

No. 672,030.

Patented Apr. 16, 1901.

D. T. CLARK.
MOTOR VEHICLE.

(Application filed Oct. 8, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

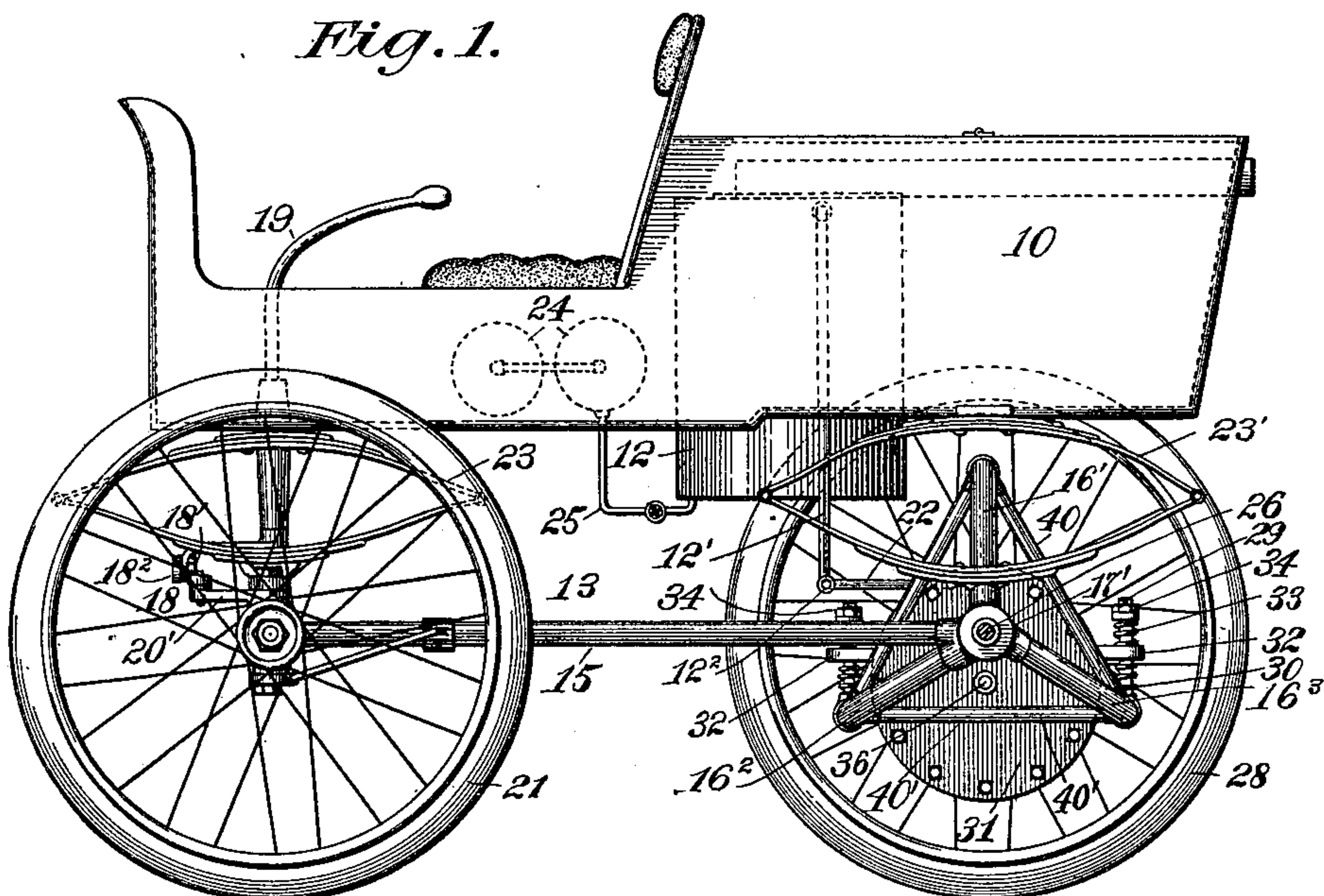
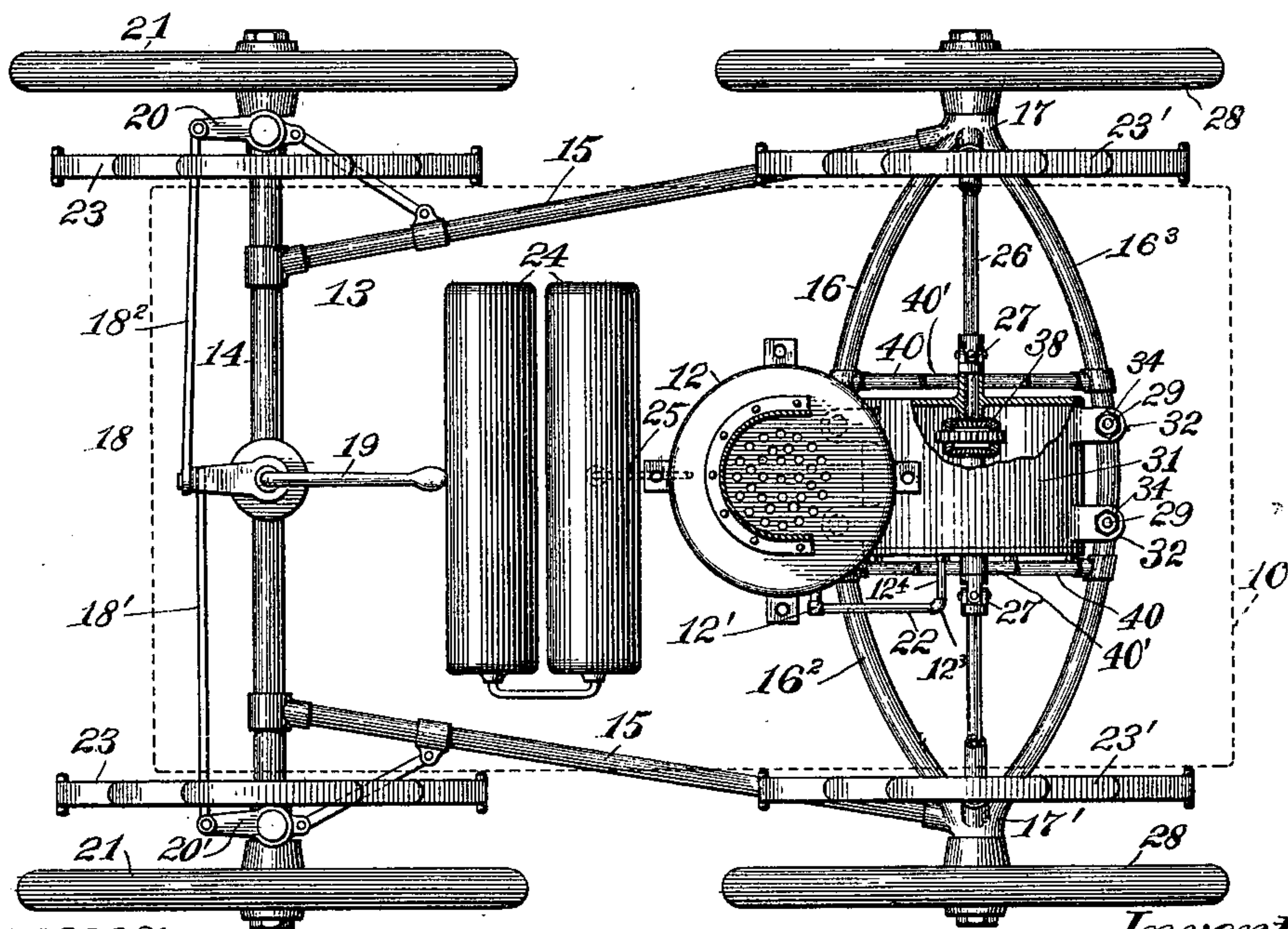


