No. 672,713. Patented Apr. 23, 1901.

E. SANCHIS.

HORSELESS CARRIAGE.

(Application filed Dec. 3, 1900.)

(No Model.) 2 Sheets—Sheet 1.

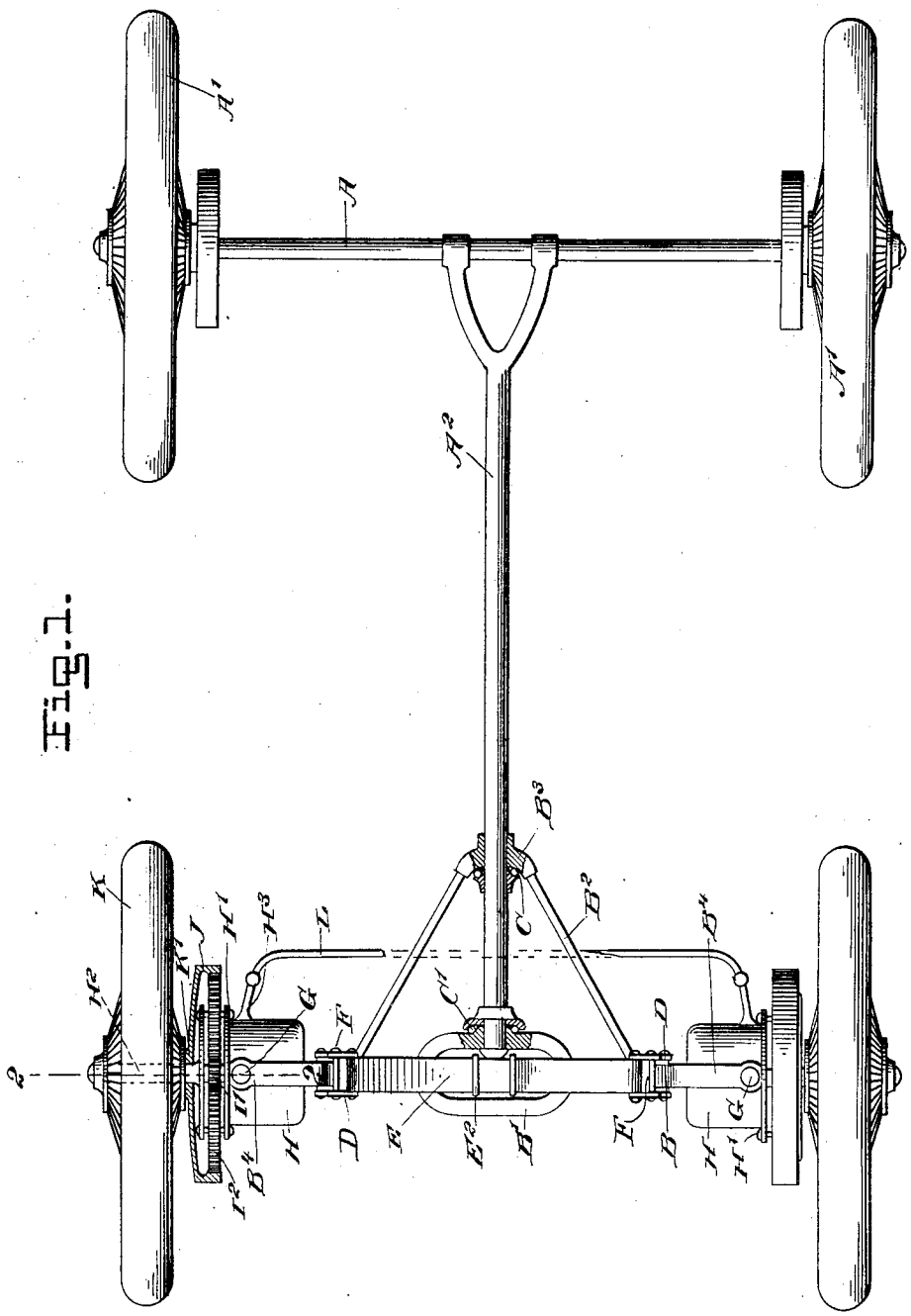


Fig. 1.

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Fig. 2.

