

No. 679,045.

Patented July 23, 1901.

A. & J. B. BENSON.

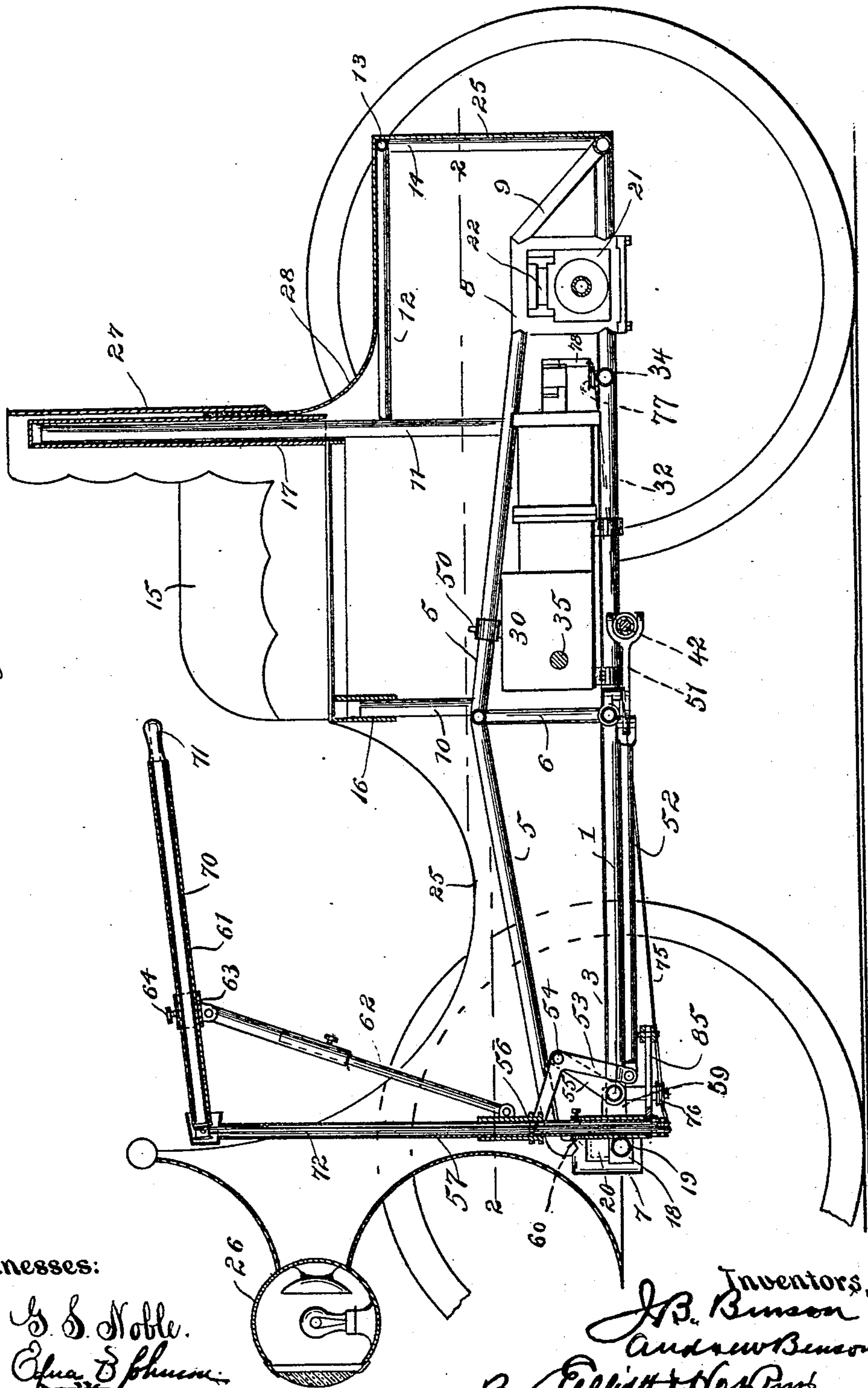
MOTOR VEHICLE.

(Application filed Dec. 4, 1899.)

(No Model.)