Fig. 2.



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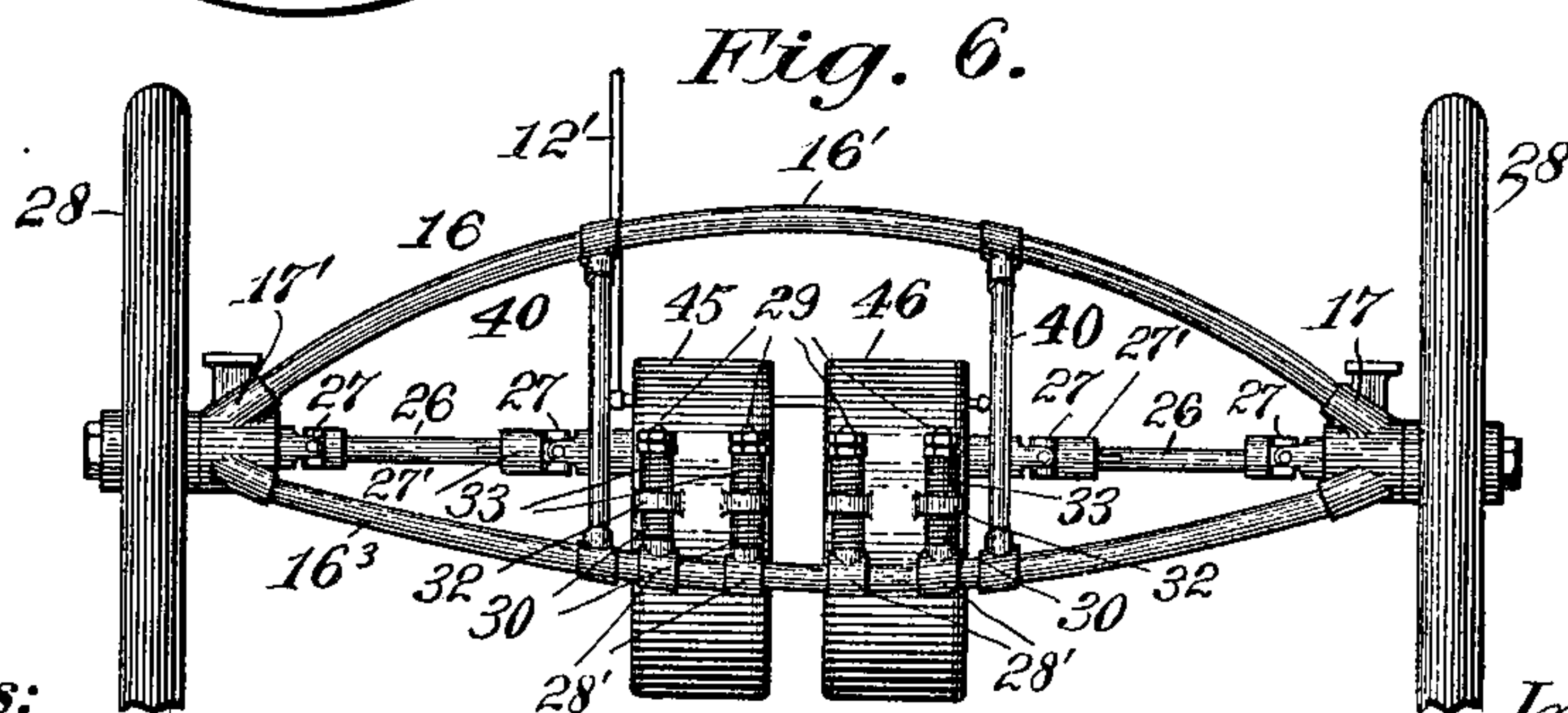
