

No. 666,554.

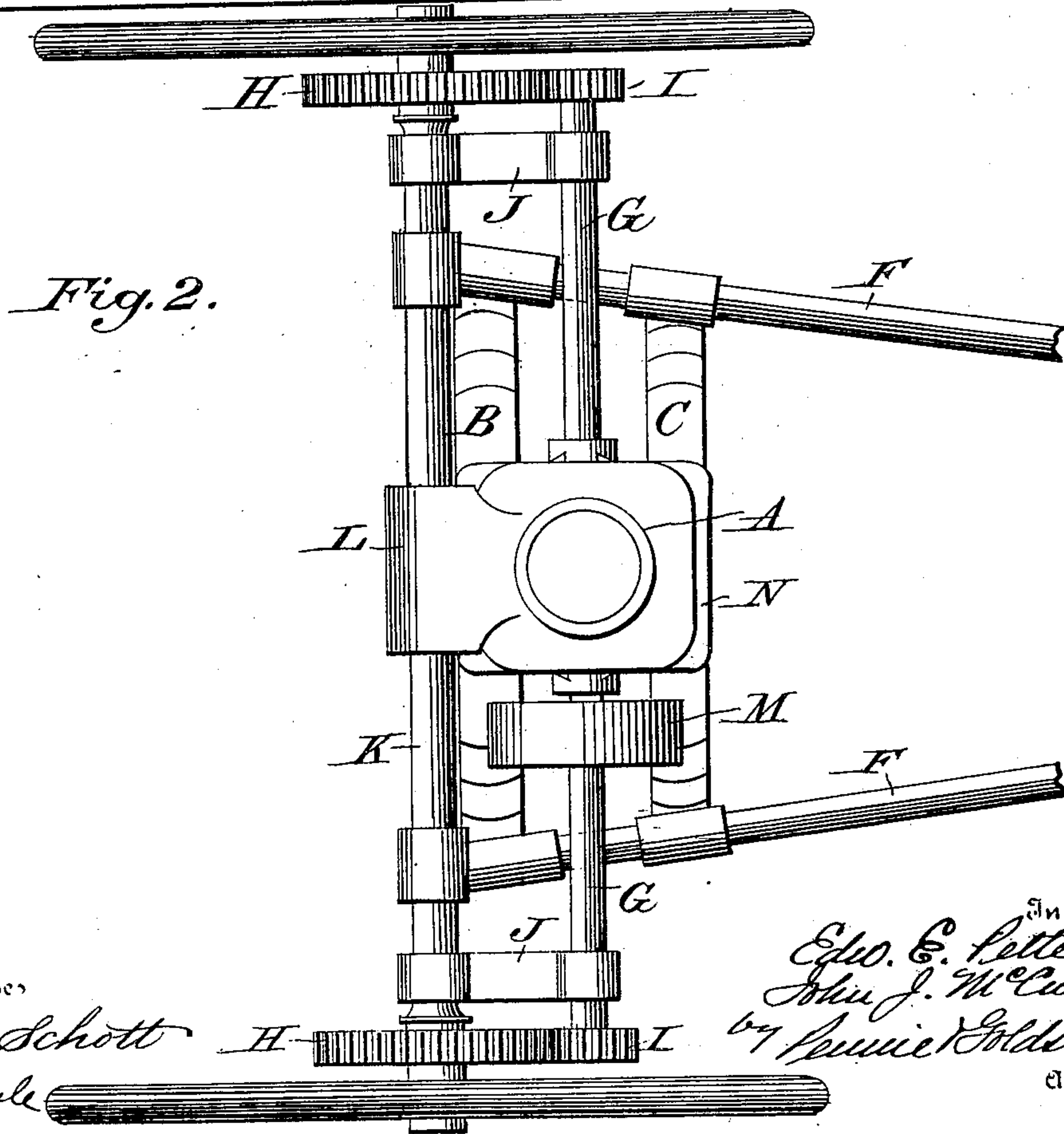
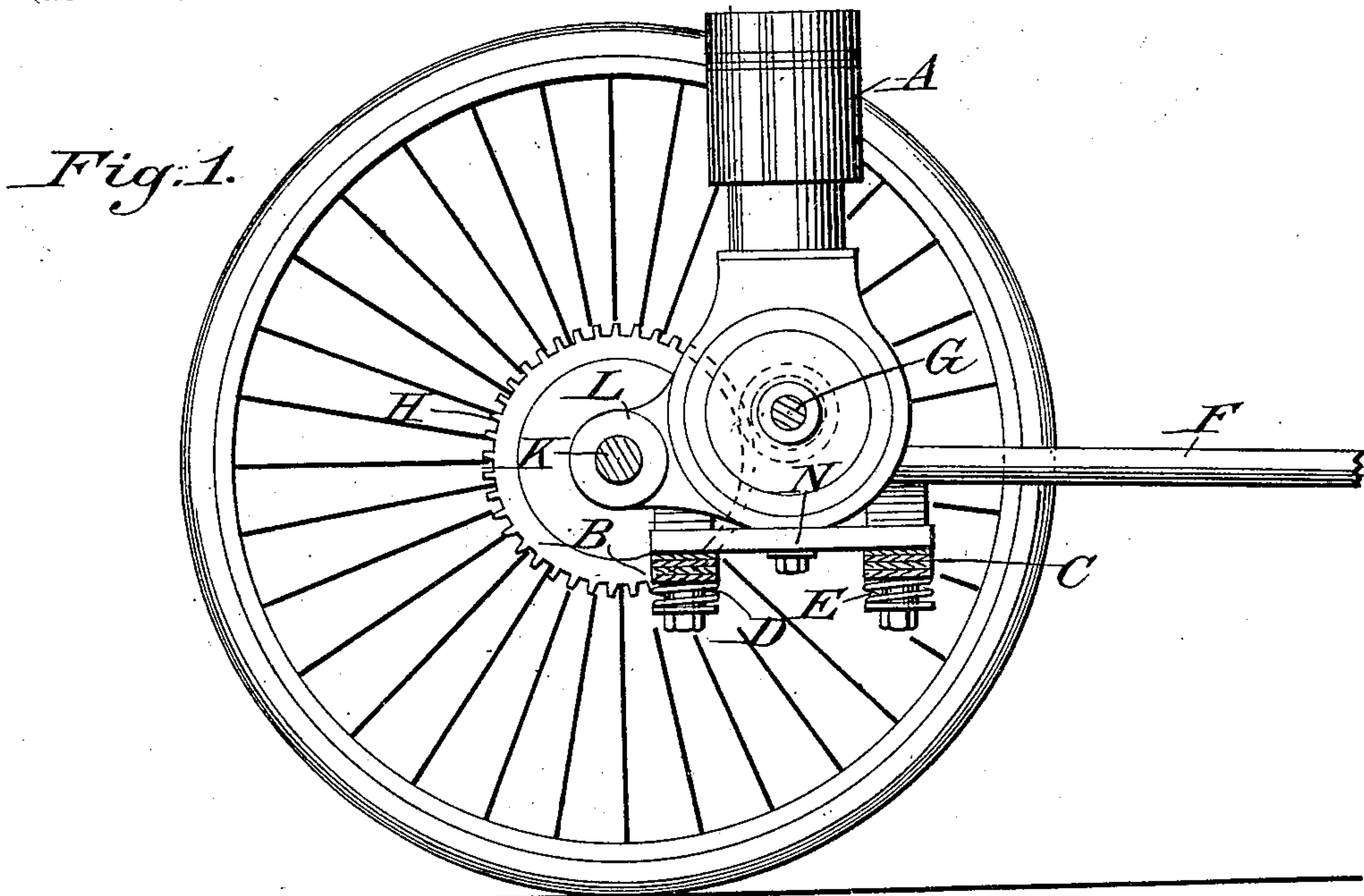
Patented Jan. 22, 1901.

