No. 610,466. Patented Sept. 6, 1898.

A. WINTON.

MOTOR VEHICLE.

(Application filed Jan. 12, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

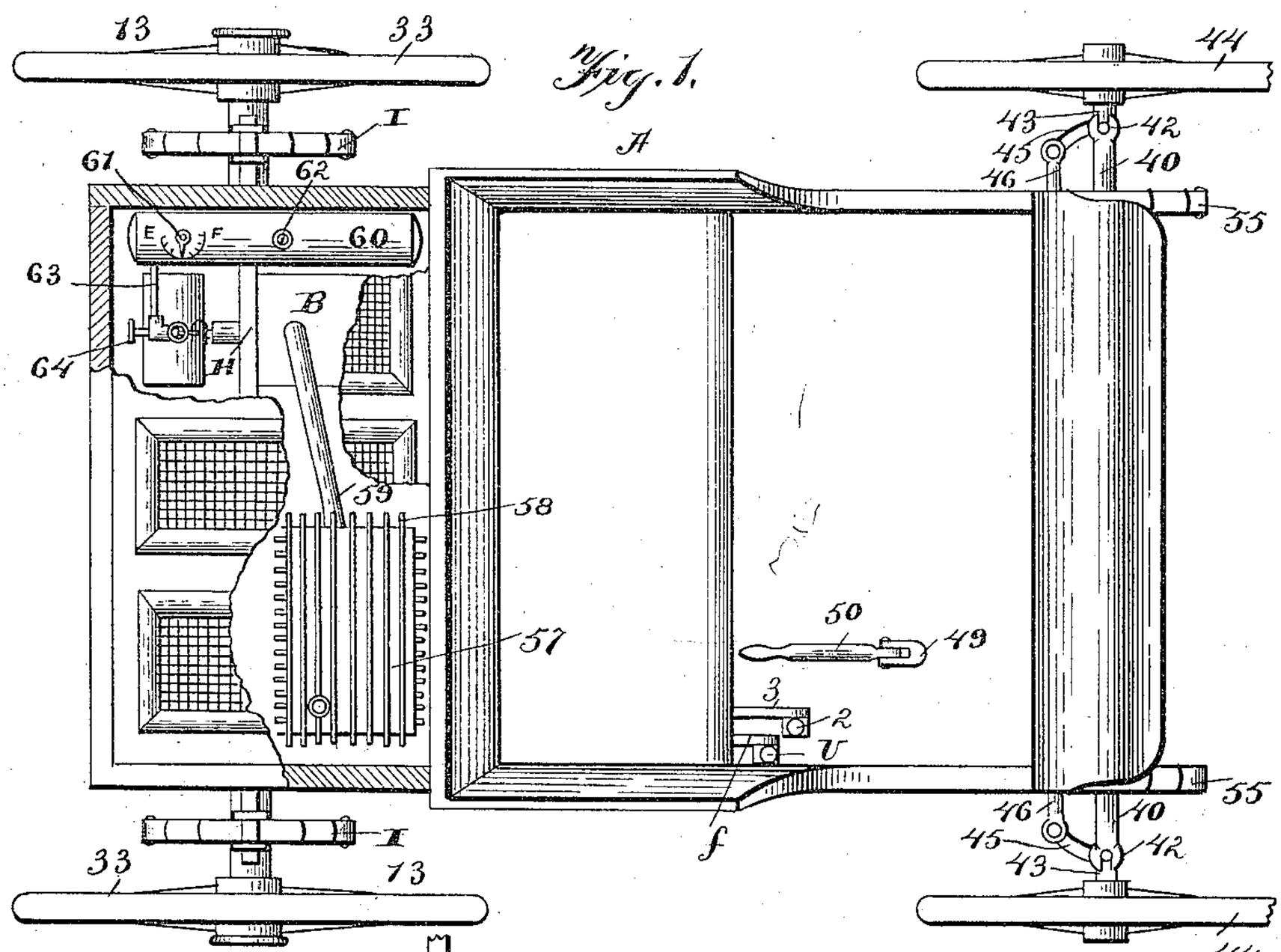


Fig. 2.