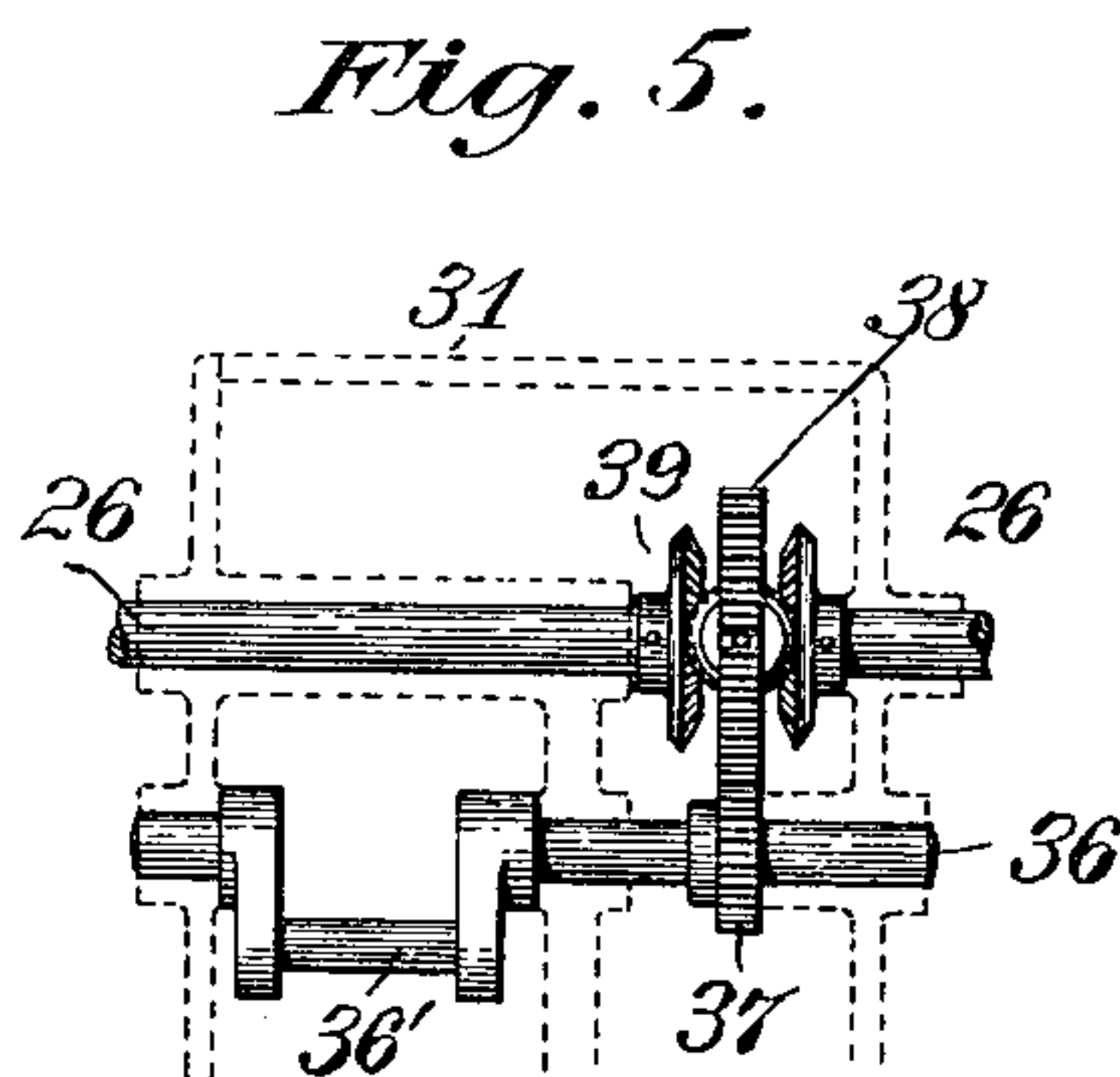
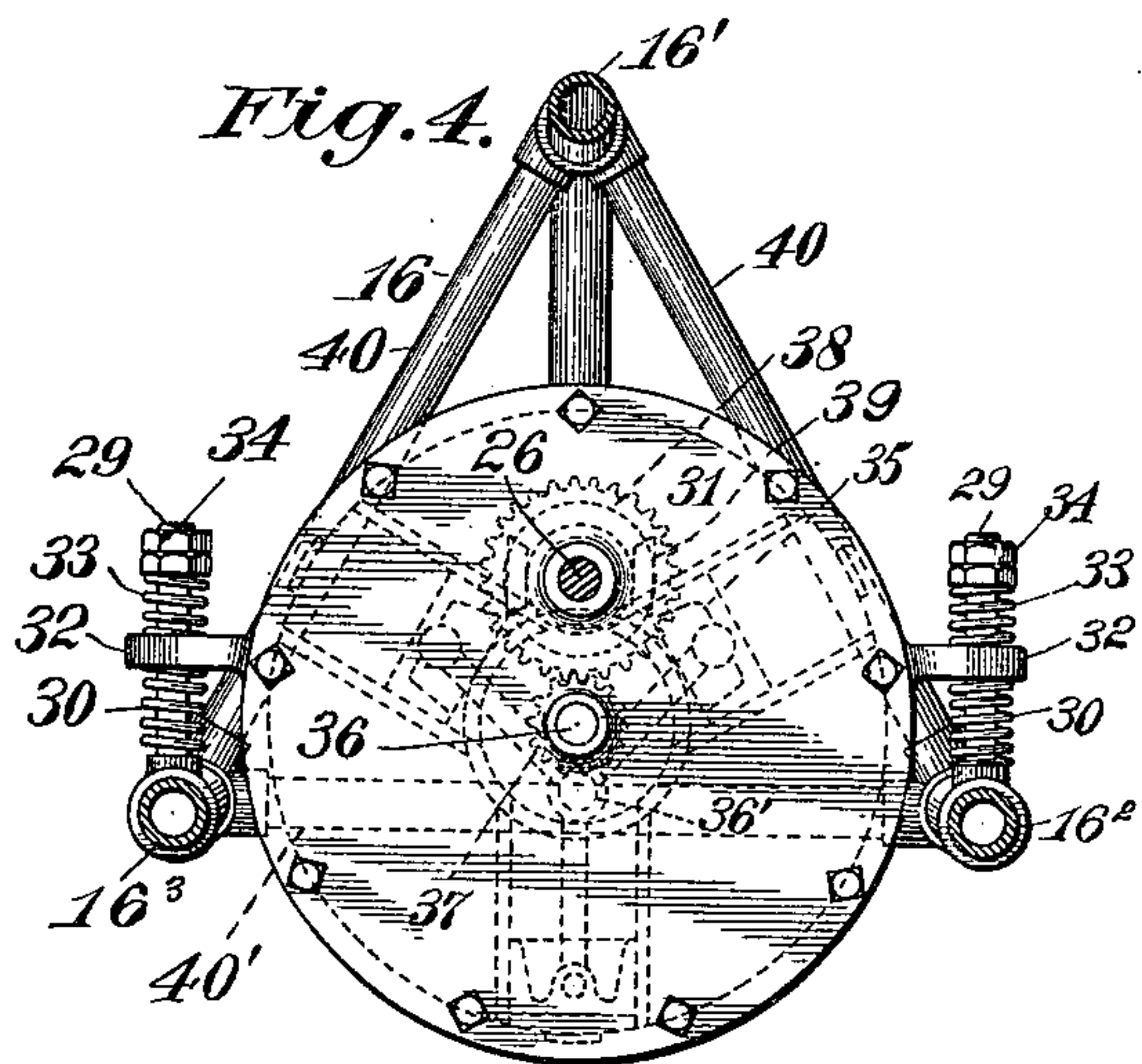
