

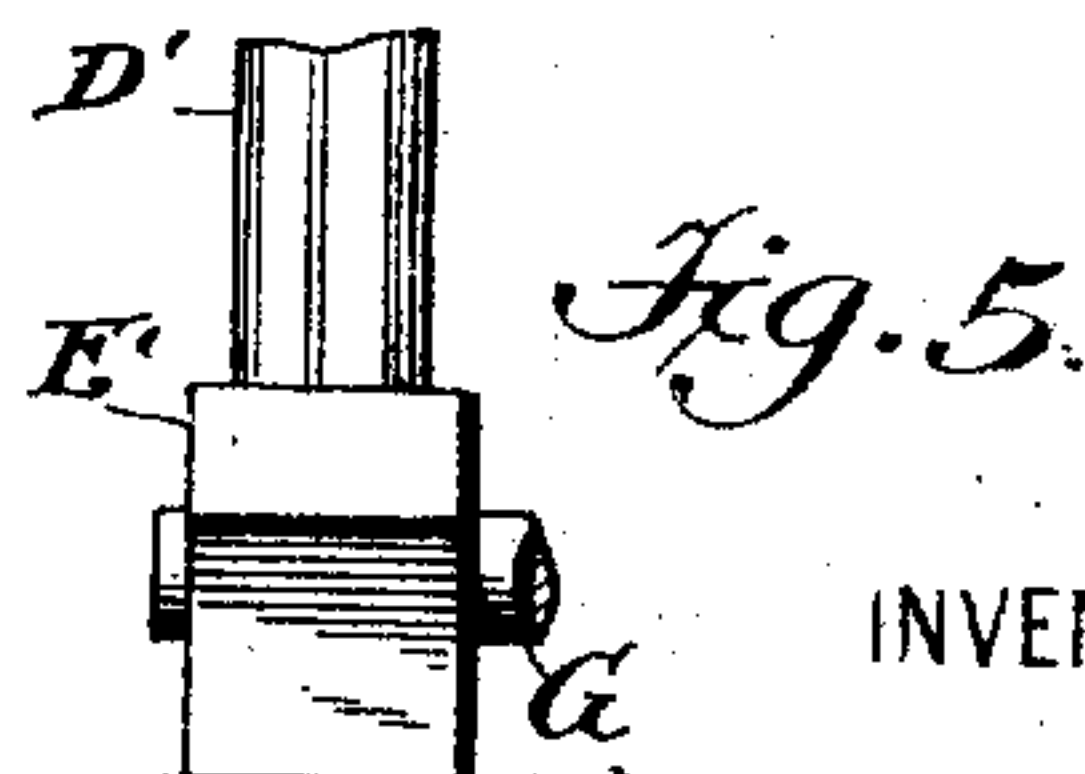
