

No. 809,475.

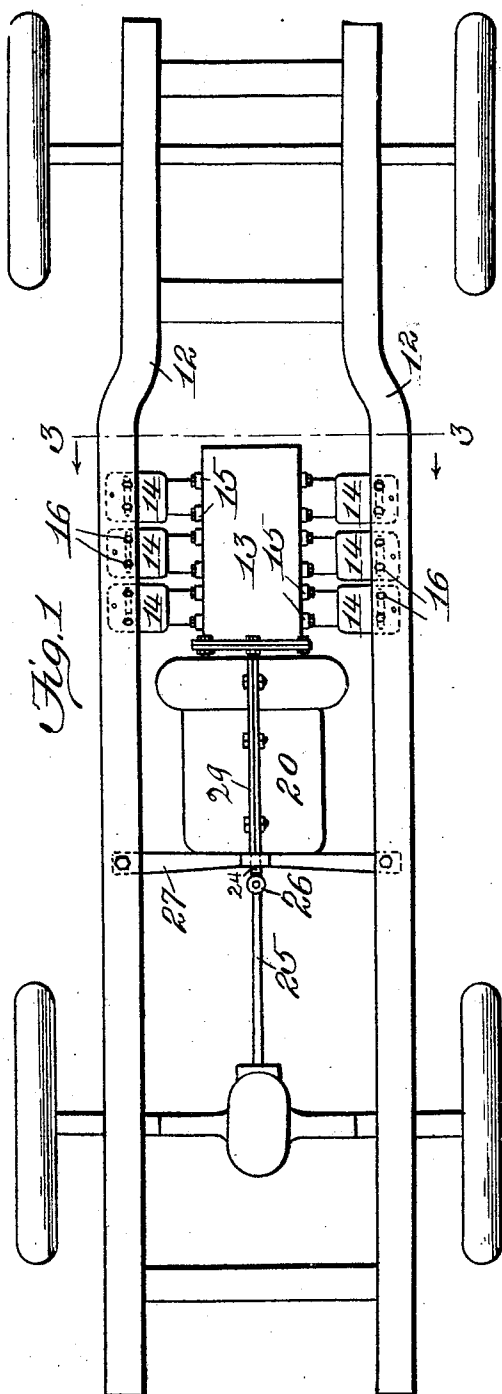
PATENTED JAN. 9, 1906.

T. L. & T. J. STURTEVANT.

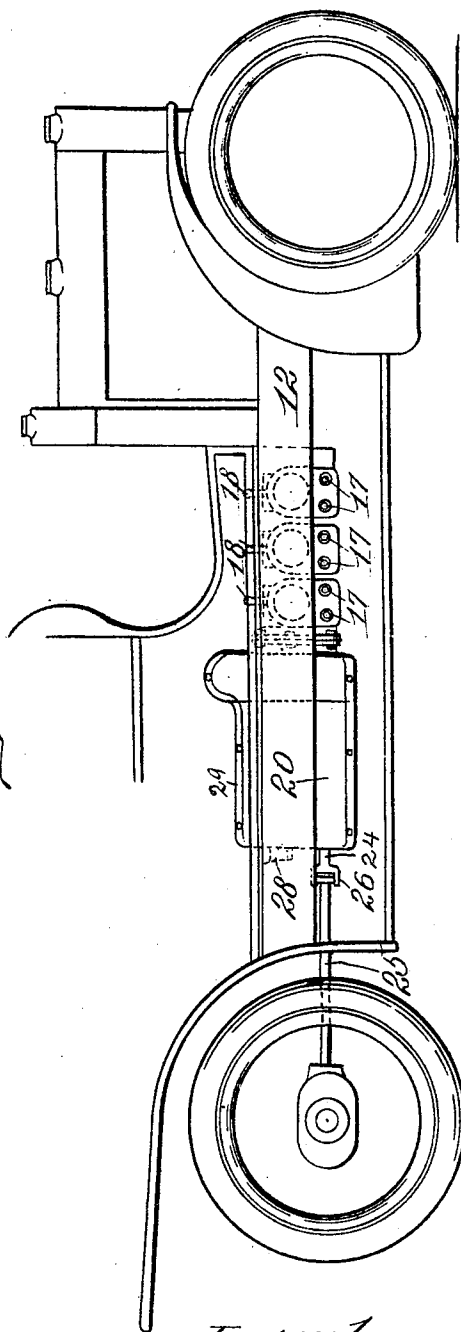
MOTOR VEHICLE.

