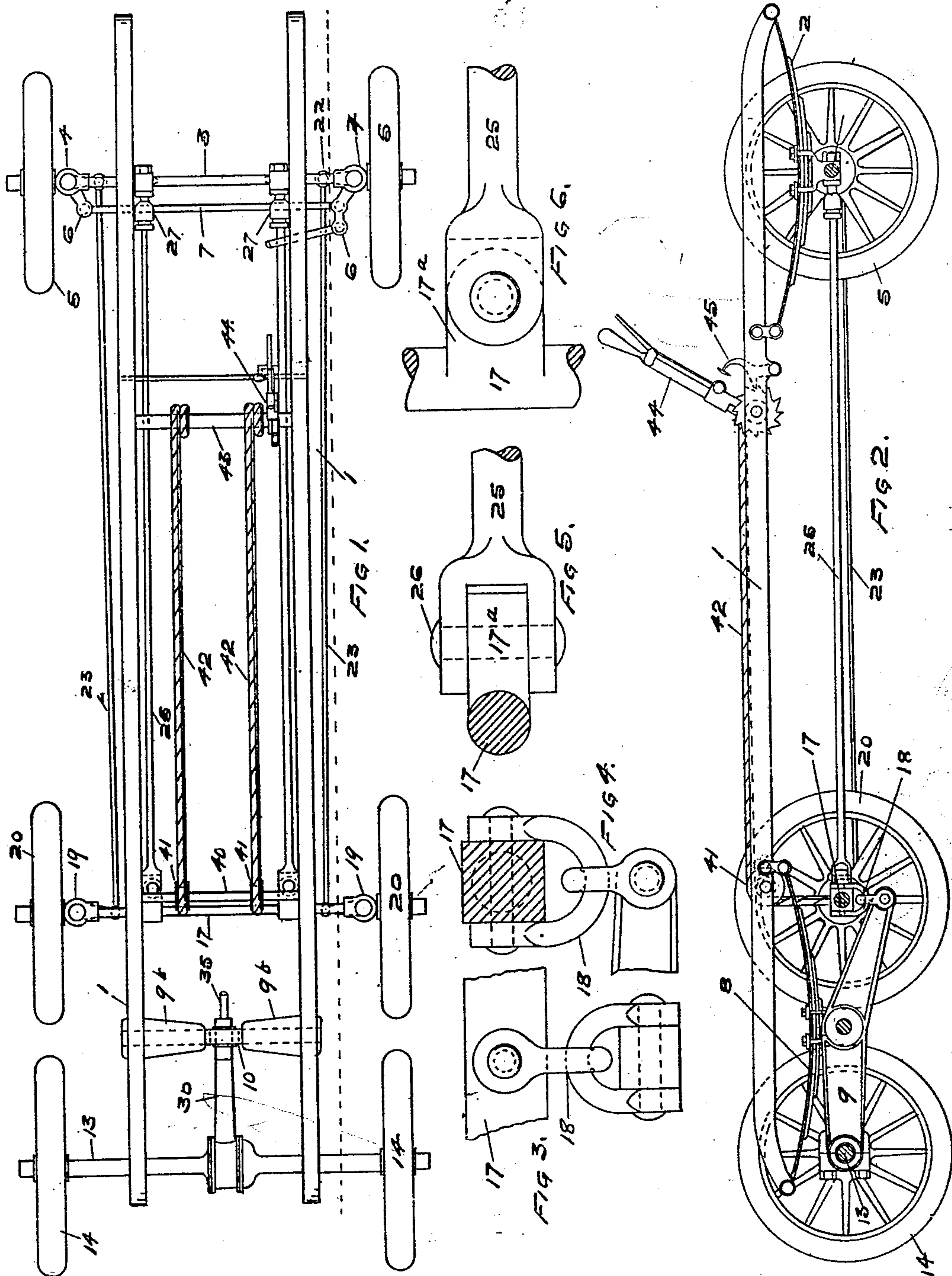
No. 878,156.

PATENTED FEB. 4, 1908.

C. T. PRATT.
AUTOMOBILE RUNNING GEAR.

APPLICATION FILED APR. 10, 1907.

4 SHEETS—SHEET 1.



WITNESSES.