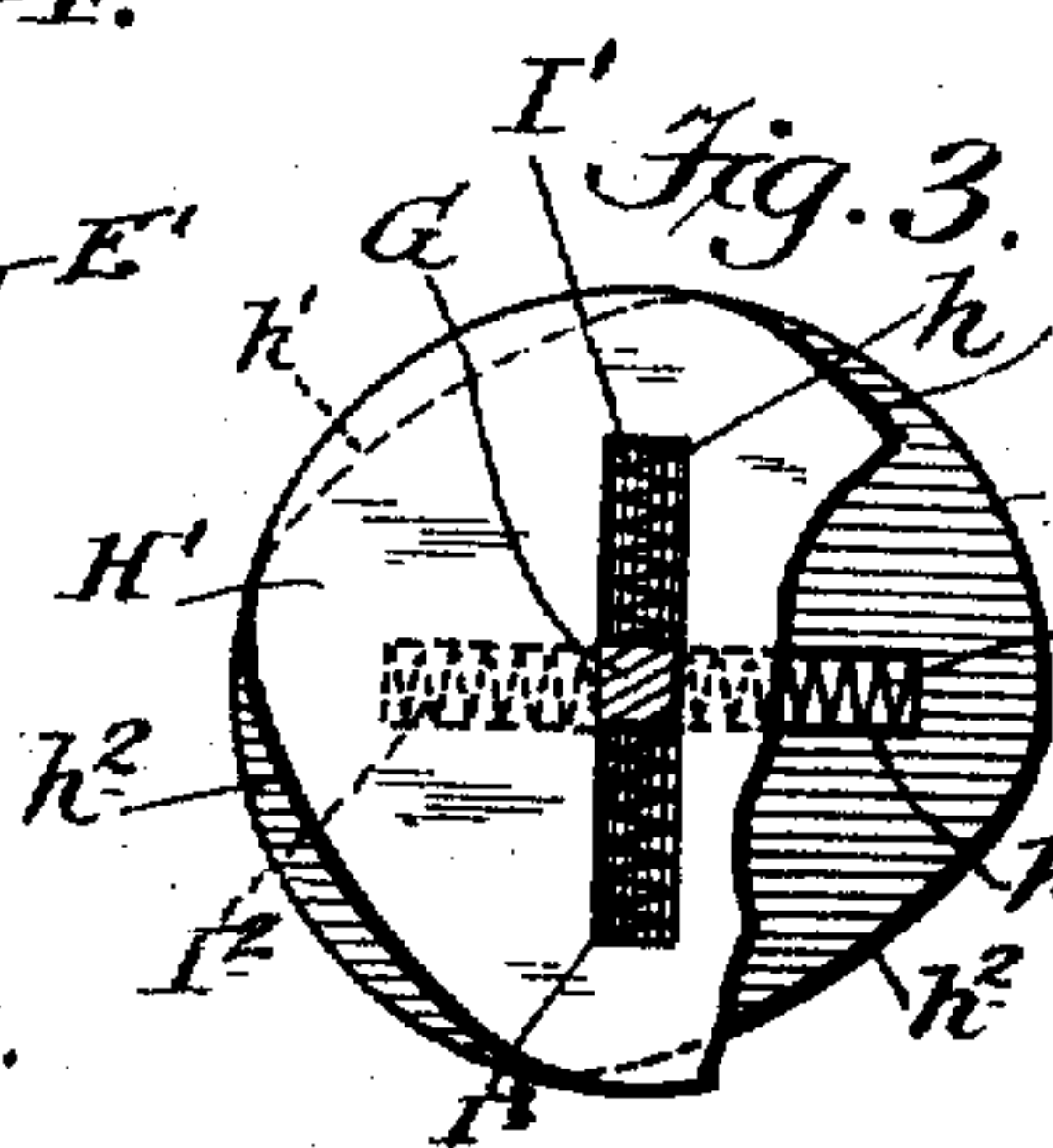
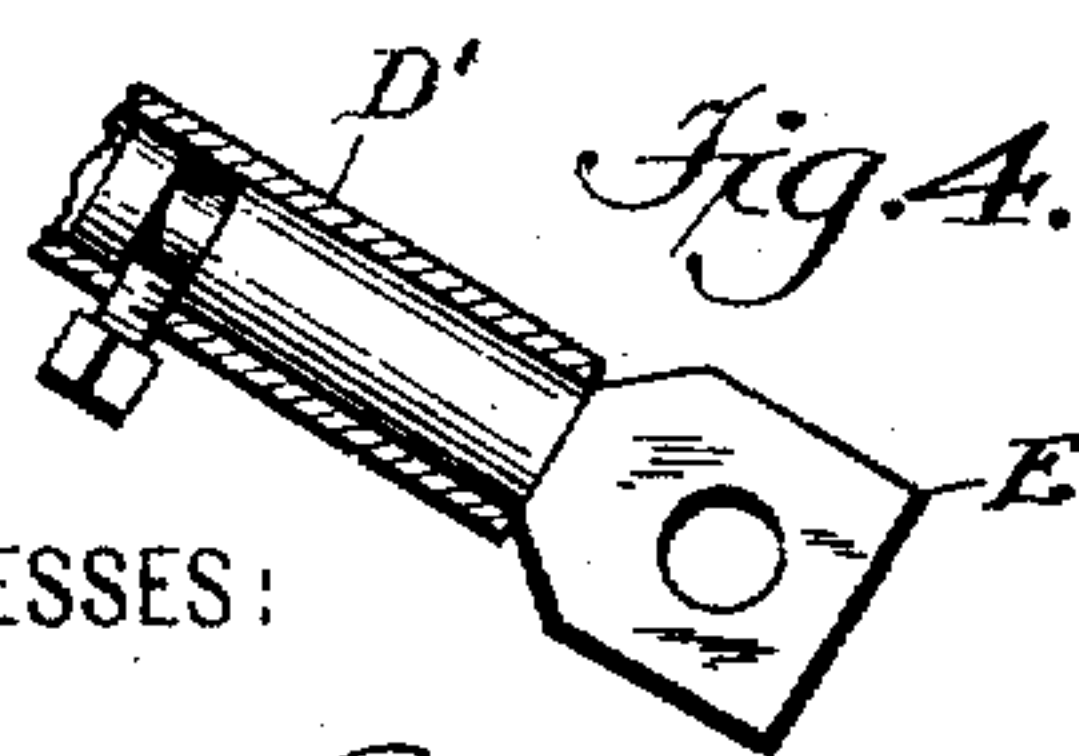