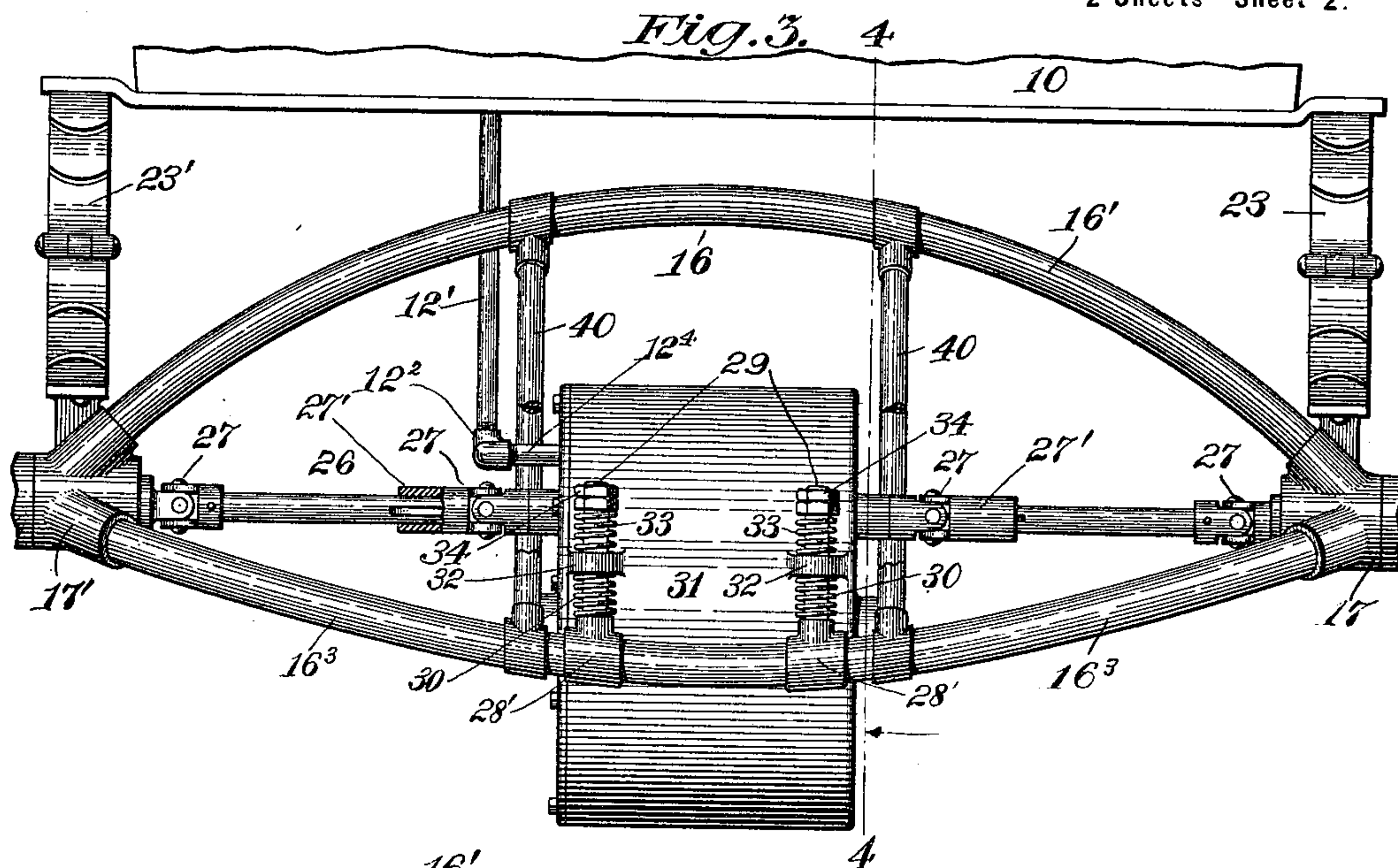
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