W. G. Stone,
S. E. Clark.

Charles T. Pratt. INVENTOR

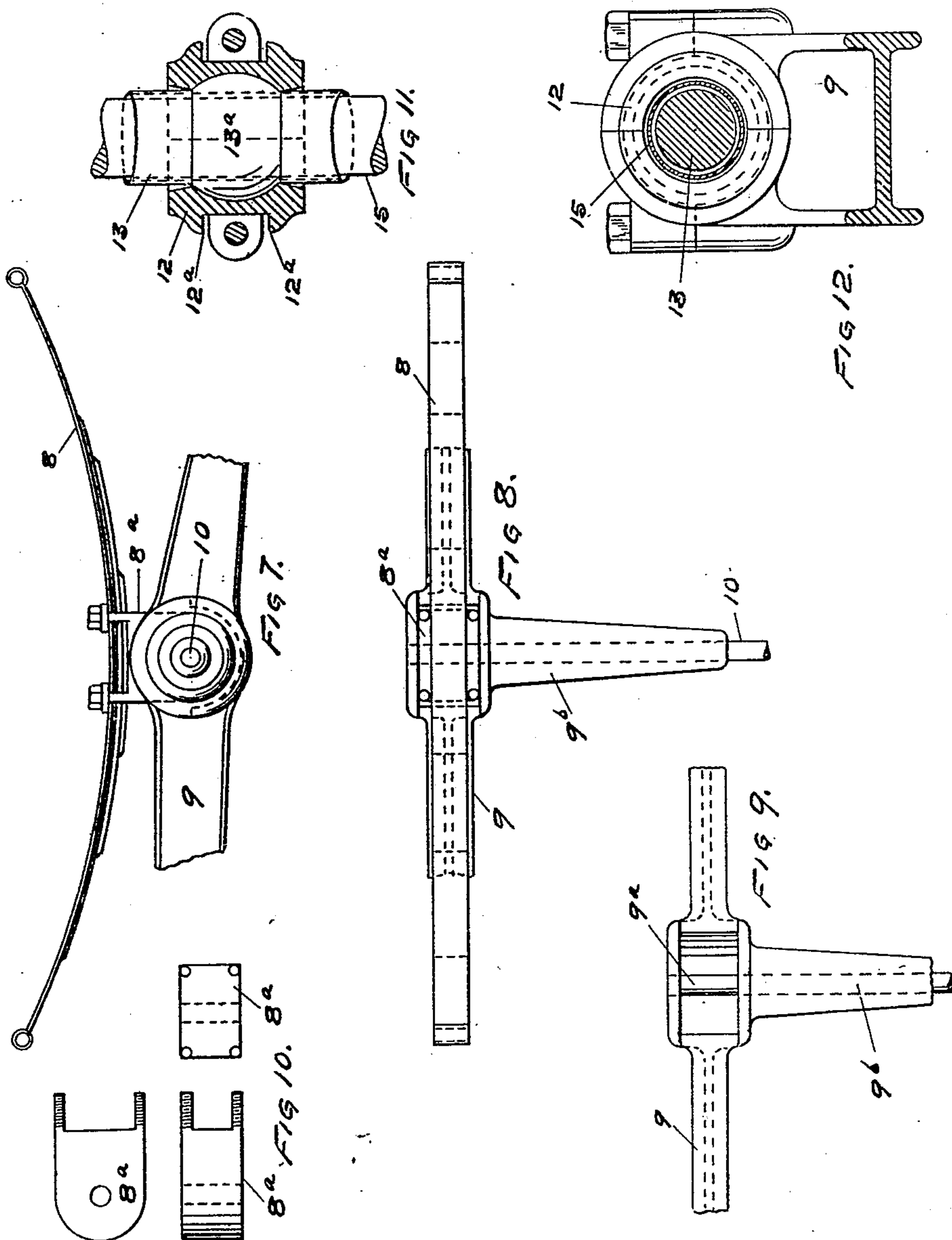