4 Sheets—Sheet 1.

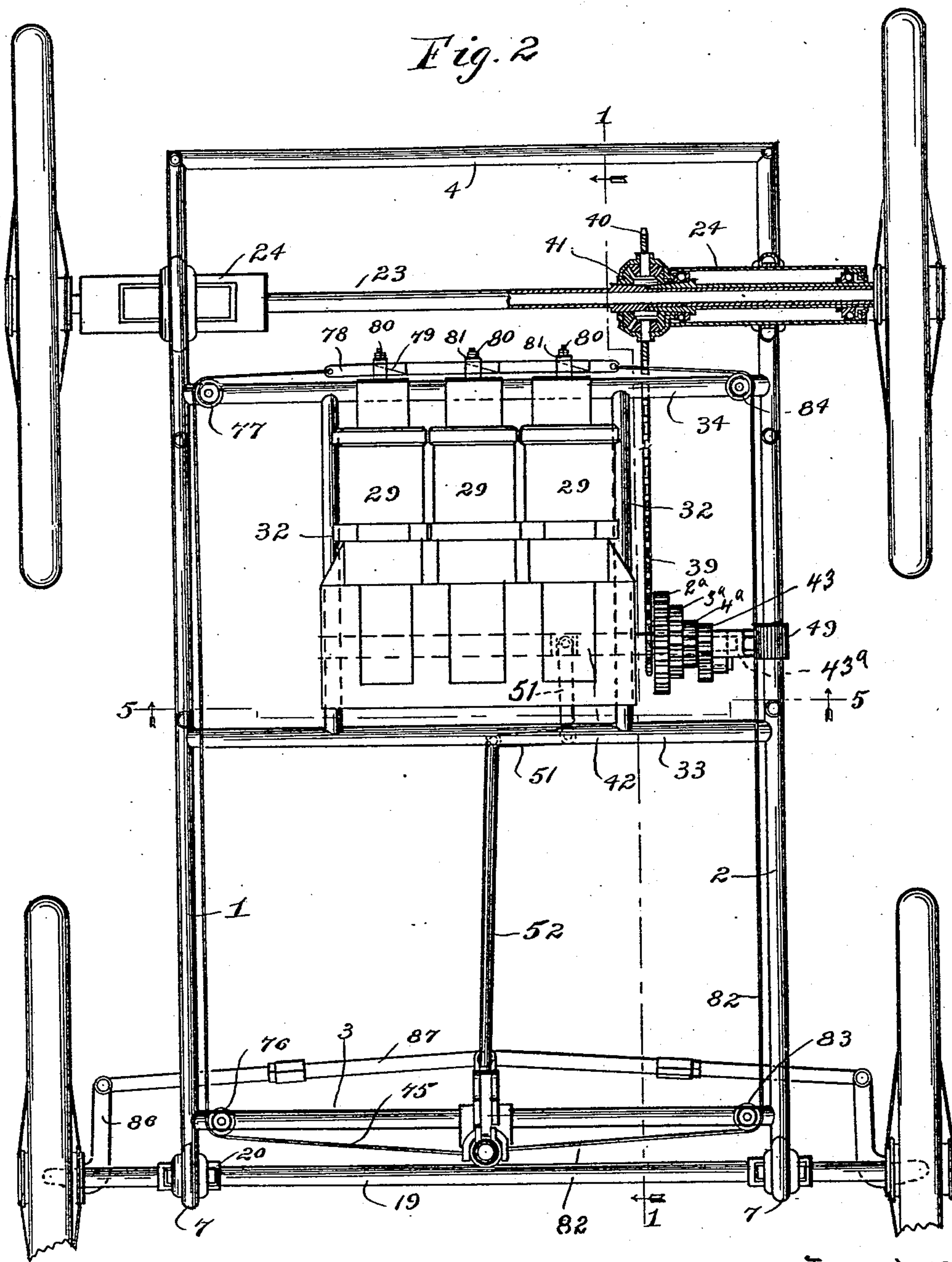
Fig. 1



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Fig. 3

Fig. 3^a

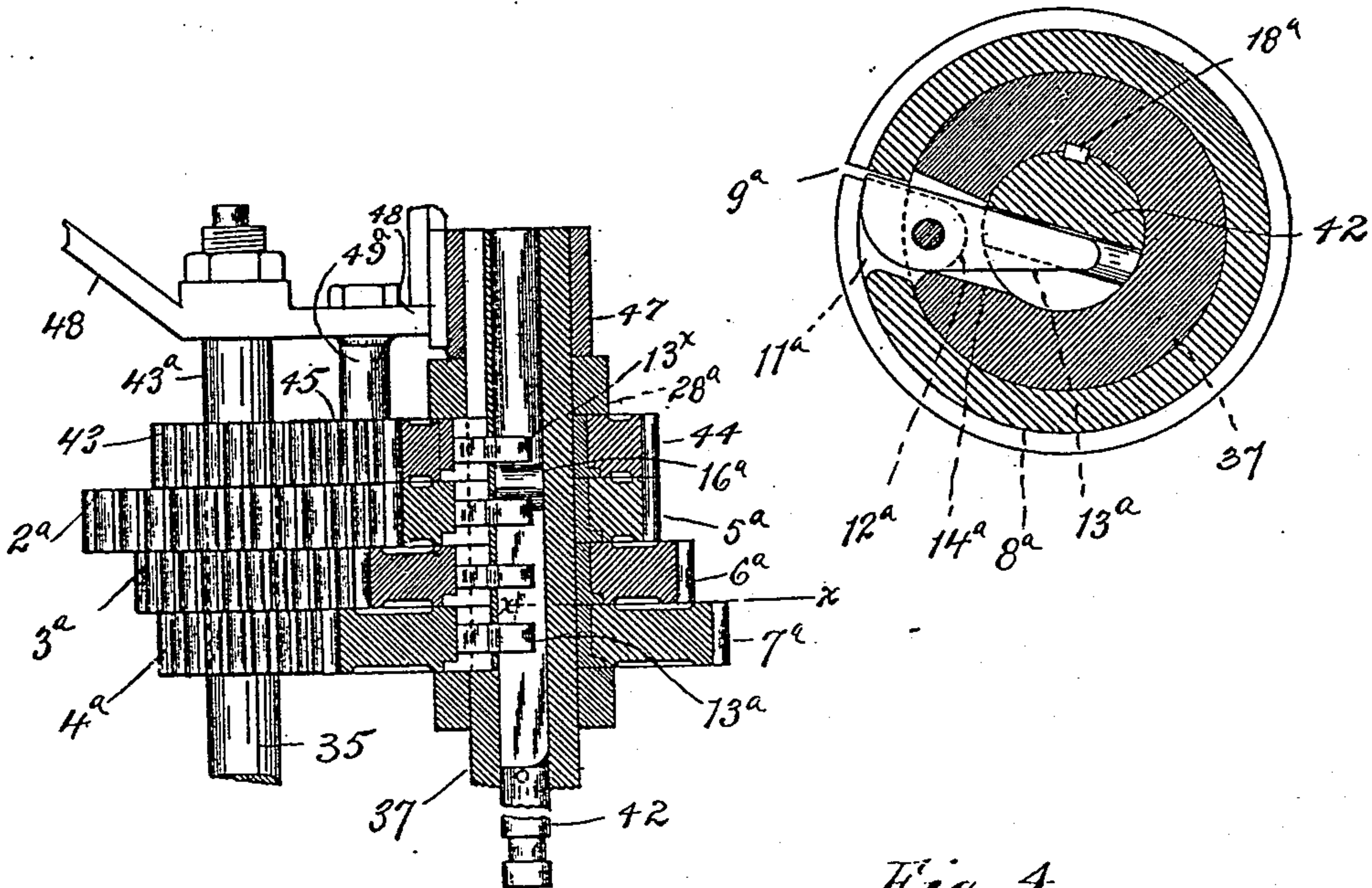