APPLICATION FILED JUNE 6, 1905.

2 SHEETS—SHEET 1.



Witnesses:
L. M. Sweeney
McDonnell.



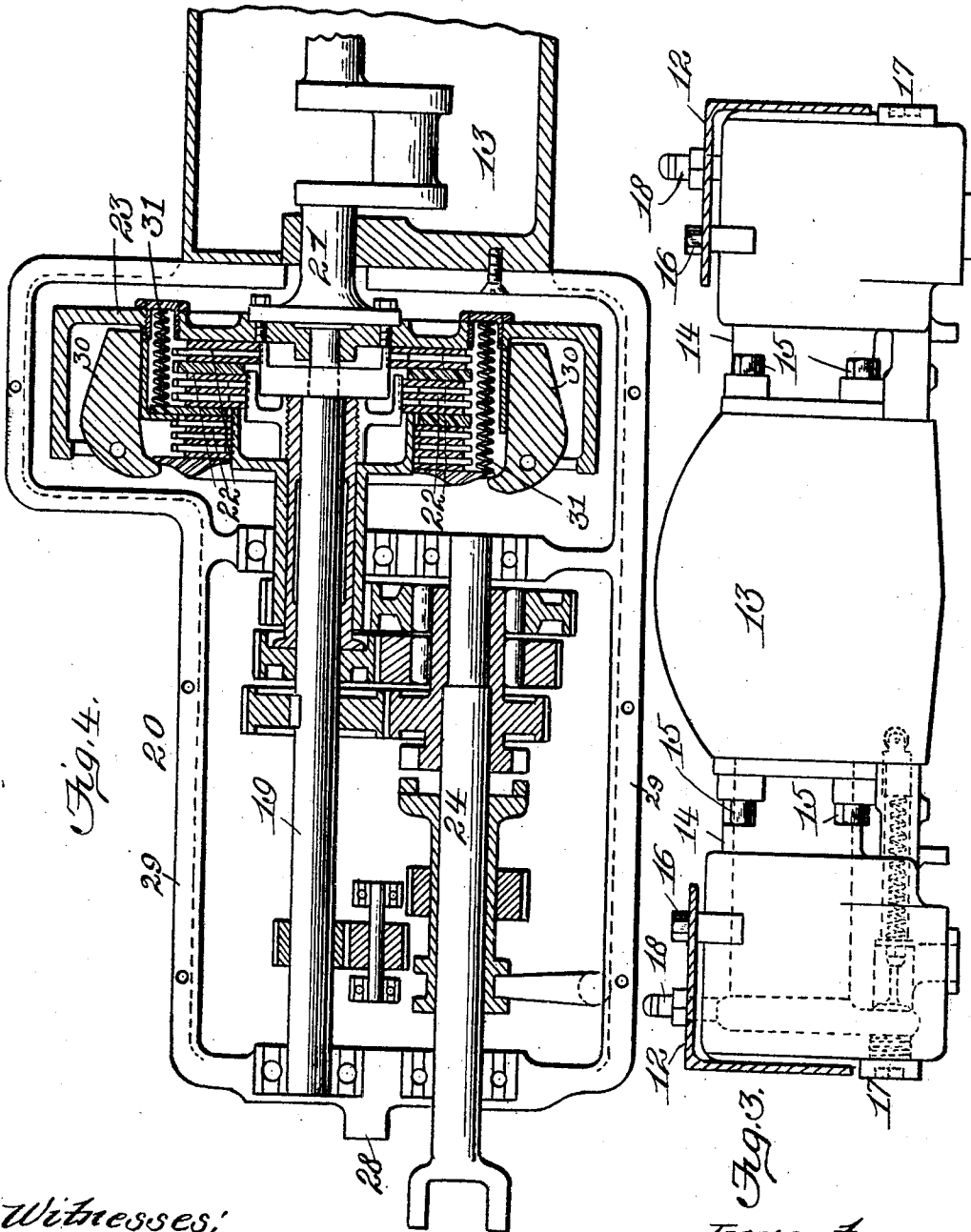
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2 SHEETS—SHEET 2.