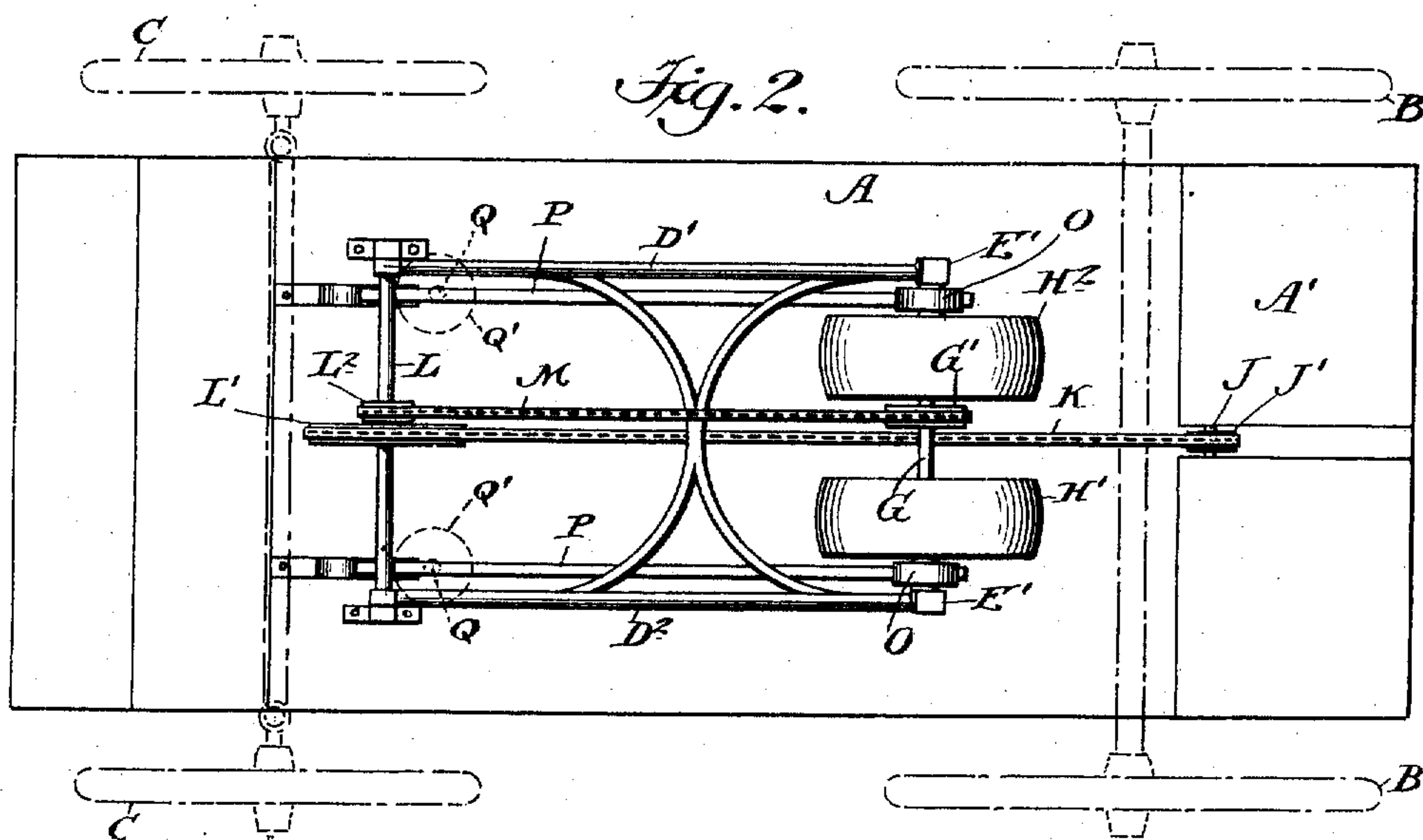