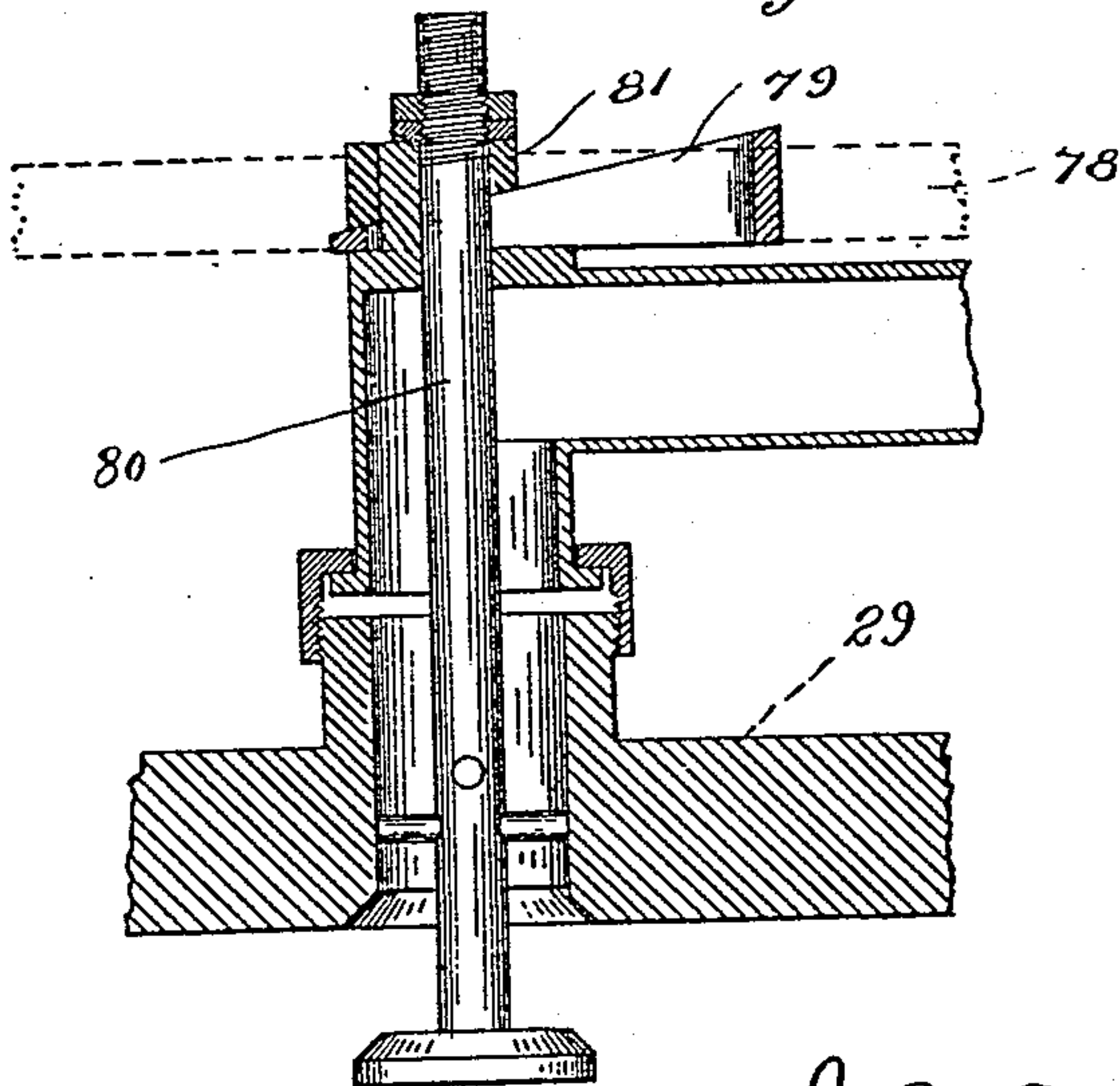


Fig. 4



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MOTOR VEHICLE.

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(No Model.)