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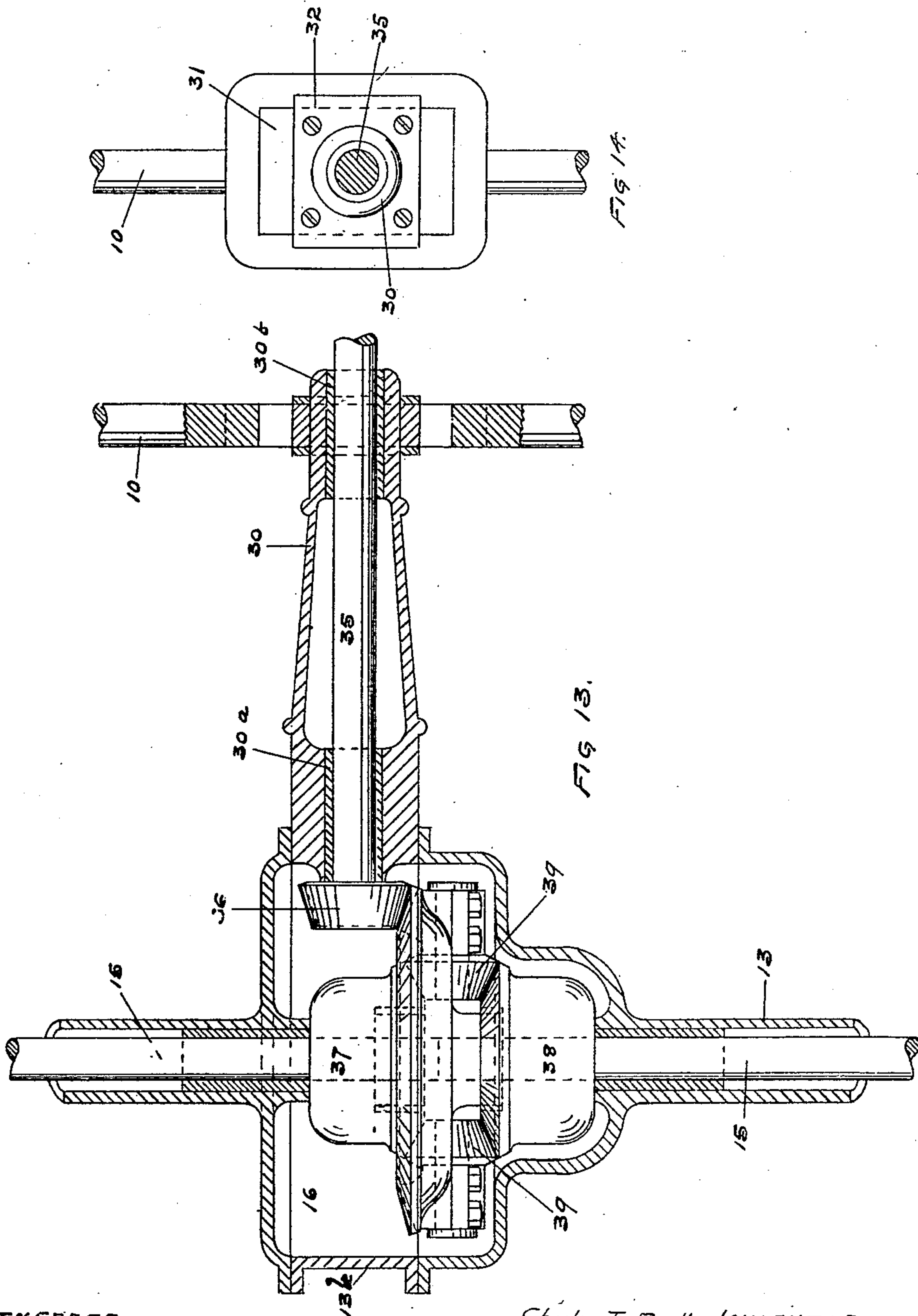