E. E. PETTEE & J. J. McCUTCHAN.
MOTOR VEHICLE.

(Application filed May 12, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

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Fig. 3.

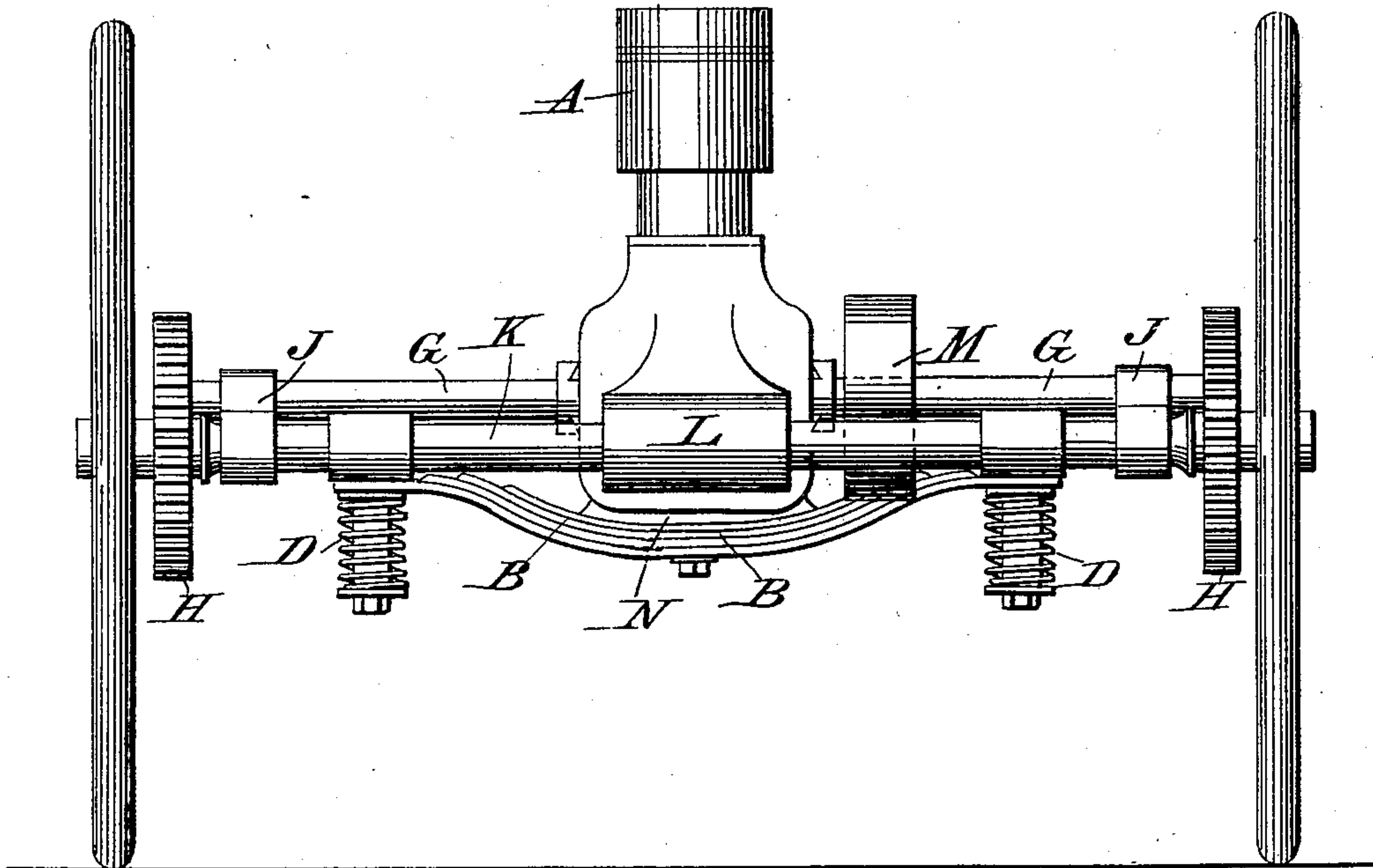
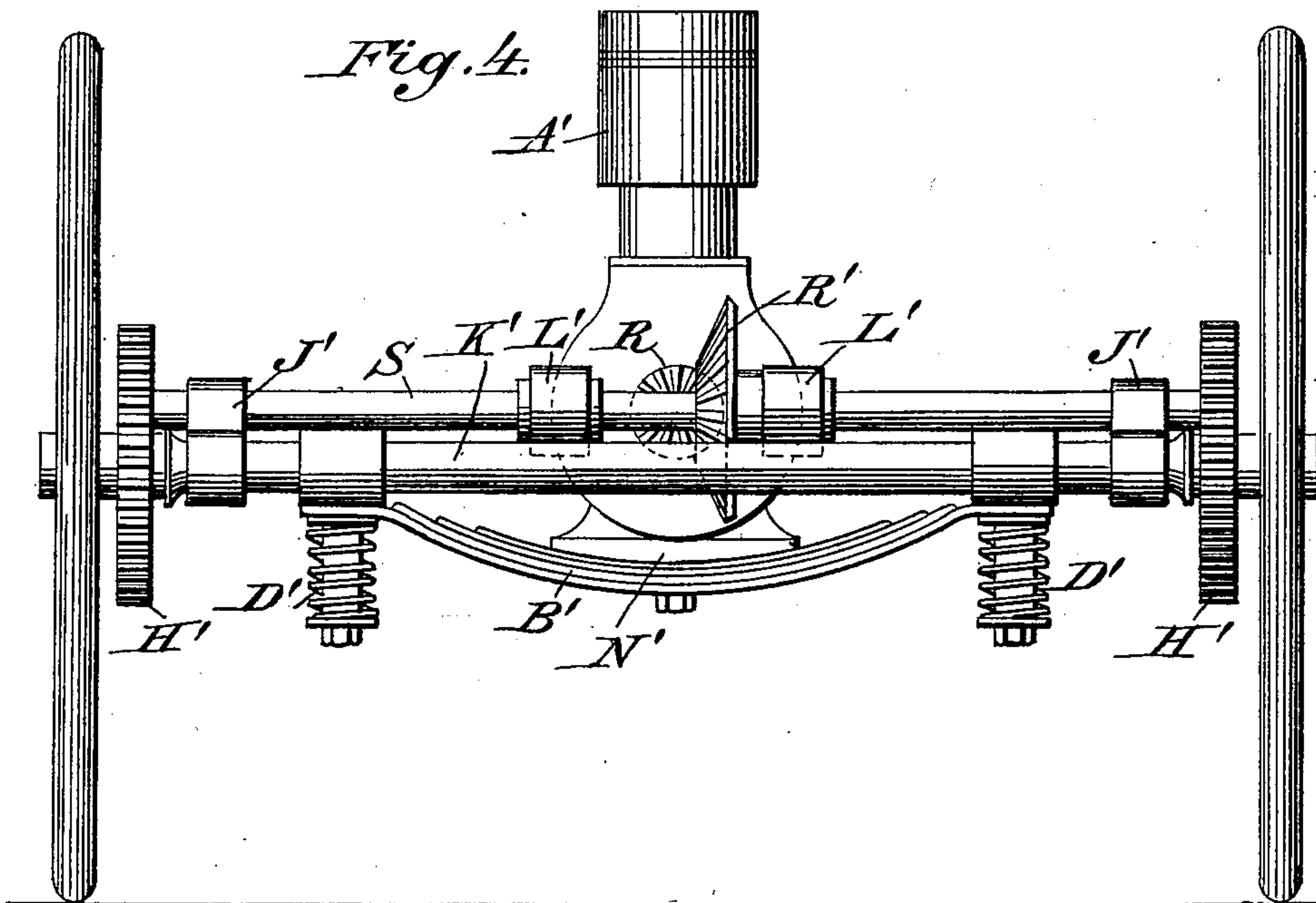


Fig. 4.