4 Sheets—Sheet 4.

Fig. 5

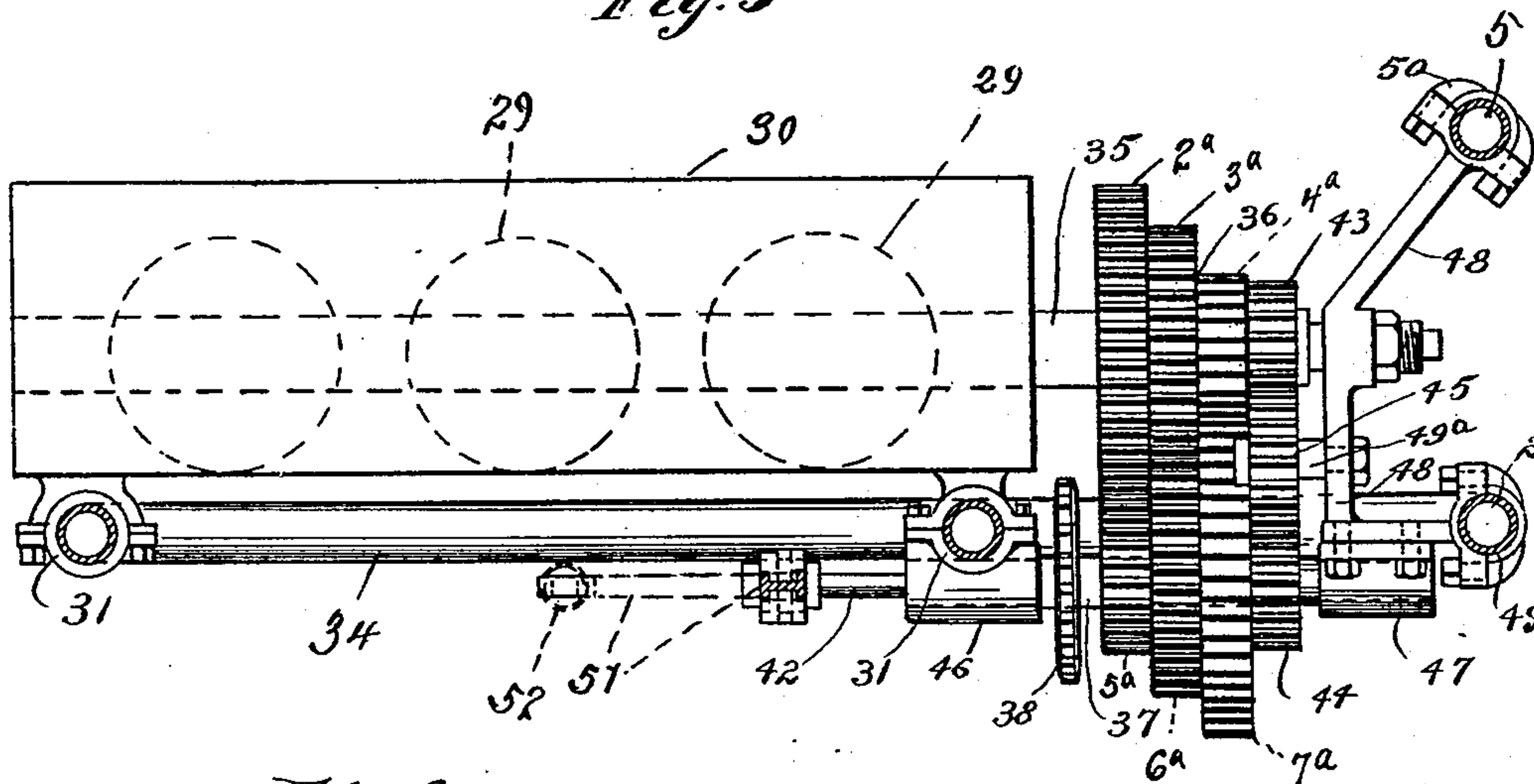


Fig. 6

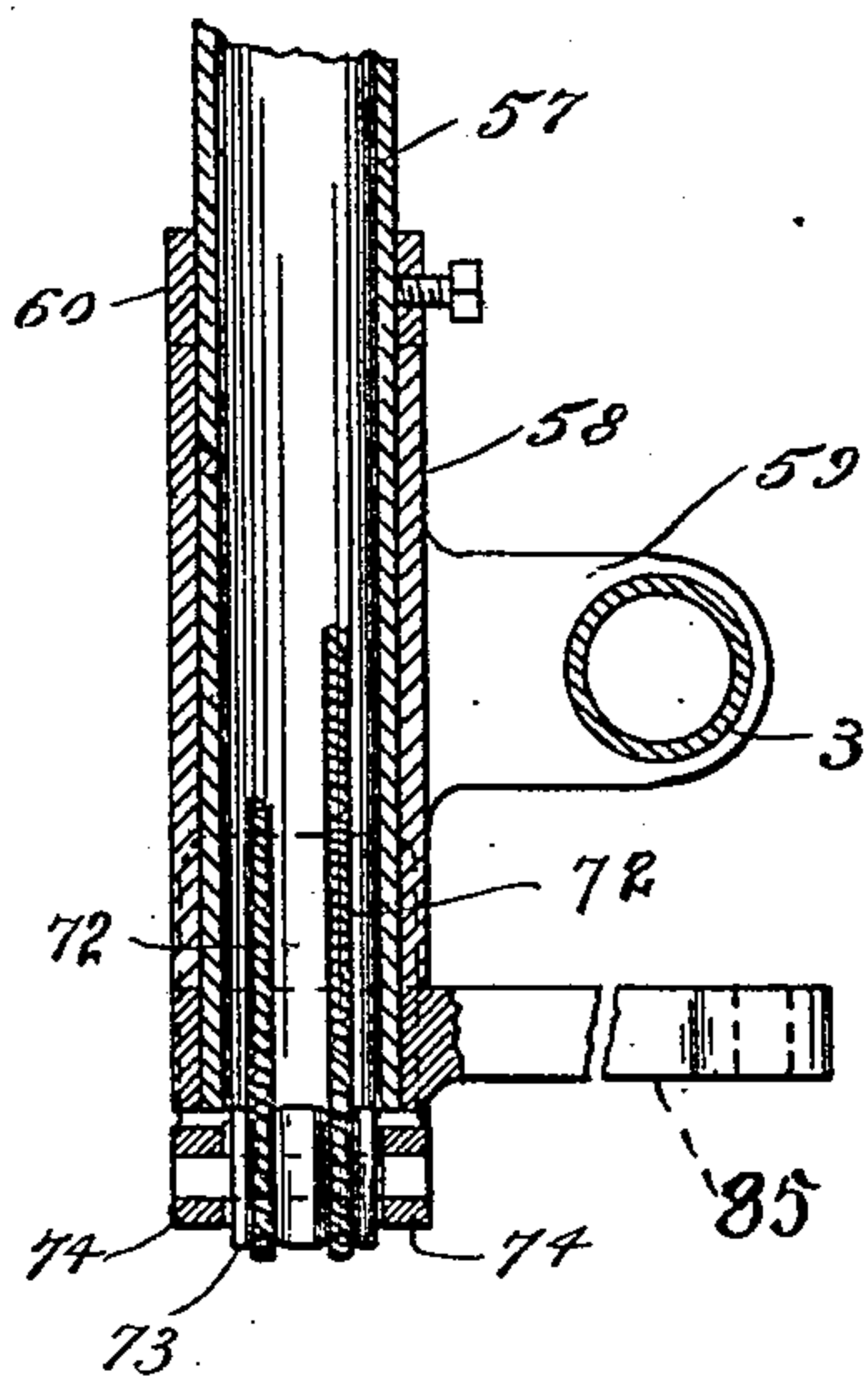