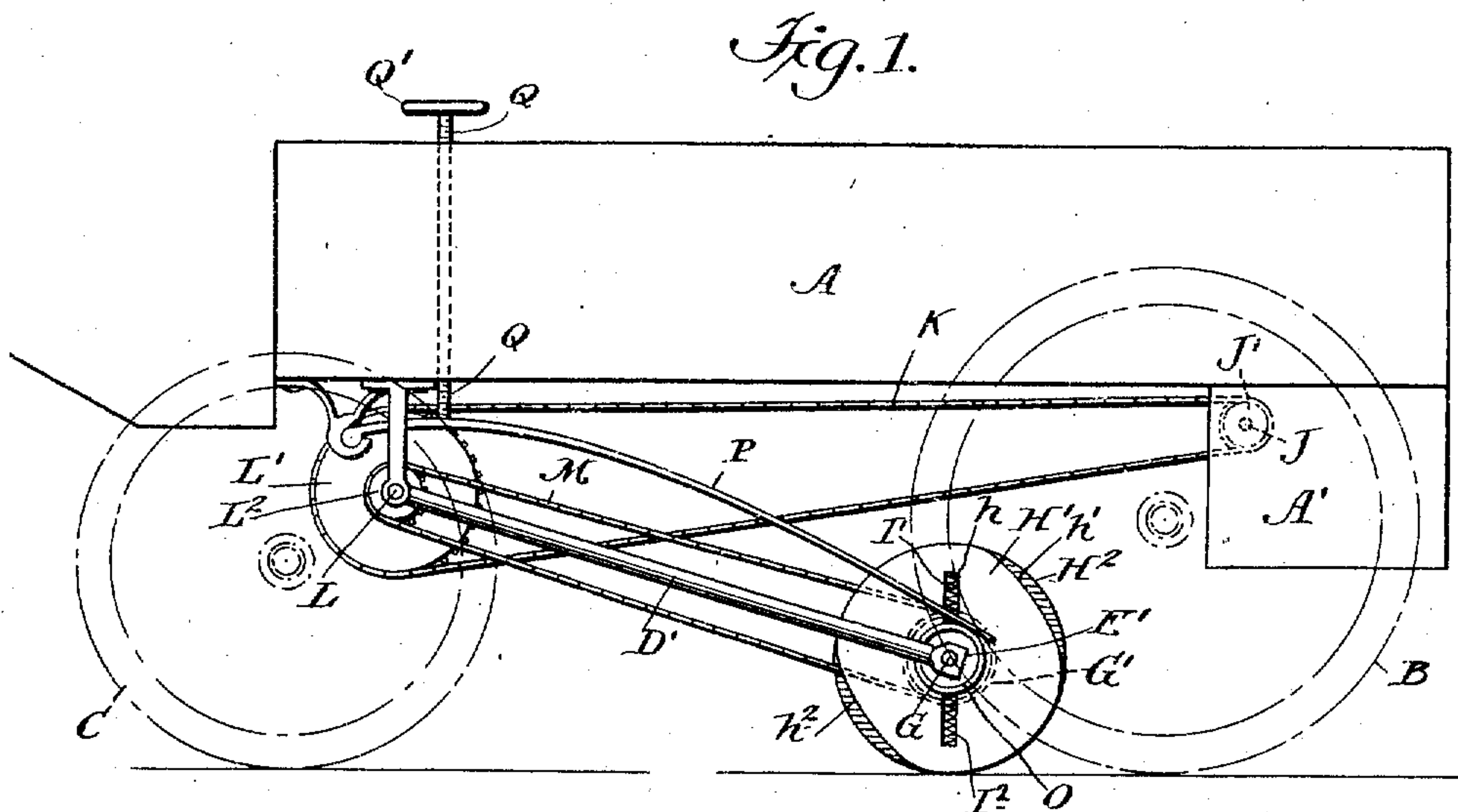
No. 687,957.