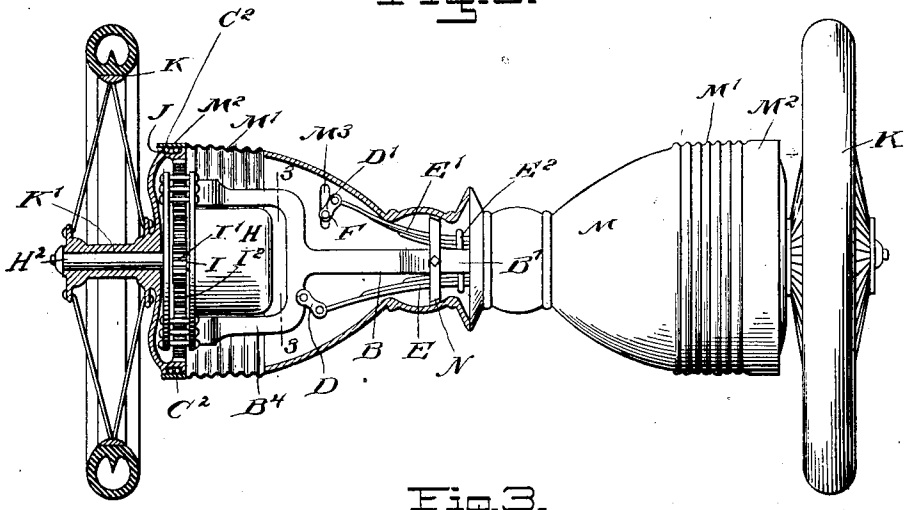


Fig. 3.

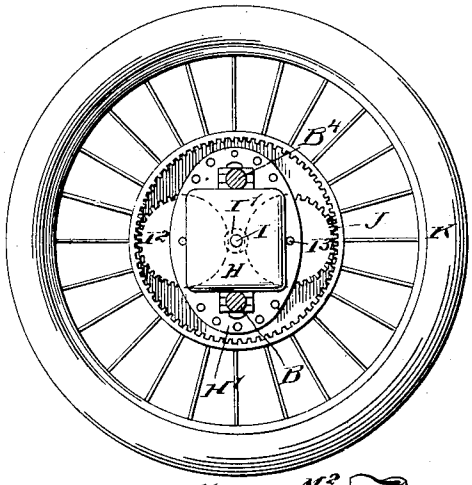
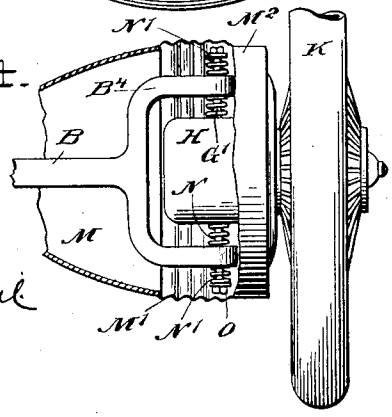


Fig. 4.



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ENRIQUE SANCHIS, OF MADRID, SPAIN.

HORSELESS CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 672,713, dated April 23, 1901.

Application filed December 3, 1900. Serial No. 38,511. (No model.)

To all whom it may concern:

Be it known that I, ENRIQUE SANCHIS, a subject of the King of Spain, and a resident of Madrid, Spain, have invented new and useful Improvements in Horseless Carriages, of which the following is a full, clear, and exact description.

My invention relates to horseless carriages, and particularly to that class in which the motor is mounted upon a fore-carriage.

The object of my invention is to provide a simple, strong, and easily-steered construction of the above-indicated class.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan of the running-gear of the carriage with parts in section. Fig. 2 is an elevation of the fore-carriage with parts in section on line 2 2 of Fig. 1. Fig. 3 is a cross-section on the line 3 3 of Fig. 2, and Fig. 4 is a side elevation showing a spring-support for the motor.

The running-gear consists of a body provided with wheels, and the rear part of the carriage may be constructed in any approved manner. As shown, it comprises a rear axle A, with rear wheels A′ and a central longitudinal or reach member A^2, connected pivotally with the fore-carriage, so that each part can swing relatively to the other about an axis extending lengthwise of the running-gear.