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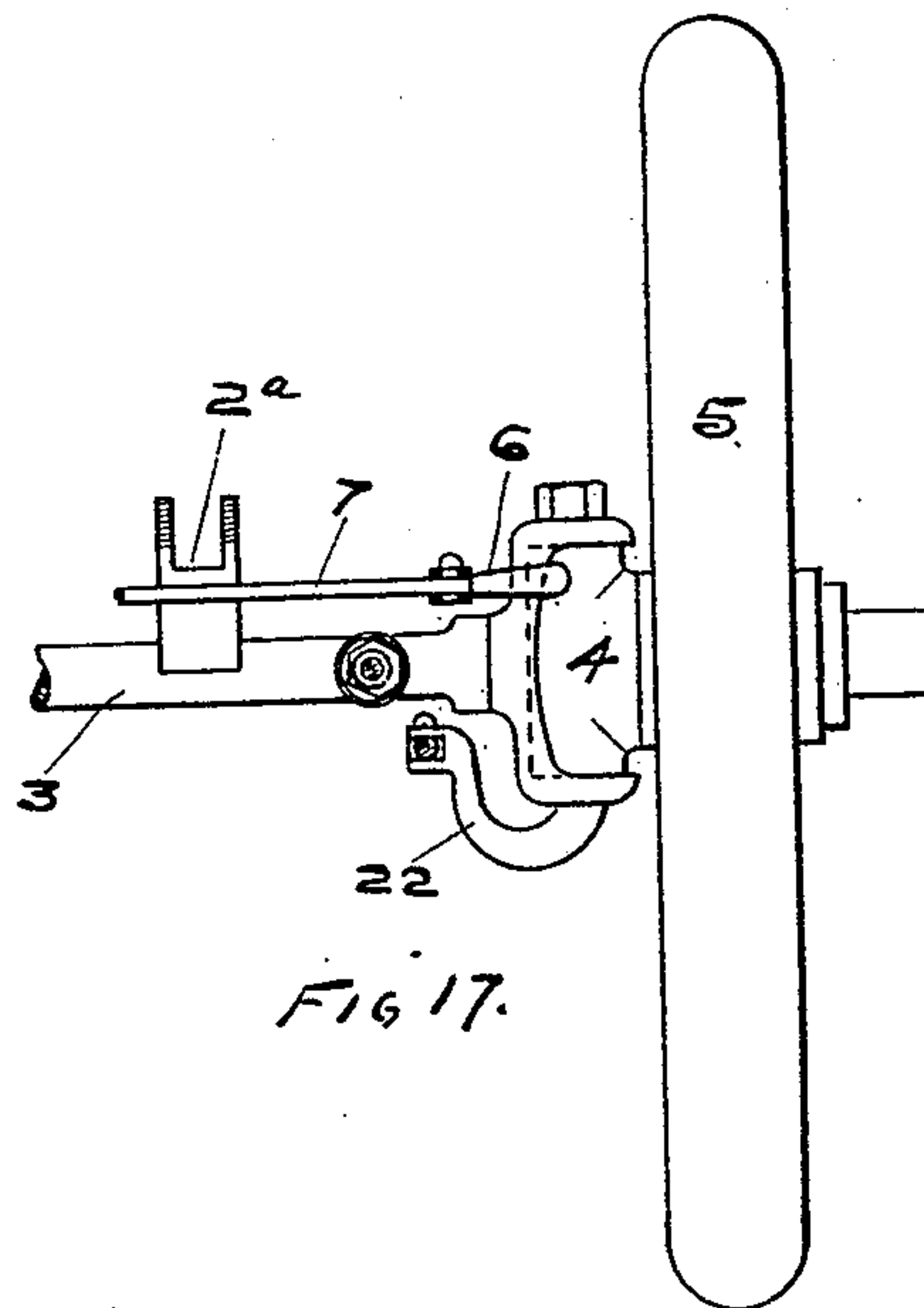
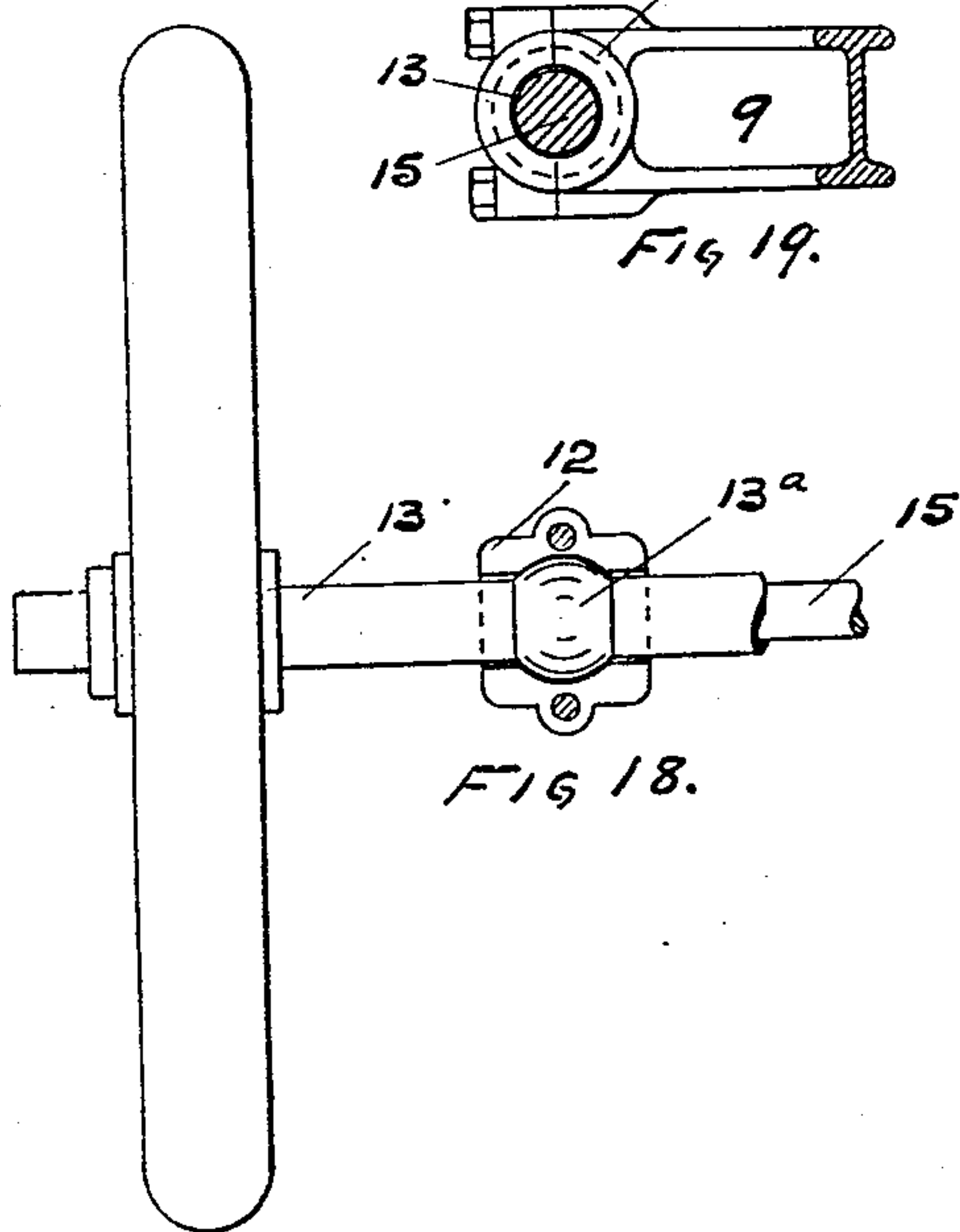