Patented Dec. 3, 1901.

J. FORTNER.
AUTOMOBILE.

(Application filed Sept. 6, 1901.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

JESSE FORTNER, OF NEW YORK, N. Y.

AUTOMOBILE.

SPECIFICATION forming part of Letters Patent No. 687,957, dated December 3, 1901.

Application filed September 6, 1901. Serial No. 74,498. (No model.)

To all whom it may concern:

Be it known that I, JESSE FORTNER, a citizen of the United States, residing in the borough of Manhattan, in the city and State of New York, have invented a certain new and useful Improvement in Self-Propelling Carriages, Sometimes Called "Automobiles," of which the following is a specification.

The invention may apply to motors of any ordinary or suitable character. I will describe the motor as an electric motor and represent it simply by a box in which it is inclosed, with a pulley shown, through which the power is communicated.

The invention relates to the provisions for taking hold of the ground or of the track or pavement over which the carriage is traversed. It enables me to receive a larger proportion than usual of the weight of the entire carriage and its load on a single driving-wheel, or preferably two, mounted side by side on the same shaft. I can use any number and arrangement of additional bearing-wheels, which may be mounted in any ordinary manner. I will omit the details of these ordinary and long-approved parts and represent the wheels simply by circles. My special wheels are pressed yieldingly on the ground between the paths of the ordinary bearing-wheels.

My invention avoids all difficulties and complications incident to the communication of power from the motor to the traction-wheels which act on the ground. I have discovered that it is practicable to so locate one wheel, or preferably two, near together under the body of the automobile that it shall serve well under all ordinary and extraordinary conditions. The bearing-surfaces may be so near together that there is no necessity to provide for the slight inequalities in their rates of motion in turning corners. One simple communication of motion to the driving-shaft is sufficient. I provide the wheels with independent means for yielding relatively to the axle twice in each revolution and adjust the wheels so that their yielding comes at alternate periods. I believe that this will contribute much to the success of the invention.

The accompanying drawings form a part of this specification and represent what I con-

sider one of the best means of carrying out the invention.

Figure 1 is a side elevation, and Fig. 2 a plan view from below, showing the mechanism, with the body and running-gear of the carriage simply in outline. Fig. 3 is on a larger scale. It is a side view of one of my special wheels and a cross-section of the squared portion of the axle which plays in a slot therein. A portion of this wheel is broken away to show the other wheel. Fig. 4 is a side elevation, and Fig. 5 an end elevation, showing the construction of the rear end of one of the inclined frames and the adjacent parts.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the body, of any ordinary or suitable construction.

A' is the motor-case, secured below the body.

B B are the rear wheels and C C the front wheels, the latter swiveled and provided with controllable mechanism for steering. The wheels B and C may be of any preferred construction and may have tires of any suitable material, as metal or rubber.

D' D² are rigid bars, of hard wood, each strongly braced laterally, as shown, and yieldingly connected to a shaft L, extending transversely beneath the body. These bars extend rearward at inclinations which may vary within wide limits by the turning of the bars on the shaft L.

Transversely mounted in efficient bearing-boxes E' E' is a shaft G, portions of which are accurately squared and perform important functions.

H' H² are my driving-wheels. They may be of as large diameter as the limited space will allow. Their widths may vary; but I will assume the breadth of each to be about six inches. Each is formed with a long radial slot h, extending across its center and nearly to its periphery at each end, the width of which slot is just equal to the thickness of the square portion of the shaft G. The two wheels are set with their slots quartering to each other—that is to say, they take hold of the square shaft in different positions, so that the slots are at right angles to each other.

Each slot receives two stout helical springs $I' I^2$, arranged to abut against the inner end of the slot and to exert a pressure against the corresponding face of the shaft G. When
 5 in the rotation of the wheels the shaft G tends to move to a position out of the center of the slot, it is allowed to do so by the compression of the spring I' and the dilation—the extension—of the counter-spring I^2 . I attach much
 10 importance to the form and construction of the outer face of these driving-wheels. Various materials may be used; but I propose for ordinary rough working stout tires of iron. Two portions, each about one-sixth of the
 15 periphery, are circular. These portions are opposite to each other and adjacent to the respective ends of the slot. The two spaces remaining are recessed considerably within the circular line, one recess on one side and
 20 the other on the opposite side, as indicated at $h' h^2$. Each recess is tapered at each end, as shown clearly in Fig. 3.