DANIEL T. CLARK, OF CLEVELAND, OHIO.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 672,030, dated April 16, 1901.

Application filed October 8, 1900. Serial No. 32,362. (No model.)

To all whom it may concern:

Be it known that I, DANIEL T. CLARK, a citizen of the United States, residing in Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Motor-Vehicles, of which the following is a specification.

This invention relates to motor-vehicles, and particularly to the running-gear thereof.

Primarily the object of the invention is the production of a running-gear frame of improved construction whereby the gearing for actuating the driving-axle of the vehicle may be supported in such a manner that it will be kept in correct engagement notwithstanding the character of the road-bed over which the vehicle is traveling and whereby it will not be affected by the jolting, swerving, or tilting of said vehicle.

A further object of the invention is the provision of yielding connections between the running-gear frame and the frame or other part for sustaining the motor, the construction being such that the gearing of the driving-axle and the motor will be prevented from disalignment, all movements of the parts due to jolting or jarring of the vehicle will be compensated for and taken up, and the weight of the motor will not be borne by the axle.

A further object of the invention is the provision of a truss-frame of peculiar construction for supporting the motor in such a manner that its weight will not be sustained by the axle.

In the accompanying drawings, Figure 1 is a side elevation of a motor-vehicle with my invention applied thereto. Fig. 2 is a plan view partially in section. Fig. 3 is an end view of a portion of the vehicle, showing the improved truss-frame, and also illustrating the sectional driving-axle and its universal joints. Fig. 4 is a section on line 4 4, Fig. 3, looking in the direction of the arrow. Fig. 5 is a plan view of a compensating gear, showing a manner in which power may be applied to the sectional driving-axle. Fig. 6 is a view similar to Fig. 3, but drawn to a smaller scale, illustrating multiple motors for operating the vehicle.

Similar characters designate like parts throughout the several views.

Referring to the drawings, the numeral 10 designates the body of a motor-vehicle which may be of any desired kind, but is shown as of the steam variety, 12 representing a steam-generator located in said body.

The numeral 13 designates in a general way the running-gear frame of the vehicle, which is composed of a front axle or cross-bar 14, reach-rods or side bars 15, and an improved truss-frame (designated in a general way by 16) for supporting the motor and the parts coöperating therewith. This truss-frame, as illustrated, is composed of three curved rods or tubes, preferably the latter, shown triagonally disposed and merging in tubular end portions 17 17', containing sockets for the reception of the reaches 15 and serving as bearings for the driving-axle; but while this arrangement is preferable these rods may be differently disposed and the number thereof may be varied, as desired.