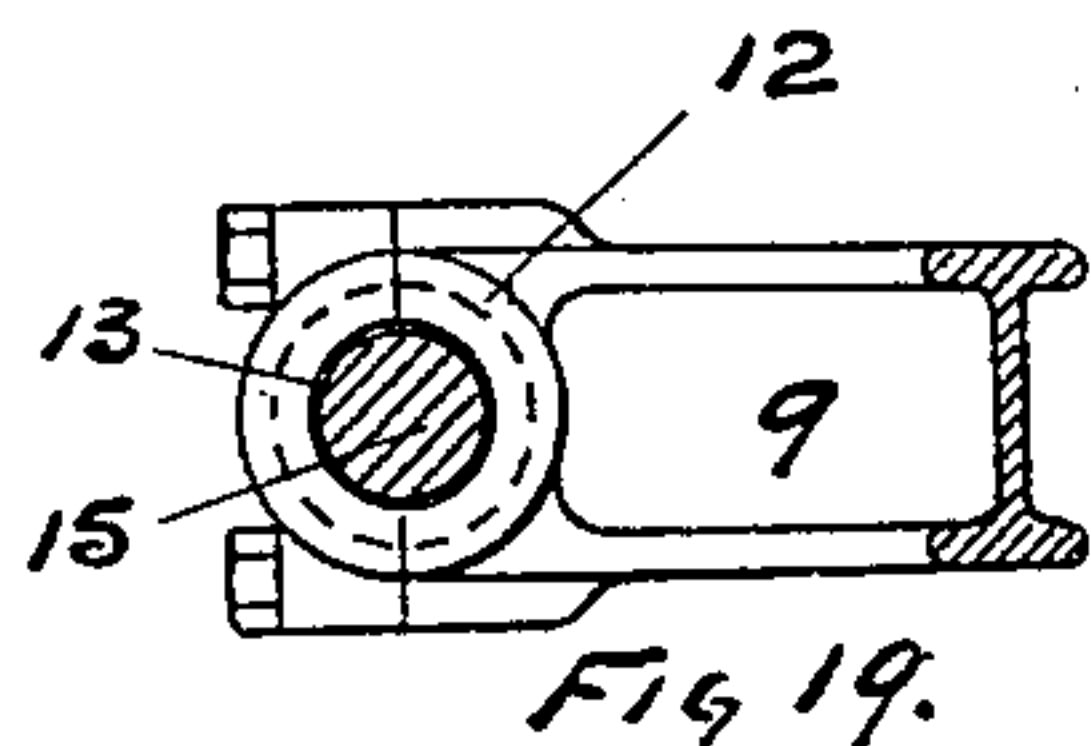
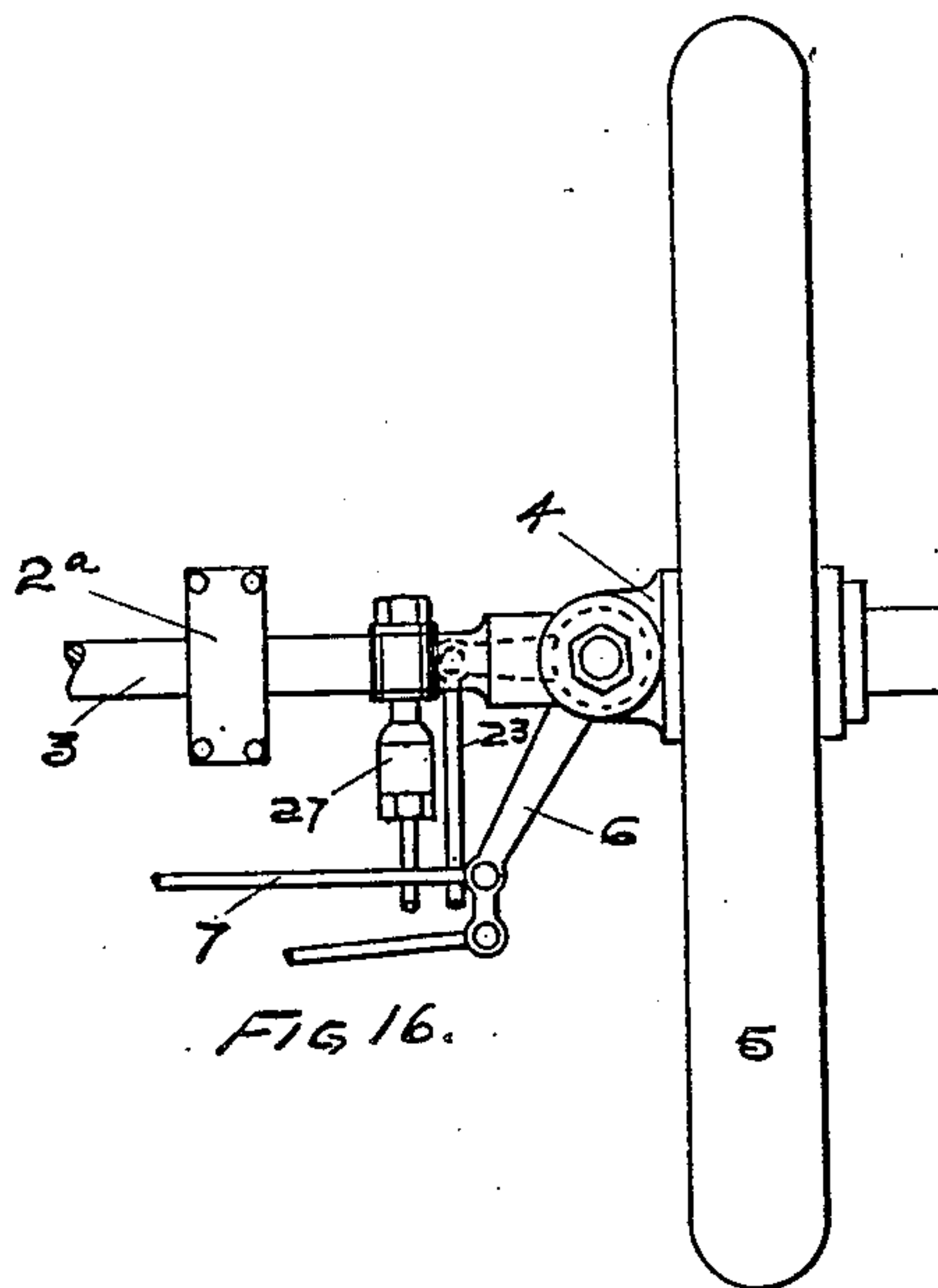