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Fig. 5.

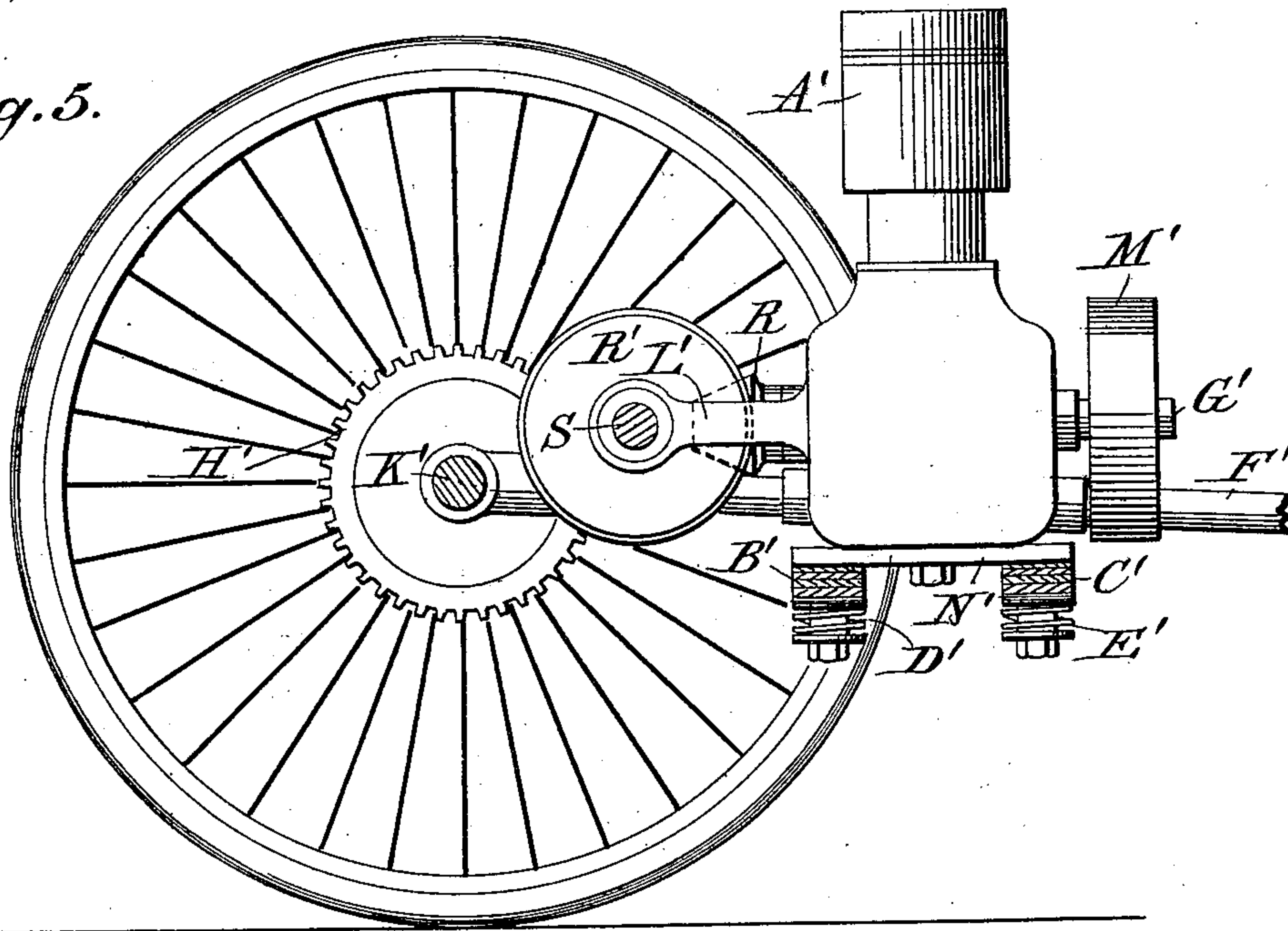
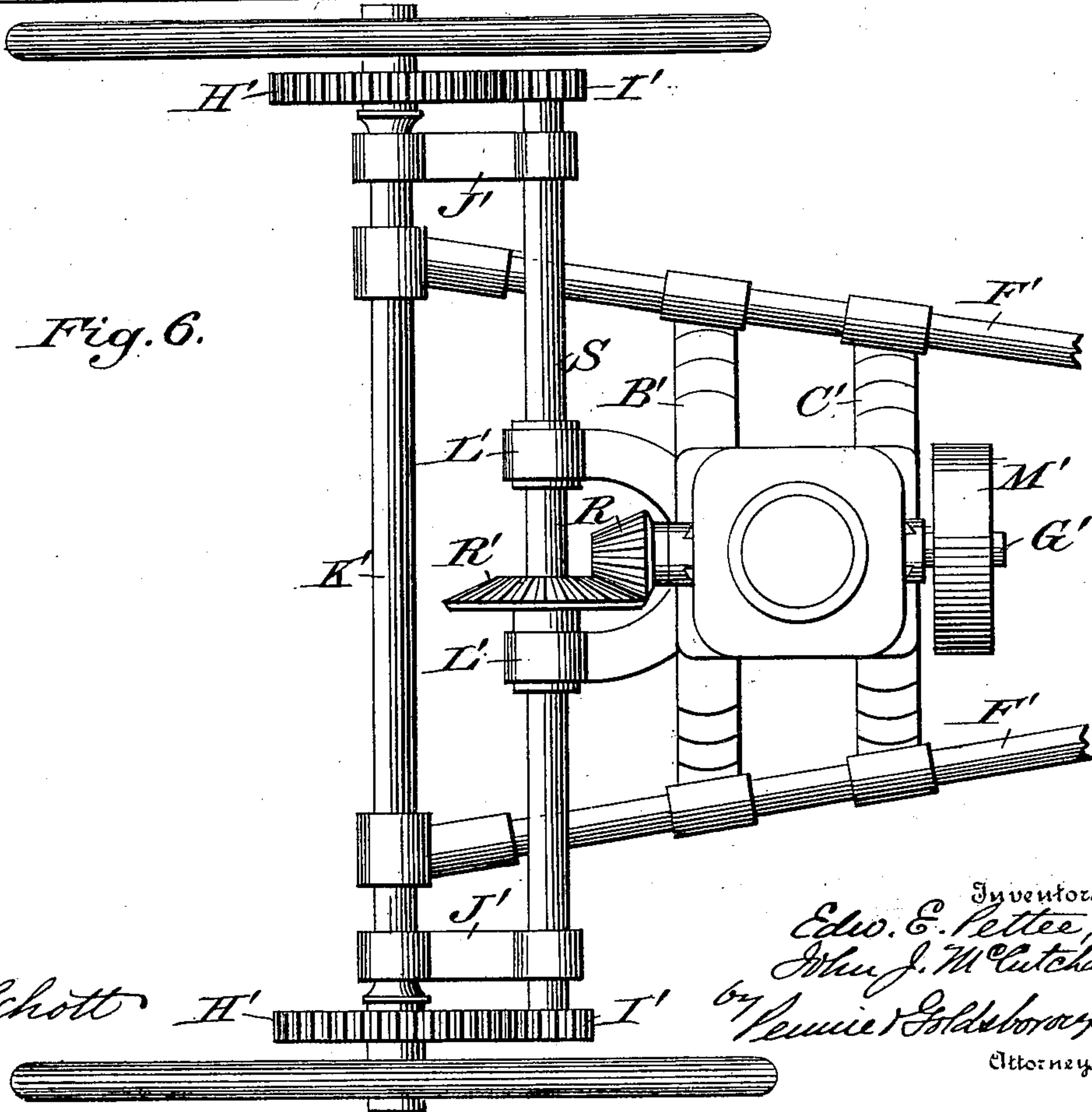