Fig. 7

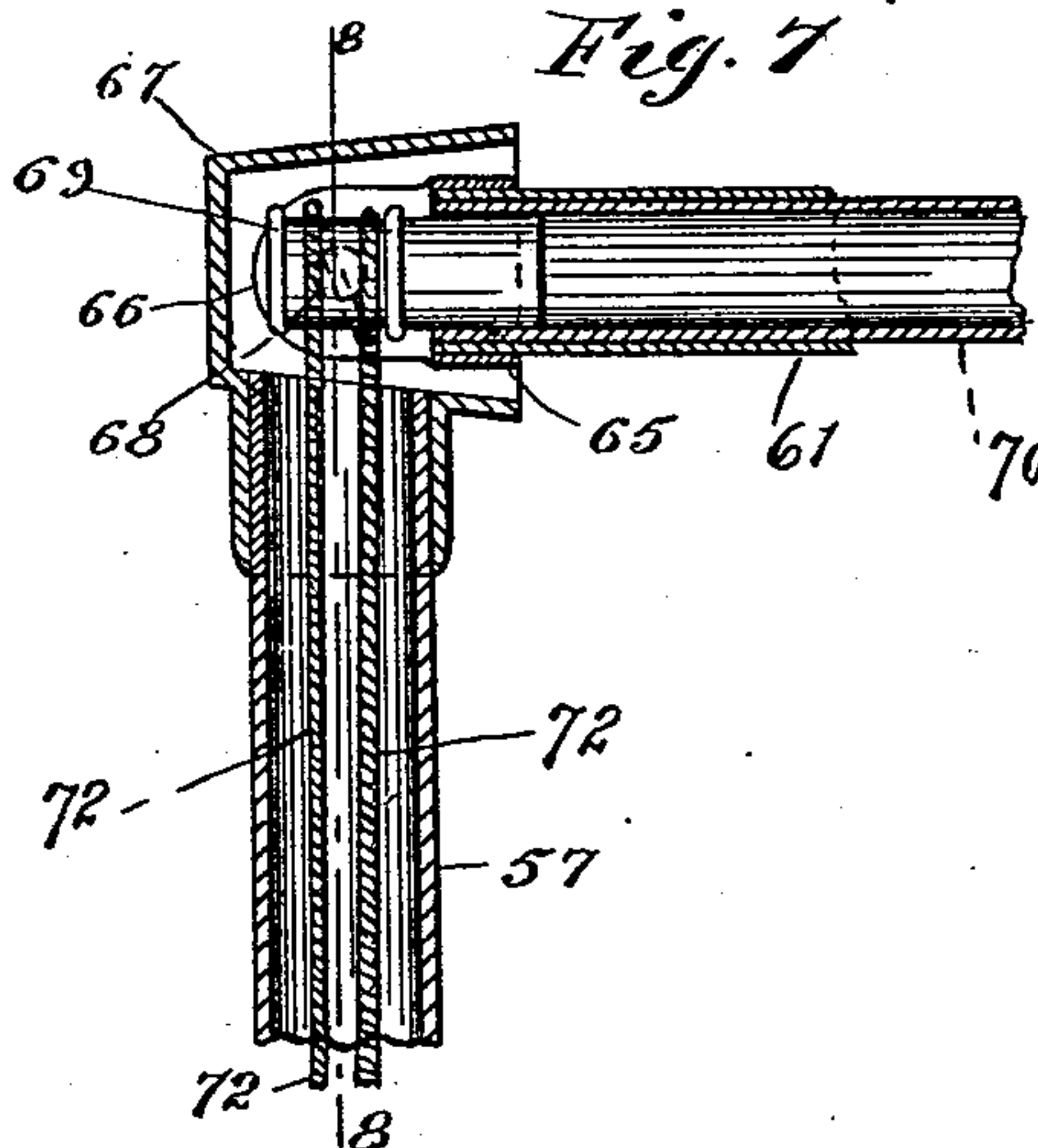
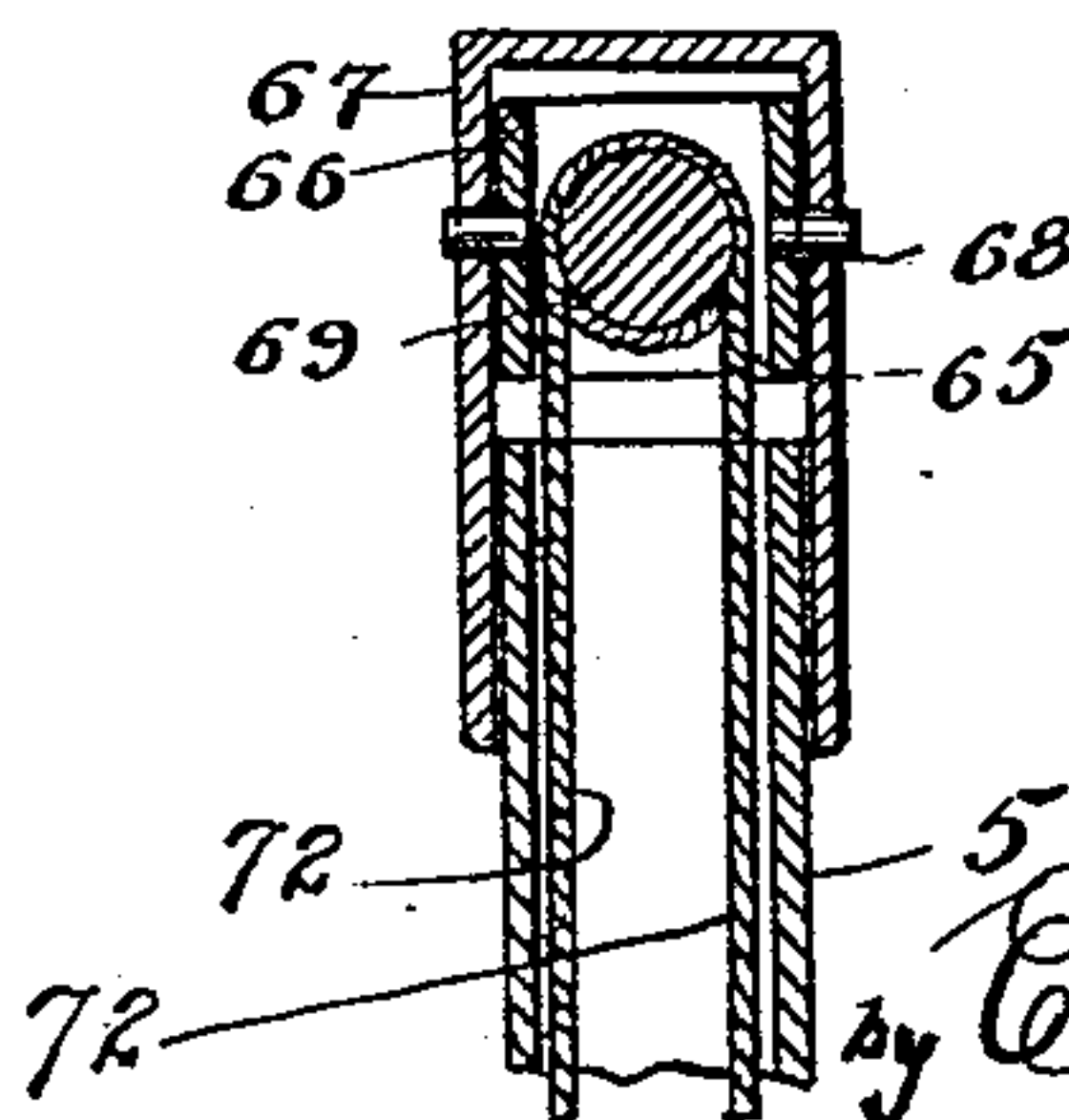