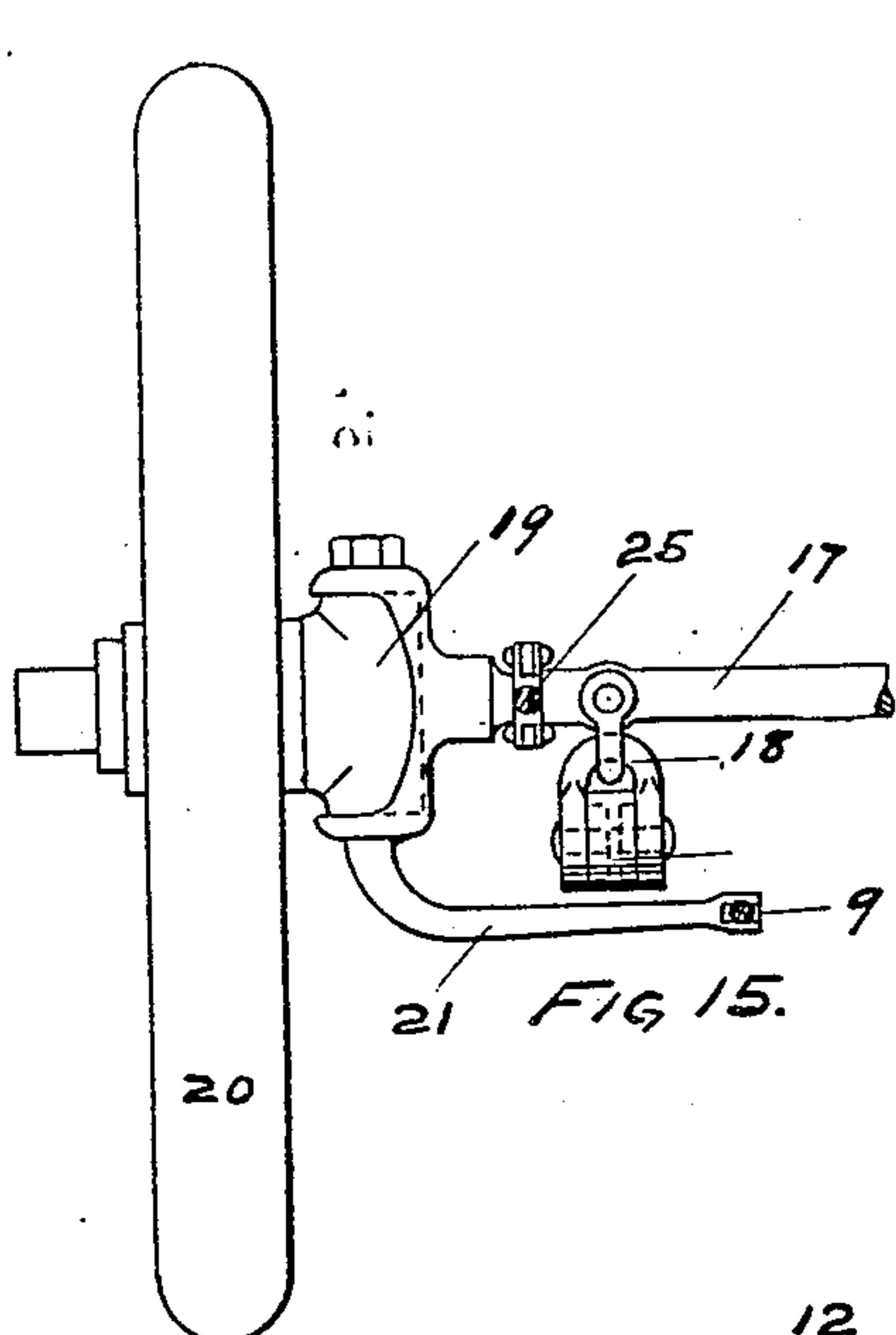
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UNITED STATES PATENT OFFICE.