Fig. 6.



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H'

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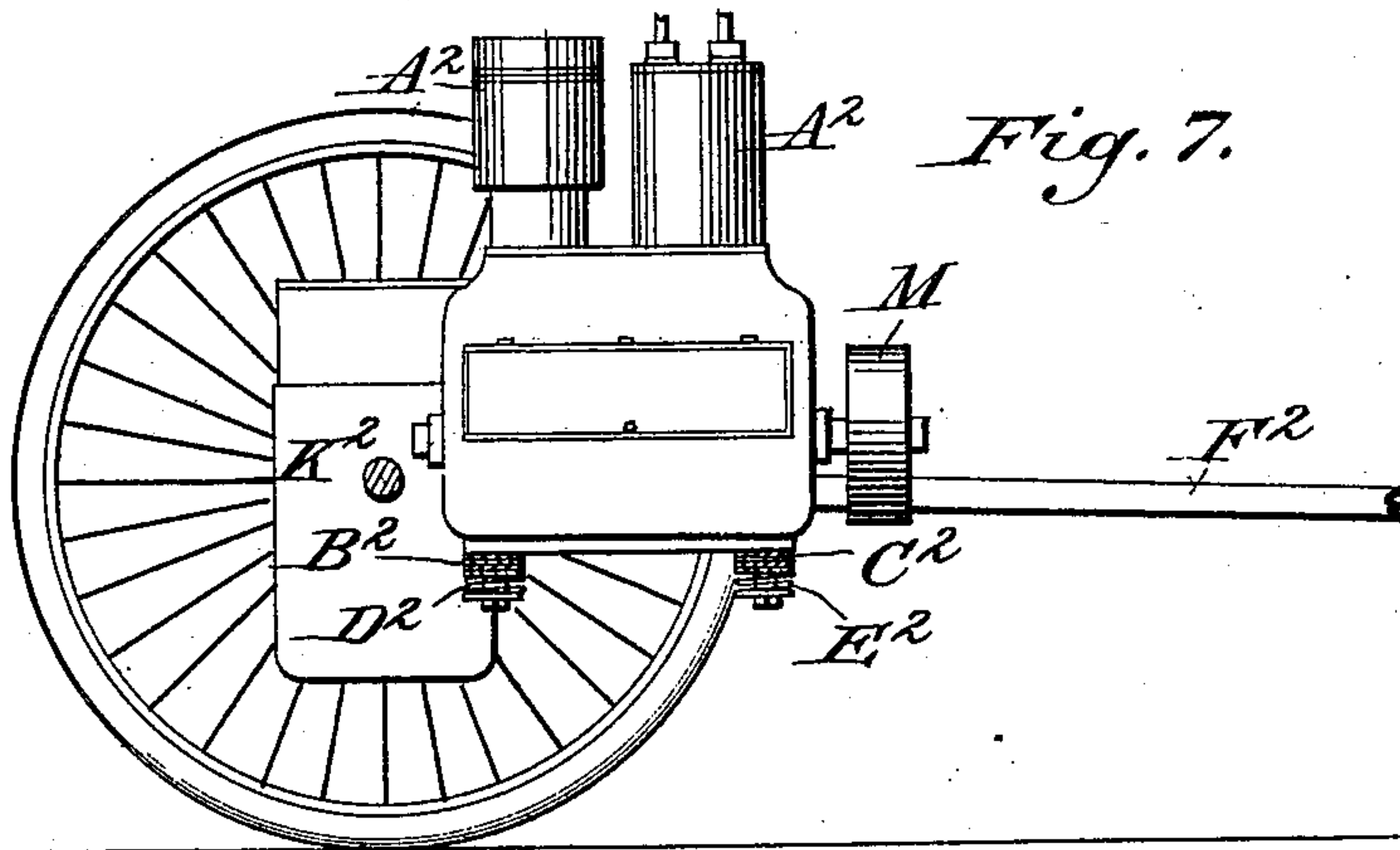