Suitable steering mechanism (designated by 18) and under the control of the operator by means of a lever or handle 19 is employed, and this steering mechanism consists in the exemplification given of links 18' 18², connected to levers 20 20', for actuating the swiveling hubs of the steering-wheels 21.

Depending from the steam-generator 12, or it may be from any other suitable generator for the motive fluid, is a pipe 12' for conveying steam to the motor, and this pipe is articulated at 12² to another pipe 22, leading to the cylinder of said motor.

Suitable springs 23 23' are employed for sustaining the body of the vehicle in a well-known way, and the usual air and fuel tanks 24 are located in the body of the vehicle, a pipe 25, controlled by a suitable valve, leading from one of said tanks to the burner of the steam-generator.

The rear or driving axle of the vehicle is designated by the numeral 26, and it is composed of sections which are united to each other by universal joints 27, for a purpose hereinafter explained, the driving-wheels 28 being fastened to said axle in the ordinary way. Two of these joints are carried by sleeves 27', splined to and fitted for sliding movement upon the axle, whereby the sections of said axle will be permitted to telescope and conform to the movements of the

motor when the wheels are passing over an uneven surface—as, for instance, when one side of the vehicle is raised higher than the other.

5 Sleeved upon two of the truss-rods 16² 16³ are fittings 28' for the reception of bolts 29, and on each of these bolts is mounted a coiled or spiral spring 30.

10 The numeral 31 designates a motor-carrying frame (shown as a casing) provided at each of its sides with a pair of laterally-projecting perforated lugs 32, through which the bolts 29 pass, these lugs resting upon the top of the spiral spring 30, as shown in Figs. 1, 3, 15 and 4. Surrounding said rod above the perforated lugs 32 of the frame 31 are springs 33, the tension of which may be regulated by nuts 34.

20 Located within the frame in the construction illustrated is a motor 35, which may be of any desired kind, but is shown as a triple-cylinder engine, the piston-rods of which are connected with a crank 36' on a shaft 36, journaled in said frame, and also carried by this 25 shaft is a gear 37 in mesh with the gear 38 of a compensating gear 39 of common construction and connected with the sectional axle, where it accomplishes the usual result.

30 Connecting the curved rods or tubes 16' 16² 16³, constituting the truss-frame 16, are inclined tie-rods or tubes 40, which serve to brace said frame and render it rigid and unyielding, and also connecting the rods or tubes 16² 16³ are horizontal tie-rods or tubes 35 40', which brace the frame at the bottom and hold the sections thereof rigidly in place.

40 While a steam-motor is illustrated, it is distinctly to be understood that my invention is not limited thereto, for it includes within its purview hydrocarbon, electric, and other forms of motor suitable for operating the driving-axle of the vehicle.

45 It will be seen that the frame 31, carrying the motor for operating the vehicle, is yieldingly supported by the springs 30 and 33 upon the bolts 29, projecting from the sockets 28' of the truss-rods 16² 16³, the lugs 32 of said frame being intermediate said springs, so that 50 should the vehicle in passing over uneven ground be jolted or jarred the frame and its contained motor will yield, and consequently there will be no tendency of throwing the driving mechanism out of engagement or of cramping the teeth of the gears. Further- 55 more, these springs take up the torsional strains applied when starting or reversing the motor. Any motion of the vehicle-frame is also compensated for by the yielding sections of the driving-shaft 26, the universal couplings 27 and sleeves or short telescopic sections 27' permitting said shaft to conform to 60 the movements of the motor and the vehicle. Moreover, as above stated, the weight of the motor and its frame is supported by the truss-rods and is consequently taken off from the 65 driving-axle.

Should it be desired to increase the power for driving the vehicle or to decrease the size of the motors, multiple frames or casings 45 and 46 may be secured in the manner stated 70 to the truss-rods and the power from the motors be applied directly to the driving-axle without the use of compensating gears, in the manner above described.

75 It will be noticed by reference to Fig. 3 that the steam or other motive-fluid delivery-pipe 12' is connected by a swinging coupling 12² with the pipe 22, and said pipe is attached by another swinging coupling 12³ to a pipe 12⁴, leading to the motor-cylinders, in virtue of 80 which construction as the casing moves up and down or otherwise conforms to the movement of the vehicle said couplings will turn and prevent breakage of the piping connections described. 85

Any form of compensating gear desired may be substituted for that shown without departure from my invention, and many of the details of the running-gear frame and truss connections thereof may be widely varied and 90 still be within the purview thereof. Moreover, the invention is not limited to the application of power to the rear axle, for with suitable modifications the truss-frame could be employed in connection with the forward 95 or steering axle.