CHARLES T. PRATT, OF FRANKFORT, NEW YORK.

AUTOMOBILE RUNNING-GEAR.

No. 878,156.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed April 10, 1907. Serial No. 367,308.

To all whom it may concern:

Be it known that I, CHARLES T. PRATT, of Frankfort, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Automobile Running-Gears; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The object of my present invention is to provide an improved running gear for automobiles of that class which have six carrying wheels wherein provision is made for strength and flexibility, for transmitting the power to the traction wheels without undue strain or friction, for throwing additional weight on to the traction wheels when desired and for steering four of the six wheels in an improved manner.

Other minor features of improvement are also incorporated as will hereinafter appear.

Figure 1 shows a plan view of the running gear. Fig. 2 shows a side elevation of the same. Figs. 3 and 4 are detail views of a shackle connection employed in the construction. Figs. 5 and 6 are detail views of a joint or connection employed in the frame. Fig. 7 is a side elevation of one of the rear springs with details of its connection to the lever on which it is supported. Fig. 8 is a plan view of what is shown in Fig. 7. Fig. 9 is a plan view of a portion of one of the rear supporting levers, together with additional features which enter into the construction. Fig. 10 shows three detail views of a base or block on which the rear spring shown in Fig. 7 is directly mounted. Figs. 11 and 12 are details of a bearing employed in the rear axle. Fig. 13 is a detail view on an enlarged scale and partially in section showing the manner in which the power is applied to propel the vehicle. Fig. 14 is a detail of a slide employed in the truck-frame shaft. Fig. 15 is a detail showing a front view of a portion of the intermediate axle with its joint for mounting the wheel and other details in the immediate vicinity. Fig. 16 is a plan view of one of the front steering wheels with details of the construction immediately adjoining. Fig. 17 is a rear elevation of a portion of the front axle showing the manner in which the steering wheel is mounted and

other details immediately adjacent thereto or connected therewith. Fig. 18 is a plan view of a portion of the rear axle in connection with a wheel on the axle. Fig. 19 is a detail of one of the bearings on the rear axle.

Referring to the reference letters and figures in a more particular description, 1 indicates the side bars of the frame on which the body (not shown) is directly mounted. The body frame is carried at the front end by half elliptical springs 2 which are mounted on the front axle 3 on spring bases 2^a provided on the front axle. The front axle is provided with the usual knuckle 4 carrying the bearing of the front wheel 5 and a lever arm 6 for swinging the knuckle to steer the wheels and to provide a means for connecting the wheels on the opposite sides together for simultaneous movement by the rod 7. The rear end of the body frame is carried on half elliptical springs 8, which springs are supported by side levers 9. The levers 9 are provided with a pocket 9^a in which the spring base block 8^a is received, and is pivotally mounted for a limited amount of backward and forward swinging movement on the end of shaft 10, which passes through the part 8^a and through the levers 9 as well as through the spacing sleeve 9^b. A bearing box 12 at the rear end the side lever 9 receives or is mounted on the rear axle 13 which is tubular. The bearing box 12 is arranged to receive the globular enlargement 13^a of the rear axle, which also is arranged on the axle and provides a flexible and to a limited extent universal joint or bearing as between the rear end of the side lever 9 and the rear axle. The box 12 is also allowed a limited amount of lateral play with reference to the lever by having the flanges 12^a separated to a greater extent than the width of the clamps which hold it.

The rear ground and traction wheels 14 are mounted at the outer ends of the rear axle 13 by being secured on the projecting ends of the shafts 15, which extend through the tubular rear axle and from substantially the middle line of the machine where they severally connect with the transmission gearing 16, which is contained in a box-like enlargement 13^b of the rear axle. The forward ends of the levers 9 are dropped downwardly and under the intermediate axle 17 to which they are flexibly connected by a shackle 18 consisting of interlocking clevises engaging with the axle and forward end

of the side levers 9, respectively. The axle 17 is provided with the pivoted knuckle 19 which furnishes a bearing for the intermediate ground wheel 20. The knuckle 19 is provided with a fixed lever arm 21 by means of which the wheel 20 is steered. These steering arms 21 of the intermediate axle are connected with arms 22 on the knuckles 4 of the front axle by connecting rods 23 and the lengths of the arms 21 and 22 are proportioned according to the length of the body, so that the wheels 5 and 20 will take relatively proper angles in steering or turning the vehicle. The front axle 3 and the intermediate axle 17 are connected adjacent to their outer ends by parallel reach rods 25, which rods at their rear ends are connected to the axle 17 by the form of joint shown in Figs. 5 and 6, that is to say: the axle 17 is provided with an ear 17^a extending in a horizontal plane, which ear receives the forked rear end of the reach 25 and the pivotable pin 26 is passed through the two pieces. This allows a movement in a horizontal plane and serves to hold the axle 17 against a tendency to rotate in conjunction with the wheel 20. The forward end of the reach 25 is connected with the forward axle 3 by a ball and socket joint 27, which permits within certain limits a universal movement at this point.

The transmission gear case 13^b constituting a portion of the rear tubular axle, as before stated, is provided with an arm 30 which projects forwardly to and engages in a slotted opening 31 in the truck shaft 10, as more particularly shown in Figs. 13 and 14. There is provided an intermediate sliding box or case 32 arranged in the opening 31 to slide freely longitudinally in the opening 31, and the end of the case 30 is made cylindrical to engage with the bearing 32 and to enable the casing 30 to have a rotary movement in the box 32. The main driving shaft 35 from the engine or motor is brought in through the tubular arm 30 in which it would preferably have bearings at 30^a and 30^b and is provided within the case 16 with the beveled gear pinion 36 engaging with the transmission gear, which may be of any common form of construction, the one shown consisting of the member 37 on one section of the shaft 15 and the member 38 on the other section of the shaft 15, each having beveled gear faces engaging with the ordinary planet gears 39 and the member 37 having also a face of beveled gear teeth engaging with the pinion 36.