Fig. 7.

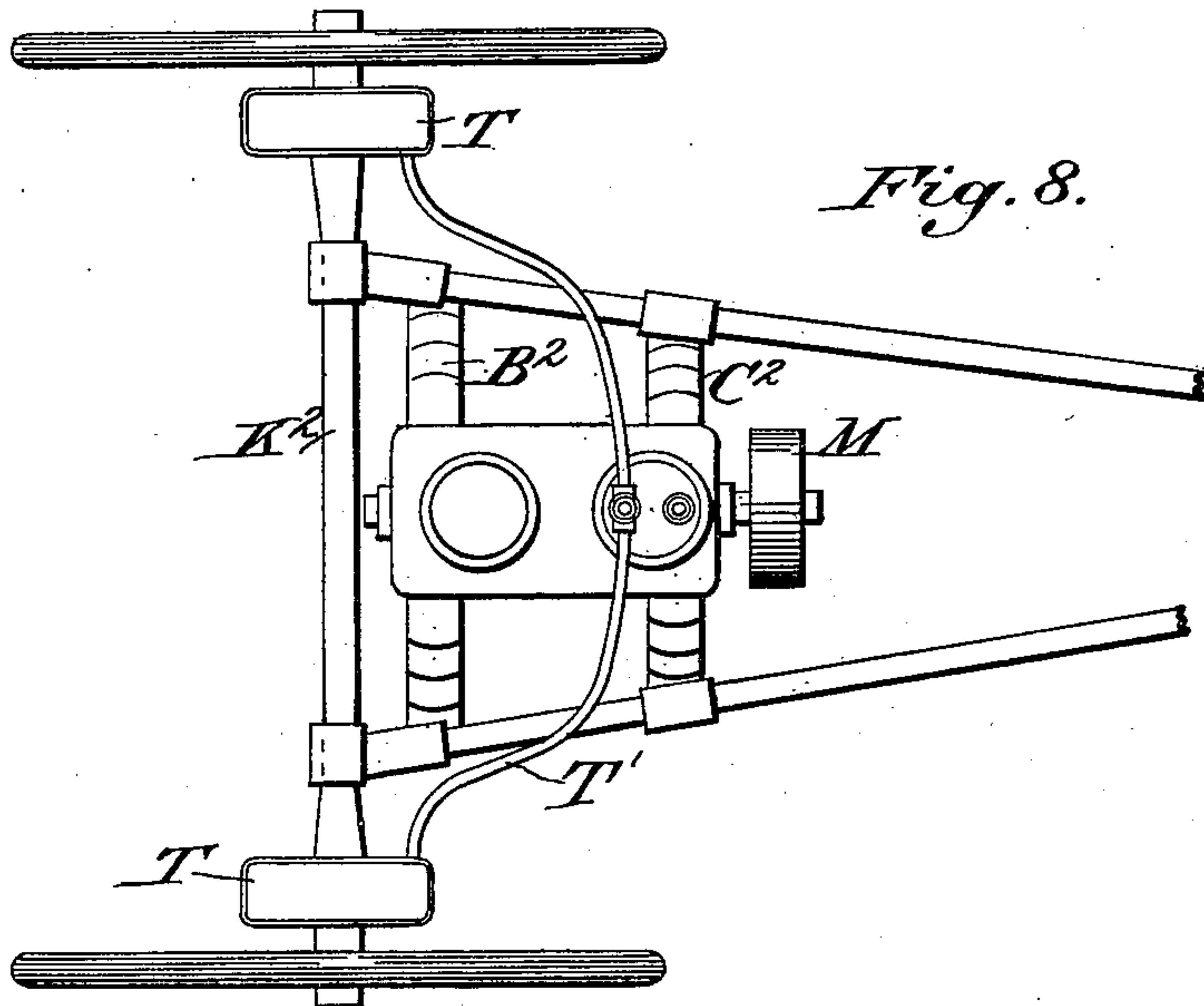


Fig. 8.