Witnesses:
C. M. Sweeney
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Inventors:
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UNITED STATES PATENT OFFICE.

THOMAS LEGGETT STURTEVANT, OF QUINCY, AND THOMAS JOSEPH STURTEVANT, OF WELLESLEY, MASSACHUSETTS, ASSIGNORS TO STURTEVANT MILL COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

MOTOR-VEHICLE.

No. 809,475.

Specification of Letters Patent.

Patented Jan. 9, 1906.

Application filed June 6, 1905. Serial No. 263,937.

To all whom it may concern:

Be it known that we, THOMAS LEGGETT STURTEVANT, residing at Quincy, and THOMAS JOSEPH STURTEVANT, residing at Wellesley, in the county of Norfolk and State of Massachusetts, citizens of the United States, have invented or discovered certain new and useful Improvements in Motor-Vehicles, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements on the motor-vehicle construction covered by our Patent No. 778,810, granted December 27, 1904.

The present invention has for its object to provide such a relative arrangement of the engine-frame and the chassis-frame as will enable the latter to better resist the shocks of the engine, so that the tendency to twist the side beams of the chassis-frame will be reduced to a minimum, as also to locate the engine-frame on a somewhat higher level than in our former construction, so that a greater clearance from the ground will be afforded, thereby lessening the danger to the driving mechanism from road obstructions, while at the same time providing such an arrangement of the driving mechanism as will enable the power of the engine to be transmitted to the driving-wheels of the vehicle with the least possible loss, as also to combine the features just mentioned with simplicity of construction, so that the fewest possible parts will be required, while at the same time the driving mechanism of the vehicle will be securely inclosed and housed against exposure to dust.

In the accompanying drawings, Figure 1 is a plan view of an automobile-chassis embodying the present invention, and Fig. 2 is a side view of the same. Fig. 3 is a cross-section of the chassis-frame on line 3 3 of Fig. 1; and Fig. 4 is a detail sectional view showing the transmitting mechanism, which is inclosed within the clutch and gear casing.

Referring to the drawings, 12 denotes the side bars or side beams of the chassis or running-gear frame of the vehicle, the said side beams being double-flanged or of angular form or inverted-L-shape in cross-section, as more clearly shown in Fig. 3. The frame of the opposed-cylinder gas-engine forms a rigid transverse part of the chassis or vehicle frame and comprises a crank-casing 13 and the cyl-

inders or cylinder-casings 14, the latter being secured to the said crank-casing by bolts 15 and attached to the side beams 12 by bolts 16, so that the engine-frame is hung crosswise of the chassis. In this improved construction the engine-frame is hung, preferably, from the upper flanges of the side beams of the chassis and between the front and rear axles of the vehicle in such a manner that the axes of the cylinders are approximately opposite the vertical centers of the depending flanges of the side beams, against which the ends of the cylinders are preferably abutted. This construction affords a better resistance by the chassis-frame to the shocks of the engine than in the construction shown by our Patent No. 778,810, in which the engine-frame was hung from lower flanges on the side beams. In this improved construction the tendency of the shocks or stresses of the engine to twist the side beams is reduced to a minimum and the engine is placed on a higher level than in our former construction, so as to afford a greater clearance from the ground and a better protection of the driving mechanism from road obstructions. In this improved construction we have, however, retained the feature of accessibility to the inlet and exhaust valves 17 of the engine and which valves are located below the side beams of the chassis-frame, so that they may be removed horizontally when required without inconvenience. The spark-plugs 18 are also conveniently accessible, in that they are in the construction herein shown inserted in the tops of the cylinder portions of the engine-frame through holes bored in the horizontal flanges of the side beams; but, if desired, they may be inserted through holes bored in the side or vertical flanges in the side beams, as will be understood. In this improved construction the vehicle driving-shaft 19 is located within the clutch and gear casing 20 in line with the engine crank-shaft 21, and the centrifugal clutch device 22 (which is in principle the same as the centrifugal clutch device covered by our Patent No. 766,551, granted August 2, 1904, and which comprises friction-disks 22, weights 30, and springs 31) is inclosed within the fly-wheel 23, the latter being in the present instance housed within the clutch and gearing casing 20, bolted (see Fig. 1) to the crank-casing 13, so as to be supported at one end by said crank-