My machine is capable of being driven backward with almost equal facility; but I will describe it as working forward. The motor-shaft J, turned rapidly in the proper direction by the provisions inside, (not shown,) actuates a small sprocket-wheel J' , which gives motion through a pitch-chain K to a large sprocket-wheel L, keyed on the shaft L, which gives motion to a smaller sprocket-wheel L^2 , fixed on the same shaft, and a pitch-chain M to a sprocket-wheel G' , keyed on the square shaft G. The motor being of any suitable character may be controlled by any ordinary or suitable means. (Not shown.) The driver by controlling the motor controls the strong revolutions of the wheels $H' H^2$. It is important to press these driving-wheels and the mechanism carried thereon down to the ground or pavement with a yielding force, so that the apparatus can adapt itself to all inequalities. This is effected by long strong springs P, mounted centrally over the space
 45 between the bars D' and D^2 and bearing on the shaft G through antifriction-wheels O.

I provide boxes at the several bearings which are capable of rolling sufficiently to allow for all the inequalities of the rising and
 50 sinking motions of the two bars $D' D^2$. It is important also to provide for varying the force with which the springs P shall act. I effect this latter by a screw Q, tapped through a suitable nut in the bottom of the body A and provided with a convenient hand-wheel Q' . I attach importance also to the square construction of the shaft and the right-angle position of the slots h in the two wheels thereon, and I especially attach importance to the
 60 springs $I' I^2$, mounted in those slots and exerting a force tending to hold each wheel in such position that the shaft extends across in the mid-length of the slot, but capable of yielding to allow large excursions from that position in two directions only, each in the direction to and fro in the line of its slot.

My invention allows any desired portion of

the load to be carried on the driving-wheels. It is important, particularly in traveling uphill, to support a large part of the weight on the wheels $H' H^2$. This may be effected by
 70 varying the pressure of the springs by adjusting the hand-wheels Q' . In any exigency where the carriage is in danger of upsetting the load can be entirely taken off from one
 75 of these wheels and by turning the screw for the other side in the opposite direction the load on the lowermost of the wheels H' or H^2 will be correspondingly increased, thus contributing to the stability of the carriage in
 80 all positions.

I have represented the carriage-body simply as rectangular. It may be made in various tasty forms, provided with seats for passengers or with provisions for receiving and discharging heavy articles, as barrels or hogsheads. I have shown the front as equipped with a footboard for the driver; but this may be dispensed with.

It will be understood that the yielding of the springs P, which carry a good portion of the load, contributes to the ease of riding of the body, also that there may be any ordinary or suitable springs between the body and the several bearing-wheels B and C.

It will be understood that the parts not represented or described, as the provisions for steering, &c., may be of any ordinary or suitable character.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The inclined bars $D' D^2$ may be knuckled to the body at the rear instead of the front, in which case the bars $D' D^2$ will incline forward and the wheels
 105 $H' H^2$ will be near the front axle instead of the rear.

Parts of the invention can be used without others. The recessed portions $h' h^2$ may be omitted and the peripheries of the wheels
 110 may be each a complete circle; but I prefer the recesses, as shown.

I have shown the sprocket-wheels as so proportioned that the velocity of rotation will be reduced between the motor and the axle.
 115 This reduction may be desirable for most or all forms of motor liable to be employed. The difference in sizes of the wheels, and consequently the amount of reduction of the speed and consequent augmentation of the force of
 120 the rotation, may be increased or diminished within wide limits.

I claim as my invention—

1. In an automobile, driving-wheels $H' H^2$ arranged to press on the ground within the treads of the ordinary bearing-wheels B C, in combination with the latter wheels and with bars $D' D^2$ which are strongly braced in horizontal directions but free to rise and sink and with springs P P and provisions for varying
 125 the force of such springs as required, all substantially as herein specified.

2. In an automobile, driving-wheels $H' H^2$ arranged to press on the ground within the

treads of the ordinary bearing-wheels B C and having slots $h' h^2$ arranged at right angles, in combination with the latter wheels and with a squared shaft G received in such slots and with springs I' I² carried in such wheels adapted to yield alternately, and with bars D' D² which are strongly braced in horizontal directions but free to rise and sink and with springs P P and provisions for varying the force of such springs as required, all substantially as herein specified.

3. In an automobile, driving-wheels H' H² arranged to press on the ground within the treads of the ordinary bearing-wheels B C, and having slots $h' h^2$ arranged at right angles, and having also recesses $h h$ in their

peripheries, in combination with the latter wheels and with a squared shaft G received in such slots and with springs I' I² carried in such wheels adapted to yield alternately, and with bars D' D² which are strongly braced in horizontal directions but free to rise and sink and with springs P P and provisions for varying the force of such springs as required, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JESSE FORTNER.

Witnesses:

M. F. BOYLE,
J. B. CLAUTICE.