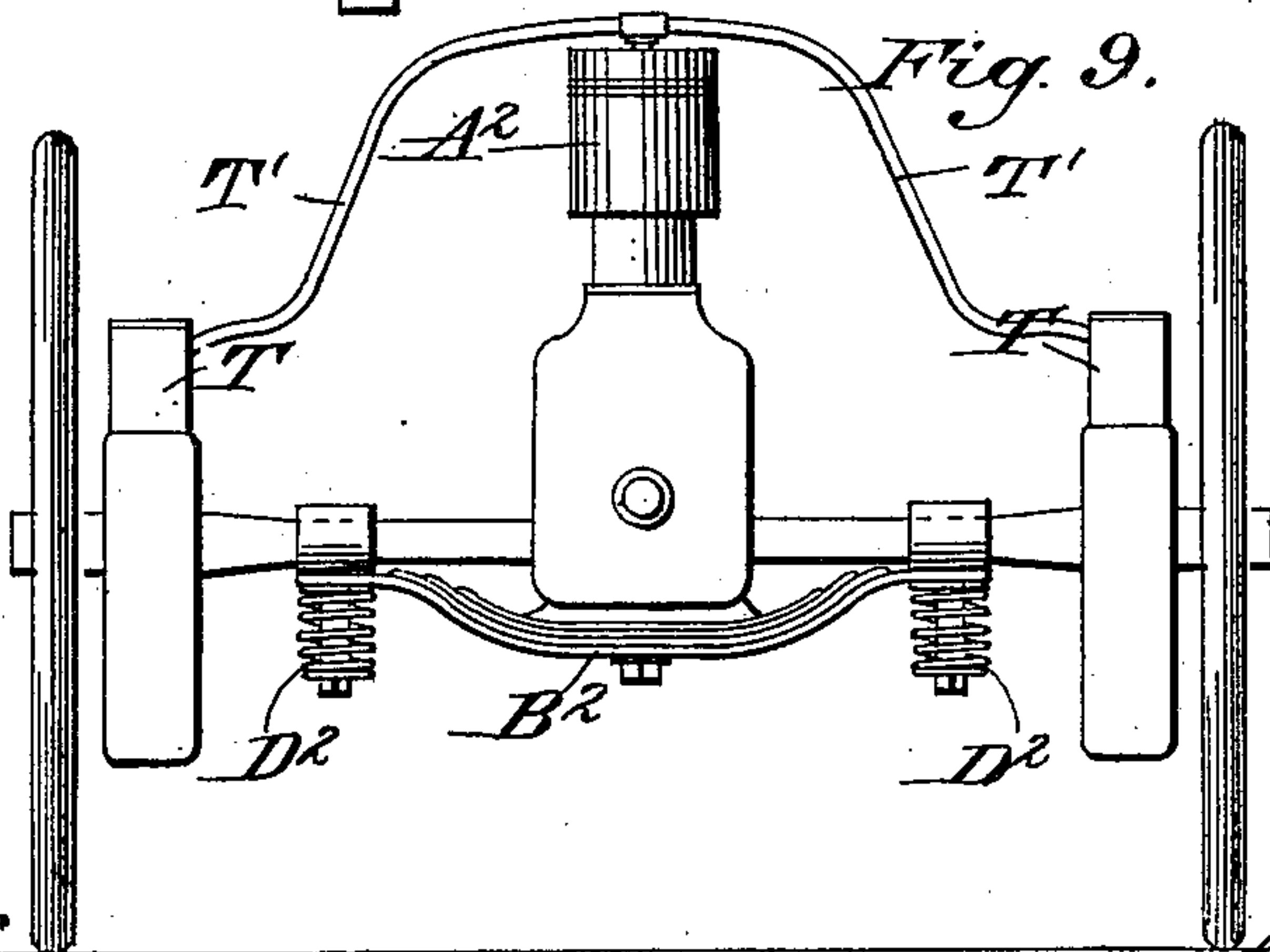


Fig. 9.

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UNITED STATES PATENT OFFICE.

EDWARD E. PETTEE AND JOHN J. McCUTCHAN, OF NEW YORK, N. Y., ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE AUTOMATIC AIR CARRIAGE COMPANY, OF NEW YORK.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 666,554, dated January 22, 1901.

Application filed May 12, 1899. Serial No. 716,538. (No model.)

To all whom it may concern:

Be it known that we, EDWARD E. PETTEE and JOHN J. McCUTCHAN, citizens of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Suspension of Engines Upon Vehicles; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in the suspension of explosive or other reciprocating engines upon vehicles, and has for its object to so mount or locate the engine thereon that the vibrations caused by the reciprocation shall not be transmitted to the body of the vehicle.

In carrying out our invention we suspend the engine upon springs that bear upon the running-gear of the vehicle, while the body of the vehicle rests upon other springs which have no connection with those supporting the engine. In this manner the vibration of the engine is taken up by the resiliency of its supporting-springs and no vibration is transmitted to the body of the vehicle.