casing forming part of the engine-frame, said clutch and gearing casing being in longitudinal alinement with the said crank-casing and said clutch and gearing casing being preferably removable from the chassis-frame independently of said engine-frame. The driving-shaft 19 is connected with the working shaft 24 by variable-speed gears operated from the automatic centrifugal clutch and gearing device in the manner set forth in our said Patent No. 766,551, although the present construction comprises gearing which affords three speeds instead of the two-speed gearing mechanism of the particular construction shown in said patent. The gearing mechanism within the clutch and gearing casing comprises suitable reversing-gears, and the said casing will preferably, also, inclose a suitable pneumatic or fluid-pressure brake. (Not shown.)

In order that power may be transmitted to the cardon-shaft 25 in as direct a manner as possible, so as that said cardon-shaft may be located in a practically straight line with the shaft from which it receives its power, the power-transmitting or working shaft 24 is located below the driving-shaft 19 and is practically in line with the said cardon-shaft 25, which latter has a suitable jointed connection at 26 with the said driving-shaft 24, as will be understood from Fig. 2 of the drawings.

The chassis-frame, besides being braced transversely by the engine-frame, is also braced and stiffened by the cross-beam or cross-bar 27, which is bolted at its ends to the side beams 12 and which cross-bar serves to support one end of the clutch and gearing casing, the latter having a projection 28 seated in said cross-bar or in a suitable hanger thereon or suspended therefrom.

The clutch and gearing casing 20 is preferably made oil-tight, so that the clutch and gearing mechanisms housed therein may run in oil and also dirt and dust will be entirely excluded from said mechanisms and oil will not be dropped on the road or pavements. The two halves of the casing are preferably provided at their contiguous parts with longitudinal stiffening or strengthening flanges 29, through which bolts to hold the two parts of the casing together will pass. From the construction shown and hereinbefore described it will be seen that the motor or engine is secured to the chassis-frame independently of the change-gear casing 20, and the said motor or engine will remain in position if the said change-gear casing be removed.

Although we have herein shown a multicylinder engine, it will be understood that a two-cylinder engine may be used, if desired, and other variations from the details herein shown may be made without departing from our invention, and it will also be understood that some features of our invention may be used independently of others.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. In a motor-vehicle, the combination with a vehicle-frame comprising side beams, of an opposed-cylinder engine-frame arranged crosswise of said vehicle-frame and forming a rigid transverse part of said vehicle-frame, said engine-frame being disposed between the front and rear axles of the vehicle and with the cylinder portions of said engine-frame inside of or between the outside parts of said side beams and approximately central, vertically, of the said side beams.

2. In a motor-vehicle, the combination with a vehicle-frame comprising side beams, of an opposed-cylinder engine-frame arranged crosswise of said vehicle-frame between the front and rear axles of the vehicle and with the cylinder portions of said engine-frame approximately central, vertically, of the said side beams, and with the horizontal inlet and exhaust valves of the engine located below the said side beams.

3. In a motor-vehicle, the combination with a vehicle-frame comprising side beams, of an opposed-cylinder engine-frame arranged crosswise of said vehicle-frame between the front and rear axles of the vehicle and with the cylinder portions of said engine-frame approximately central, vertically, of the said side beams, and having sparking plugs mounted on the upper portions of the cylinders of the engine-frame.

4. In a motor-vehicle, a chassis or vehicle frame comprising side beams, combined with an opposed-cylinder engine-frame forming a rigid transverse part of said vehicle-frame and supported by said side beams and between the outside parts of the latter, with the axes of the cylinder portions of the engine-frame between the lines of the upper and lower parts of said side beams.

5. In a motor-vehicle, a chassis or vehicle frame comprising side beams, combined with an opposed-cylinder engine-frame forming a rigid transverse part of said vehicle-frame and arranged crosswise the chassis and supported by and within the outer faces or parts of said side beams, with the axes of the cylinder portions of the engine-frame between the lines of the upper and lower parts of said side beams, said engine-frames supporting horizontal inlet and exhaust valves which are disposed below the lower lines of the said side beams.

6. In a motor-vehicle, a chassis or vehicle frame comprising side beams, combined with an opposed-cylinder engine-frame forming a rigid transverse part of the vehicle-frame and arranged crosswise the chassis and connected with said side beams, with the axes of the cylinder portions of the engine-frame between the lines of the upper and lower parts of said side beams, and sparking plugs mounted on the upper portions of the engine-cylinders.