Having thus described my invention, what I claim is—

1. In a motor-vehicle, the combination, with a motor, of a frame on which said motor is 100 mounted; a driving-axle composed of yielding sections and with which the motor is connected; and means for yieldingly supporting said frame connected with the driving-axle and independent of the body of the vehicle. 105

2. In a motor-vehicle, the combination, with a motor, of a frame carrying said motor; a driving-axle composed of yielding sections with which the motor is connected; means for 110 yieldingly supporting the motor-frame connected with the driving-axle and independent of the body of the vehicle; and gearing connecting the motor and said driving-axle.

3. In a motor-vehicle, the combination, with a driving-axle, of a series of truss-bars; bearings carried by said truss-bars and in which 115 the axle is journaled; a motor connected with said axle; and means for yieldingly suspending said motor between the truss-bars.

4. In a motor-vehicle, the combination, with 120 a driving-axle composed of sections united by means of universal joints, of a series of curved truss-bars; a motor-frame yieldingly suspended between said bars; a motor carried by the frame; and gearing connecting said motor 125 with the driving-axle.

5. In a motor-vehicle, the combination, with a motor, of means for supplying motive fluid to said motor; a rear driving-axle composed of yielding sections; a truss-frame having 130 bearings in which the ends of said axle are supported; a frame yieldingly suspended be-

tween the truss-bars; a motor carried by said frame; and means for connecting said motor with the axle.

6. In a motor-vehicle, the combination, with
5 a running-gear frame, of a series of truss-bars connected to said frame at the rear end thereof; a casing yieldingly suspended by said truss-bars; a motor carried by the casing; and means connecting said motor with the driv-
10 ing-axle.

7. In a motor-vehicle, the combination, with a driving-axle, of a series of triagonally-disposed curved truss-bars constituting a frame; a motive-fluid generator carried by the body of
15 the vehicle; a casing suspended between the truss-bars; a motor carried by the casing; and gearing connecting said motor with said driving-axle.

8. In a motor-vehicle, the combination, with
20 a running-gear frame, of a series of curved truss-bars; bearings carried by said truss-bars; a sectional driving-axle journaled in said bearings; a casing having perforated lugs; rods projecting from the truss-bars and
25 passing through said lugs; springs upon which the lugs are sustained; a motor carried by the casing; and means for connecting said motor with the driving-axle.

9. In a motor-vehicle, the combination, with
30 the body thereof, of a motive-fluid generator supported by said body; a running-gear frame; triagonally-disposed truss-bars constituting a part of said frame; a motor suspended between said truss-bars; and connections between said motor and the motive-fluid
35 generator.

10. In a motor-vehicle, the combination, with the running-gear frame thereof, of a series of curved truss-bars located at the rear
40 of said running-gear frame; a driving-axle

composed of yielding sections journaled in bearings with which said truss-bars are connected; a casing having perforated lugs; rods projecting from two of the truss-bars and inserted through said lugs; springs supported
45 by said rods above and below the lugs; and means connecting said motor with the driving-axle.

11. In a motor-vehicle, the combination, with the body thereof, of a running-gear
50 frame; a steering-axle and its wheels; steering mechanism; a series of curved truss-bars triagonally disposed at the rear of said frame; bearings at the ends of said bars; a sectional driving-axle journaled in said bearings and
55 carrying the driving-wheels; a motor yieldingly suspended between the truss-bars; and gearing connecting said motor with the driving-axle.

12. In a motor-vehicle, the combination, 60 with the body thereof, of a running-gear frame; a series of curved truss-bars connected to the rear end of said frame; a driving-axle journaled in bearings connected to said truss-bars; a casing yieldingly supported between
65 the truss-bars; gearing carried by the casing; and means connecting said gearing with the driving-axle.

13. In a motor-vehicle, the combination, with a driving-axle, of a series of triagonally-
70 disposed truss-bars; tie-rods or tubes connecting the top and bottom truss-bars; tie-rods or tubes uniting the bottom truss-bars; a frame suspended between the truss-bars; and a motor carried by said frame and connected with
75 the driving-axle.

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