Fig. 8



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UNITED STATES PATENT OFFICE.

ANDREW BENSON AND JOHN B. BENSON, OF CHICAGO, ILLINOIS, ASSIGNORS
OF ONE-HALF TO ROBERT P. PRICE AND JOHN P. PRICE, OF SAME PLACE.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 679,045, dated July 23, 1901.

Application filed December 4, 1899. Serial No. 739,215. (No model.)

To all whom it may concern:

Be it known that we, ANDREW BENSON and JOHN B. BENSON, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Motor-Vehicles, of which the following is a full, clear, and exact specification.

Our invention relates to automobiles or motor-vehicles generally; and it has for one of its important objects to provide means whereby the speed and direction of motion of the vehicle may be controlled by one handle and, if desired, the supply to the motor also thus controlled.

Another object of our invention is to improve and simplify the vehicle-frame and the motor-support.

With these ends in view our 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.

In the said drawings, Figure 1 is a vertical longitudinal sectional view of a motor-vehicle embodying our invention, the section being taken on the line 1 1, Fig. 2. Fig. 2 is a plan section taken on the line 2 2, Fig. 1. Fig. 3 is a detail view of the variable-gear mechanism, partially in longitudinal section, hereinafter explained. Fig. 3^a is a section taken on the line 3 3, Fig. 3. Fig. 4 is a detail view of the mechanism for controlling the inlet-valves of the motor hereinafter described. Fig. 5 is a vertical transverse section taken on the line 5 5, Fig. 2. Fig. 6 is an enlarged detail sectional view of the lower end of the steering-stem. Fig. 7 is a detail vertical sectional view of the upper end of the steering-stem and operating handle or lever, and Fig. 8 is a similar section taken at right angles to the section shown in Fig. 7.

In constructing the frame of the vehicle we employ a rectangular frame-piece composed of four tubes or sections of pipe 1 2 3 4, joined together at right angles to each other, and trussed or braced on the sides by up- and bent pipes or pieces 5, supported at about

their mid-lengths by vertical standards 6, brazed or otherwise connected to the side members 1 2. The forward ends of the members 1 2 are connected to boxes 7, to which the forward ends of the trusses 5 are also connected, while the rear ends of the side members 1 2 and the rear ends of the trusses 5 are connected to boxes 8, the rear sides of the boxes 8 being braced by short sections 9, secured thereto and extending downwardly to the rear member 4 of the frame. Rising from the trusses 5 on each side of the vehicle are short standards or uprights 10, and a little to the rear of these rise taller standards or uprights 11. From the latter standards extend horizontal members 12 on each side of the vehicle-frame, and these latter are connected together by a horizontal member 13 at the back of the vehicle and to a vertical member 14 at each corner, which supports the members 12 13 on the rear member 4, thus forming the box of the vehicle.