The fore-carriage comprises an axle B, having an open enlarged central portion B′ of oval shape, and rearwardly-converging braces B^2, which meet at a socket B^3. Ball-bearings C C′ are preferably located at the socket B^3 and at the rear member of the oval portion B′ to journal the reach-rod A^2. The outer ends of the axle B are forked, the fork member B^4 being superposed, as shown best in Fig. 1, and to each lower fork member is attached a link D, (preferably pivotally,) and the lower end of the link is connected with one end of an upwardly-convexed semi-elliptical supporting-spring E. The central portion of this spring fits into the oval portion B′ of the axle and has vertical play therein. The central portion of the spring E is connected, by hoops E^3 or other means which pass through the oval portion B′, with the central portion of a downwardly-convexed semi-elliptical spring E′, the ends of which are attached to the upper ends of links D′, connected at their lower ends with rods F or other parts for supporting the carriage-body. (Not shown.)

The fork members B^4 receive the alining vertical pivots G of a motor frame or casing H, which contains a motor, (not shown,) preferably an electric motor, and to the casing are secured two spaced vertical plates H′, and between said plates is mounted centrally on the motor-shaft I a pinion I′, in mesh with gear-wheels I^2, journaled at I^3 on the plates H′. The wheels I^2 engage interiorly with a toothed rim J, rigidly connected or integral with the hub K′ of the front wheel K, said hub being mounted to turn on an axle H^2, projected outwardly from the outer plate H′.

To turn the wheels K for the purpose of steering the carriage, I provide lugs H^3 on the frame H, and said lugs may be connected by a rod L and operated by any suitable steering mechanism.

To protect the gearing, I prefer to provide a tubular case M, secured to axle B by supports N and connected by a flexible bellows portion M′ (made, for instance, of leather) with a ring M^2, surrounding the toothed rim J loosely to allow the rim to swing relatively to the central case M. Balls C^2 are placed between the rim J and ring M^2. The case M has vertical slots M^3 for the passage of the rods F. The protecting-case and its connections are shown in Fig. 2 only.

It will be seen that each wheel has its own motor, thus rendering the use of differential gearing unnecessary; also, since the motor swings with the wheel in the steering motion of the latter the position of the motor with respect to the wheel is always the same and a very simple construction is the result.

In some cases it may be desirable to secure greater elasticity to reduce jars, particularly with powerful and heavy motors. To this end I may provide springs N N′ on the pivots G′ of the motor-frame H, the springs N being interposed between said frame and the fork members B^4, while the springs N′ are located around the pivots G′ exteriorly of the fork

members. Adjusting screws or nuts O permit of varying the tension of the springs N N'. The pivots G' are longer than the pivots G, hereinbefore described, and slide up and down in the fork members B^4, it being understood that the motor-frame H is properly spaced from the fork members for this purpose.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a horseless carriage, the combination of a wheel having a toothed ring, a motor having its drive-shaft located centrally relatively to said ring, and driving connections from said shaft to a plurality of points of the said ring.

2. In a horseless carriage, a running-gear having on each side driving ground-wheels mounted to rotate about axes capable of swinging about vertical pivots, and motors mounted to swing with the wheels in their steering movement, and having their drive-shafts located centrally of the said wheels.

3. In a horseless carriage, a running-gear having on each side driving ground-wheels mounted to rotate about axes capable of swinging about vertical pivots, separate motors for the driving-wheels located on opposite sides of the carriage, each motor being mounted to swing with the respective wheel, and having its drive-shaft located centrally of the said wheel, and transmission mechanism from said drive-shaft to a plurality of points of the wheel.

4. In a horseless carriage, the combination of the axle having superposed fork members at its ends, a frame pivotally supported between said fork members, a wheel-axle projecting outwardly from said frame, a motor-shaft journaled in said frame, a pinion on said shaft, gear-wheels meshing with said pinion and journaled on the said frame, and a ground-wheel journaled on said wheel-axle and provided with a toothed rim meshing with said gear-wheels.

5. In a horseless carriage, the combination of the body of the running-gear, frames pivotally connected with the said body on each side to swing about vertical axes, a wheel-axle projected outwardly from each frame, a motor-shaft journaled in said frame, a pinion on said shaft, gear-wheels meshing with said pinion and journaled on the said frame, and a ground-wheel journaled on said wheel-axle and provided with a toothed rim meshing with said gear-wheels.

6. In a horseless carriage, a running-gear body, frames provided with axles and mounted to swing on the body about vertical axes, a wheel journaled on each of the axles, and a case having a rigid central portion, and flexible side portions arranged to follow the swinging movement of the said frames.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ENRIQUE SANCHIS.

Witnesses:

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