In the accompanying drawings, Figure 1 represents in sectional elevation the application to a vehicle of one form or modification of the invention, the shaft of the engine being geared directly to the wheel-hubs. Fig. 2 represents a top plan view thereof. Fig. 3 represents a rear elevation thereof. Figs. 4, 5, and 6 represent similar views of another form or modification thereof, the engine-shaft being geared indirectly to the vehicle-hubs through the intermediacy of bevel-gearing and a secondary transmitting-shaft; and Figs. 7, 8, and 9 represent similar views of another form or modification wherein independent motors are located upon the vehicle-hubs and are actuated by compressed air supplied from a combined engine and air-compressor.

Similar letters of reference indicate similar parts throughout the several views.

In the form shown in Figs. 1, 2, and 3, A represents any ordinary explosive or reciprocating engine having a shaft G, operated by its piston. To the shaft G are attached the fly-wheel M and pinions I, which mesh with the gear-wheels H, rigidly attached to the hubs of the vehicle-wheels. The shaft G is supported upon the vehicle-axle K by the bearings J, which insure a proper meshing of the gear-wheels. The engine A is formed with a bracket L, through which the axle K passes, and which forms a bearing for the engine upon the axle, thereby securing a perfect alinement of the shaft G in all possible positions. In addition to the supporting-bracket L we suspend the engine upon the cross-springs B and C, which in turn are supported by the coil-springs D and E, that bear upon the running-gear F. The plate N is secured to the base of the engine and also to the springs B and C, forming a seat for the engine. As the engine is upright, it will be seen that the blow caused by the operation of the engine is downward and is received by the springs, which take up the vibratory effect and prevent transmission of the jar of the engine to the body of the vehicle.

In the form shown in Figs. 4, 5, and 6, A' represents, as before, any ordinary explosive or reciprocating engine having a shaft G', operated by its piston. To the shaft G' are attached the fly-wheel M' and the bevel-pinion R, which meshes with the bevel gear-wheel R', attached to the shaft S. The shaft S is supported by the bearings L', attached to the engine A', and by the bearings J', attached to the vehicle-axle K'. At the ends of the shaft S are secured the pinions I', meshing with the gear-wheels H', which are rigidly attached to the hubs of the vehicle. The bearings J' being rigidly attached to the axle K' insure a perfect alinement of the shaft G' and a positive meshing of the gear-wheels I' and H'. To the axle K' is secured the running-gear or frame F' of the vehicle, and from this frame are suspended the cross flat leaf-springs B' and C'. These springs rest upon the coil-springs D' and E', which encompass hangers or suspenders attached to the running-gear, as shown in Fig. 4. Upon the flat leaf-springs is placed the engine A' in an upright position

and attached thereto by its base N' in such a manner that the jar of the engine is taken up by these springs.

In Figs. 7, 8, and 9, A² represents an explosive or reciprocating engine in combination with an air-compressor for compressing air to operate the motors T, which are attached to the hubs of the vehicle. T' denotes flexible connections from the compressors to the motors. K² is the axle to which the running-gear F² is attached, and B² C² are cross-springs supporting the engine in an upright position resting upon the coil-springs D² E², which are supported by hanger-rods, as before, from the running-gear. A suitable form of combined explosive-engine and air-compressor for use in this connection is illustrated, for instance, in our prior applications for Letters Patent, Serial Nos. 708,421 and 708,422, filed March 9, 1899.

It will of course be understood that the vehicle-body is to be supported upon springs independent of those which support the engine.

It is characteristic of all of the modifications illustrated that when the engine is in operation the explosions and the movements of its piston will be manifested in the form of a downward and upward thrust and that the consequent jars, shocks, or vibrations will be transmitted to and taken up by the suspending-springs instead of being transmitted to the body of the vehicle.

It is further characteristic of our invention that the engine and fly-wheel have substantially a central location with respect to the running-gear and that in the form illustrated in Figs. 7, 8, and 9 the fly-wheel rotates in a plane transverse to the tread of the wheels, thereby reducing the vibratory effect of the revolving fly-wheel to a considerable extent.

In the use of an explosive or like reciprocating engine mounted upon the body portion of a vehicle to propel the same great annoyance and inconvenience are caused by such vibrations and throbbings of the engine trans-

mitted to the body of the vehicle. By our invention of suspending the engine in an upright or substantially upright position upon springs having no connection with the vehicle-body we entirely obviate these annoyances.

Having thus described our invention, what we claim is—

1. In a motor-vehicle, the combination of the running-gear comprising rods or bars joining the front and rear axles, springs supported by said rods or bars, cross-springs spanning the opening between the rods or bars and supported by the first-named springs, an engine carried by the cross-springs independent of the vehicle-body, and actuating means between the engine and the vehicle-wheels.

2. In a motor-vehicle, the combination of the running-gear comprising rods or bars joining the front and rear axles, springs supported by said rods or bars, cross-springs spanning the opening between the rods or bars and supported by the said first-named springs, a motor carried by the cross-springs independent of the vehicle-body, and compensating connections between the motor and axle of the vehicle.

3. In a motor-vehicle, the combination of the running-gear comprising rods or bars joining the front and rear axles, coiled springs supported by said rods or bars, cross-springs spanning the opening between said rods or bars and having their ends supported by said coiled springs, a motor carried by the cross-springs independent of the vehicle-body, and alining connections between the motor and axle of the vehicle.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWARD E. PETTEE.
JOHN J. McCUTCHAN.

Witnesses:

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M. WILSON.