7. In a motor-vehicle, the combination with

a chassis or vehicle frame, of a horizontal, opposed-cylinder explosion engine or motor supported by said chassis or frame and arranged crosswise of the latter with its cylinder portions laterally between the outer faces or parts of the side beams of said frame, so that the said side beams can assist in resisting the shock of the explosions of the said engine or motor, and with the inlet and exhaust valves of the said engine or motor below the said side beams.

8. In a motor-vehicle, the combination with a chassis or vehicle frame, of a horizontal, opposed-cylinder explosion engine or motor supported by said chassis or frame and arranged crosswise of the latter with its cylinder portions laterally between the outer faces or parts of the side beams of said frame, so that the said side beams can assist in resisting the shock of the explosions of the said engine or motor, and with the sparking plugs of the said engine or motor mounted upon the upper parts of the said cylinders.

9. In a motor-vehicle, the combination with a chassis or vehicle frame, of a horizontal, opposed-cylinder explosion engine or motor supported by said chassis or frame and arranged crosswise of the latter with its cylinder portions laterally between the outer faces or parts of the side beams of said frame, so that the said side beams can assist in resisting the shock of the explosions of the said engine or motor, and with the inlet and exhaust valves of the said engine or motor below the said side beams, and also with the sparking plugs of the said engine or motor mounted upon the upper parts of the said cylinders.

10. In a motor-vehicle, the combination with a chassis or vehicle frame comprising two angular-flanged side beams of inverted-L shape in cross-section, of an opposed-cylinder explosion engine or motor arranged crosswise of the said frame and hung from the upper flanges of the said side beams and having the axes of its cylinders between the lines of the upper and lower parts of the said side beams, so that the latter are adapted to resist shocks of explosions of the said engine or motor with a minimum tendency to twist the said side beams.

11. In a motor-vehicle, the combination with a chassis or vehicle frame comprising two angular-flanged side beams of inverted-L shape in cross-section, of an opposed-cylinder explosion engine or motor arranged crosswise of the said frame and hung from the upper flanges of the said side beams and having the axes of its cylinders between the lines of the upper and lower parts of the said side beams, so that the latter are adapted to resist shocks of explosions of the said engine or motor with

a minimum tendency to twist the said side beams, the inlet and exhaust valves of the said engine or motor being below the said side beams and the sparking plugs of the said engine or motor being mounted upon the upper portions of said cylinders.

12. In a motor-vehicle, the combination with a chassis or vehicle frame, of an explosion engine or motor supported on said frame crosswise of the latter, with its cylinder portions between the upper and lower lines of the said side beams, a clutch and gearing casing rearward of the engine-frame, a driving-shaft in said clutch and gearing casing in line with the engine-shaft, a working shaft in said clutch and gearing casing below the said driving-shaft and geared thereto, and a power-transmitting shaft connected with said working-shaft and approximately in line with the latter.

13. In a motor-vehicle, the combination with a chassis or vehicle frame, of an engine or motor frame, a gear-casing rigid with and partly supported by said motor-frame, a driving or power shaft connected with the engine or motor, a power-transmitting or working shaft below and geared to the said power-shaft and having its bearings in said casing, and through which latter shaft power is communicated to the driving-wheels of the vehicle.

14. In a motor-vehicle, the combination with a chassis or vehicle frame, of an engine or motor frame, a gear-casing rigid with and partly supported by said motor-frame, a driving or power shaft connected with the engine or motor, a power-transmitting or working shaft below and geared to the said power-shaft and through which latter shaft power is communicated to the driving-wheels of the vehicle, and an automatic clutch within said casing.

15. In a motor-vehicle, the combination with a chassis or vehicle frame, of an engine or motor frame, a gear-casing rigid with and partly supported by said motor-frame, a driving or power shaft connected with the engine or motor, a power-transmitting or working shaft below and geared to the said power-shaft and through which latter shaft power is communicated to the driving-wheels of the vehicle, an automatic clutch and a fly-wheel both within said casing.

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

THOMAS LEGGETT STURTEVANT.

THOMAS JOSEPH STURTEVANT.

Witnesses:

EDNA M. HILTON,

L. H. STURTEVANT.