The uprights or standards 10 11 serve for the support and attachment of the seat 15, which may be of any suitable construction, having sockets 16, that fit over the short standards 10, respectively, and longer sockets 17, which fit over the rear standards or uprights 11, the short sockets 16 forming the front corners of the seat-frame, while the long sockets 17 constitute the rear corners and ends of the back.

In the forward boxes 7 are arranged vertically-sliding bearing-blocks 18, in which the forward axle 19 is journaled, and between which blocks and the top of the boxes 17 is arranged a pneumatic cushion 20, which serves as a spring-support for the vehicle-body upon the axle. In the rear boxes 8 are arranged similar blocks 21, between the top of which and the top of the box is located a suitable spring or cushion 22, the rear axle 23 being journaled in suitable barrels 24, which are located in the blocks 21 and held in any suitable manner. The frame of the vehicle thus constructed may be covered with any suitable material, preferably sheet-aluminium, 25, cut in any desired design and held on the frame in any suitable way, the forward side of the aluminium frame forming a support for a lantern 26. The back of

the seat is provided with a lap 27, behind which engages the upper edge of an upwardly-curved piece 28, which forms the top of the body-box in the rear of the seat, the construction being such that the seat may be lifted 5 off of the standards 10 and 11 and at the same time disengaged from the upper end of the piece 28, the lap 27 forming a waterproof joint with the piece 28 when the seat is in place.

10 We have shown the vehicle provided with a motor of the gasolene type consisting of a number of engine-cylinders 29, secured to a casting 30, which in turn is provided with divided collars 31, embracing horizontal bars 15 32, supported by transverse frame members 33 34, extending from one of the members 1 2 to the other. By this means the engine or motor is made adjustable longitudinally of the vehicle, thus providing convenient means 20 for adjusting the chain or other gearing connection between the engine-shaft and the driving-axle. The engine-shaft is shown at 35 and may be connected by any suitable variable-gear mechanism with a sprocket-shaft 25 37, carrying sprocket 38, which latter is connected by chain 39 to sprocket 40 on the usual compensating gear 41, located on the driving-axle 23.

The speed of the vehicle and also its direction 30 of travel may be controlled solely by the aforesaid variable or differential gears by means of a bar 42, which when pushed in one direction connects the smaller ones of the gears 7^a, 6^a, and 5^a of the sprocket-shaft 37 with the 35 larger ones of the gears 2^a, 3^a, and 4^a on the crank-shaft 35, thus speeding up the vehicle, and when pushed in the opposite direction connects the smaller gears of the engine-shaft with the larger gears of the sprocket-shaft, 40 thus decreasing the speed of the vehicle without interfering with the speed of the motor, and if the movement of the bar 42 in this direction be continued the direction of movement of the vehicle will be reversed by the reversing- 45 gear 43 coming into active connection with a corresponding gear 44 on the sprocket-shaft 37 through the intermediary of an idle gear 45. The gears 5^a 6^a 7^a are each sleeved loosely upon a ring 8^a, which is split or divided at 9^a 50 and is mounted upon a hollow shaft 37, which may be termed the "driven" shaft. Each of the rings 8^a is recessed at 11^a and provided with a lug 12^a, to which is pivoted a lever 13^a. The outer end of this lever is curved on one 55 side, so as to be free to oscillate in its recess, while the other side is straight and abuts against one end of the split ring 8^a. The tail-piece or inner end of the lever 13^a projects through a passage 14^a, cut in the side of the hollow shaft 37, and extends into the interior 60 of said shaft. It will thus be seen that when either one of the levers 13^a is oscillated upon its pivot in the proper direction to bring its flat side against the end of the ring 8^a the tendency will be to expand the ring, and by 65 thus expanding within its gear 5^a, 6^a, or 7^a

will result in rotative force being imparted to the latter, and consequently communicated to one of the gears 2^a 3^a 4^a, with which the gears 5^a 6^a 7^a are in mesh. This oscillation 70 of the levers 13^a may be produced at pleasure by means of a sliding wedge-bar 15^a, which is fitted within the hollow shaft 37 and provided on one end with a wedge 16^a, having a double bevel, so that it may squeeze past any 75 one of the levers 13^a in either direction. The bar 15^a and shaft 37 are held against relative rotation by a spline 18^a. This differential-gear mechanism, however, is fully described and shown in our application for United States 80 Letters Patent, Serial No. 734,174, filed October 20, 1899, and allowed September 18, 1900. The sprocket-shaft 37 is journaled in a box 46, secured to or formed on the lower side of one of the boxes 31, and the bar 42 slides 85 within the shaft 37, as explained in our aforesaid application, the opposite end of the sprocket-shaft 37 being journaled in a box 47, forming a part of a casting 48, which has a divided collar 49 embracing the frame mem- 90 ber 2, such casting 48 also forming a support for the shaft 49^a, upon which the idle pinion 45 is journaled, and a support for the outer extremity of the engine-shaft 35. The upper end of the casting 48 is provided with a di- 95 vided collar 50, which embraces the truss member 5. The bar 42 is reciprocated by a bell-crank lever 51, pivoted to the under side of the cross-bar 33 and having one of its arms pivoted to a pull-rod 52, extending to the for- 100 ward end of the vehicle and connected to the rear arm of a bell-crank lever 53, which is pivoted at 54 to a pivoted standard 55, the latter being journaled on the front member 3 of the vehicle-frame. The upper end of 105 the bell-crank lever 53 is bifurcated and pivoted to a sleeve or collar 56, capable of vertical movement on a steering-stem 57. This latter is journaled at its lower end in a socket 58, secured by an ear or bracket 59 to the 110 frame-bar 3, the stem 57 being held against downward movement by a collar 60, resting upon the upper end of the socket 58. The sleeve 56 is given up-and-down movement for the purpose of throwing the actuating-bar 115 42 in and out by means of a lever 61, connected to the sleeve 56 by an adjustable rod 62 and collar 63, adjustably secured to the lever 61 by a set-screw 64. The lever 61 is provided on one end with a collar 65, on each 120 side of which is an ear 66, located within a hood 67, secured on the upper end of the stem 57, and to which each of the ears 66 is pivoted by a pin or bolt 68. By this means it will be seen that when the lever 61 is raised 125 or lowered the actuating-bar 42 will be thrown in or out and the speed of the vehicle varied or its direction reversed accordingly.