In order to enable additional weight to be thrown on to the traction wheels 14 when desired, there is provided in the body frame 1 supported on a shaft 40 grooved pulleys 41. These pulleys are arranged nearly directly over the intermediate axle 17, and cables 42 are provided connecting with this axle and passing over the pulleys 41 to a point on the

forward portion of the frame where they are adapted to be wound on to a reeling shaft 43. A lever and catch 44 engaging with a ratchet wheel on the shaft 43 are provided by means of which the shaft can be rotated and the cables 42 wound up and drawn tight.

45 is a pawl or catch adapted to lock the shaft 43 against rotation and arranged to be disengaged by the foot.

The spacing sleeves 9^b of the side levers 9 are adapted to engage at their adjacent inner ends with the enlargement of the shaft 10, which provides the opening 31 whereby the levers 9 are held spaced against inward movement and by a head or nut provided on the outer ends of the shaft 10 the levers 9 are held against separation laterally, and yet these levers are free to vibrate independently in vertical planes each rotating on the end shaft 10 as a pivot.

It will be noted that the re-action from the application of the driving power to the transmission gear is taken on the shaft 10 and thence by the levers 9 in a most desirable manner, and while still providing for sufficient flexibility in the truck which carries the rear end of the body frame.

The intermediate pair of wheels serve to prevent what is ordinarily termed "skidding," and it will be noted that in cases of necessity a large part of the load which is ordinarily carried by the intermediate ground wheels can be temporarily thrown on to the traction wheels to secure additional adhesion for traction purposes when required in difficult places. The reach rods 25 serve to connect the forward and intermediate axles and hold them at a definite distance apart, which gives strength to the running gear as a whole and also enables the connecting rods 23 of the steering mechanism to operate more satisfactorily in that the distance between the front and intermediate axles is maintained uniform. The shackle 18, which connects the forward end of the side lever 9 with the intermediate axle, permits such freedom of movement that in connection with the globular bearing at the rear end of the side lever 9 any one of the four wheels constituting the rear truck can be elevated or depressed to a large degree without any straining or binding in the rear truck, or interference with the regular and proper operation of the propelling mechanism.

What I claim as new and desire to secure by Letters Patent is:

1. The combination in an automobile running gear of the frame and axle and pair of steerable ground wheels carrying one end of the frame, and pair of independent levers intermediately pivoted to the frame, an axle and pair of ground wheels carrying the rear ends of said levers and an axle and steerable pair of ground wheels carrying the forward ends of said levers and connected therewith

by a suspending shackle all arranged to carry the other end of the frame, substantially as set forth.

2. The combination in an automobile running gear of a frame and axle and pair of steerable ground wheels carrying the forward end, a pair of independent longitudinally arranged levers hinged at an intermediate point to and supporting the rear end of the frame, an axle and ground wheels carrying the rear ends of said levers, an intermediate axle and steerable ground wheels carrying the forward end of said levers, and parallel reach rods connecting the front and intermediate axles, substantially as set forth.

3. The combination in an automobile running gear of a frame, an axle and pair of steerable ground wheels carrying the forward end, a pair of longitudinally arranged side levers on which the rear end of the frame is pivotally mounted, a transverse shaft arranged intermediate the length of said levers on which said levers are pivotally mounted, a rear axle on which the rear ends of said side levers are mounted, and an intermediate axle on which the forward end of said levers are mounted, an arm from the rear axle to said shaft and ground wheels provided on said rear and intermediate axles, substantially as set forth.

4. The combination in an automobile running gear of a body frame and means for carrying and steering the forward end, a truck carrying the rear end consisting of a rear and intermediate axles and longitudinally extending side levers flexibly connected to the rear and intermediate axles, a transverse connection between the said

levers on which they are respectively pivoted, an arm from the rear axle to said transverse connection, a pair of traction wheels provided on the rear axle and a pair of steerable ground wheels provided on the intermediate axle, and means for applying power to the traction wheels through the rear axle, substantially as set forth.

5. The combination in an automobile running gear of a body frame, a forward axle, a rear axle and an intermediate axle, steerable ground wheels provided on the forward and intermediate axles, reach rods connecting the forward and intermediate axles and steering rods connecting the forward steerable wheels with the intermediate steerable wheels, substantially as set forth.

6. The combination in an automobile running gear of a body frame, an axle and pair of steerable ground wheels carrying the forward end, a pair of longitudinally arranged side levers hinged to the frame and carrying the rear end of the body, a rear axle and traction wheels supporting the rear ends of said side levers, an intermediate axle and ground wheels carrying the forward end of said levers, and adjustable means connecting the intermediate axle with the body whereby additional weight may be thrown on to the traction wheels, substantially as set forth.

In witness whereof, I have affixed my signature, in presence of two witnesses, this 8th day of April 1907.

CHARLES T. PRATT.

Witnesses:

GEO. E. RENDELL,
E. S. HESSE.