In order that the speed of the motor may be controlled or the motor stopped entirely 130 by means of the same lever or handle 61, we provide the inner end of the handle or lever

61 with a drum 69, which is secured to a stem 70, of tubular form for the sake of lightness, journaled in the lever 61 and having an exterior handle 71, which serves at once for the oscillation of the lever and the rotation of the drum 59, and wound upon this drum is a flexible connection or cable 72, which extends down the hollow stem 57 in two lines, passing on opposite sides of a double-grooved roller 73, journaled in brackets 74 on the lower end of the socket 58. One of these lines of cable passes to the right, as shown at 75, around a pulley 76, located at the forward end of the vehicle, and thence to the rear and around a pulley 77, located at the rear of the vehicle, and is attached to one end of a bar 78, which has a series of wedges or inclined surfaces 79, equal in number to the number of inlet-valves 80 employed on the motor and engaging under lugs or heads 81 on the valve-stems, so as to regulate the degree of opening of the valves or prevent them from opening at all. The other line of cable passes to the left, as shown at 82, around a pulley 83, arranged at the forward end of the vehicle, and thence to the rear around pulley 84, arranged at the rear of the vehicle, and is connected at the opposite end of the wedge-bar 78. Thus it will be seen that by twisting the handle 71 in one direction the wedge-bar 78 will be pulled to the right, closing or partially closing the inlet-valves 80, and when twisted in the opposite direction the wedge-bar will be pulled to the left, permitting the inlet-valves 80 to open more or less.

Having thus described the means whereby the supply to the motor for regulating its speed and the means whereby the speed of the vehicle is controlled or its direction of movement changed or reversed by one and the same handle or lever adapted to be managed by one hand of the driver, we will now describe the means whereby the vehicle may be steered by means of the same handle or lever. The lower end of the steering-stem 57 is provided with an arm 85, and this arm is connected in any suitable way to the steering wheel or wheels. In the example of our invention shown in the drawings there are two steering-wheels, as is customary with motor-vehicles of this class, and each is pivoted on a vertical axis to the forward axle 19 and provided with an arm or lever 86, whereby the wheels may be independently turned. These arms are connected together, as usual, by bars 87, which are pivoted at their inner ends to the arm or lever 85, so that by oscillating the lever 61 to the right or the left the vehicle may be steered to the right or to the left, by depressing or raising it the speed of the vehicle may be controlled or its direction of movement reversed without interfering with the motion or speed of the motor, and by twisting it the motor may be stopped or its speed controlled.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. In a motor-vehicle the combination of a motor having means for regulating its speed, a flexible connection attached to that means, a drum for winding said connection for effecting the actuation of said means and steering means connected with said drum, substantially as set forth.

2. In a motor-vehicle the combination of a motor having means for regulating its speed, a flexible connection attached to that means, a drum for winding said connection for effecting the actuation of said means, a steering-gear and a handle common to both said drum and steering-gear, substantially as set forth.

3. In a motor-vehicle the combination of a motor having means for regulating its speed, a flexible connection connected to that means, a drum upon which said connection is wound, means for reversing the motion of the vehicle and a handle common to both said drum and reversing means, substantially as set forth.

4. In a motor-vehicle the combination of a motor having means for regulating its speed, a flexible connection connected to that means, a drum upon which said connection is wound, means for reversing the motion of the vehicle, a steering-gear and a handle common to said drum, steering-gear and reversing means, substantially as set forth.

5. In a motor-vehicle the combination of means for regulating the speed of the vehicle, a steering-gear, a hollow stem for operating said steering-gear, a drum, a flexible connection wound on said drum and connected with said controlling means, and a handle common to said drum and steering-stem, substantially as set forth.

6. In a motor-vehicle the combination of a motor having means for controlling its supply, means for controlling the speed of the vehicle or reversing its motion independently of the speed of the motor, a steering-gear, a hollow stem by which said steering-gear is actuated, a sleeve on said stem, a lever or handle pivoted to said stem and connected to said sleeve, a drum secured to said handle at the pivoted end thereof, a flexible connection wound on said drum and passing through said stem and having connection with said means for controlling the supply to the motor and an operative connection between said sleeve and said means for controlling the speed of the vehicle or reversing its motion, substantially as set forth.

7. In a motor-vehicle the combination of means for controlling the speed of the vehicle, a steering-gear, a hollow stem by which said steering-gear is actuated having a hood at its upper end, a lever pivoted in said hood, a rotary handle journaled in said lever and having a drum arranged in said hood over said stem, a cable wound on said drum, passing

through said stem and connected with said means for controlling the speed of the vehicle and means for reversing the motion of the vehicle connected with said lever, substantially as set forth.

5 8. In a motor-vehicle the combination of a vehicle-frame, an axle journaled therein, a motor having a shaft, having sliding connection with said frame, sprockets on said shaft
10 and axle respectively and an operative con-

nection between said sprockets, substantially as set forth.

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