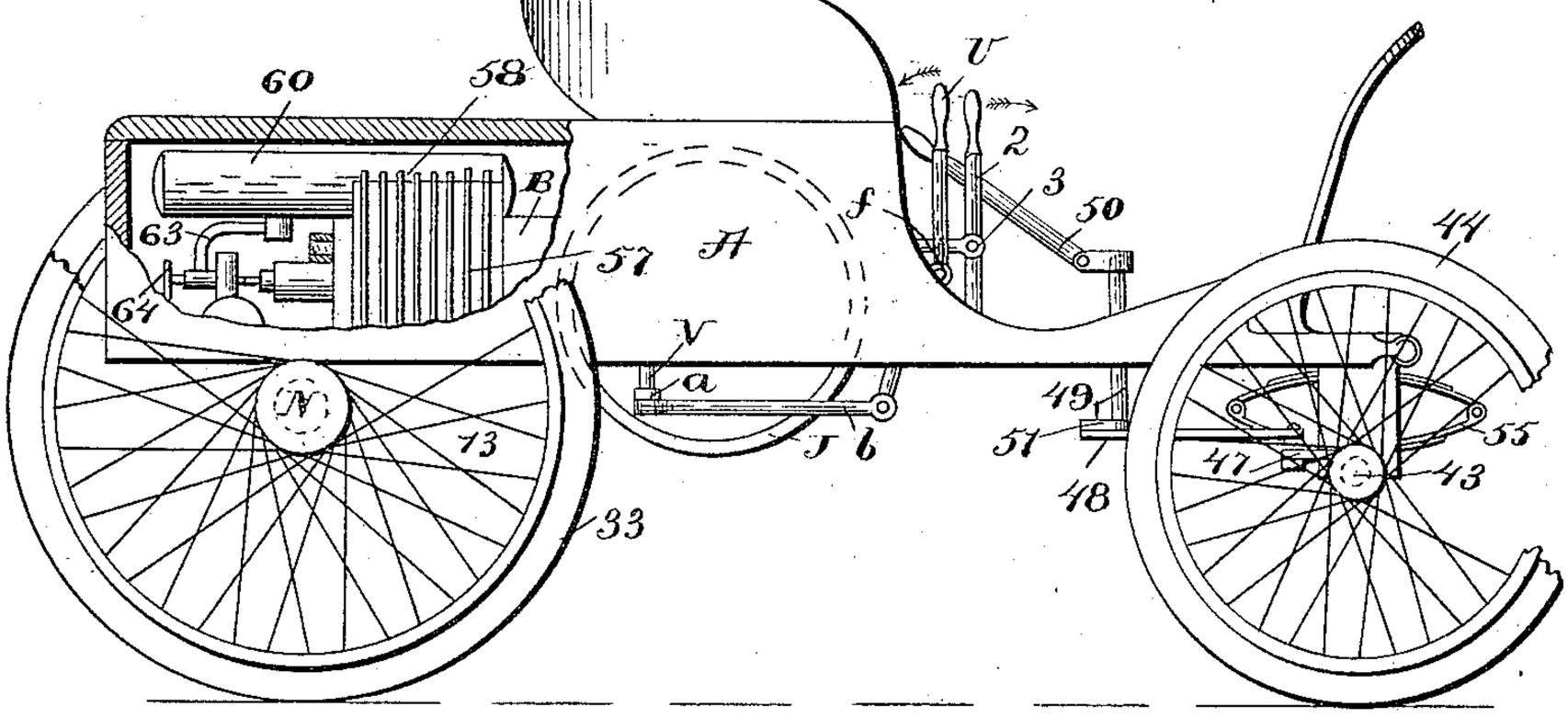
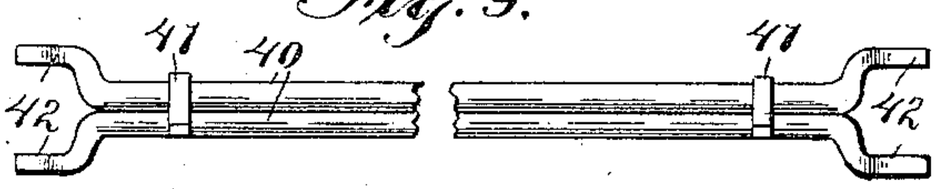


Fig. 9.



Witnesses
Geo. E. Frech.
B. E. Seitz.

Inventor
A. Winton,
by A. S. Pattison,
Attorney

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(No Model.) 3 Sheets—Sheet 2.

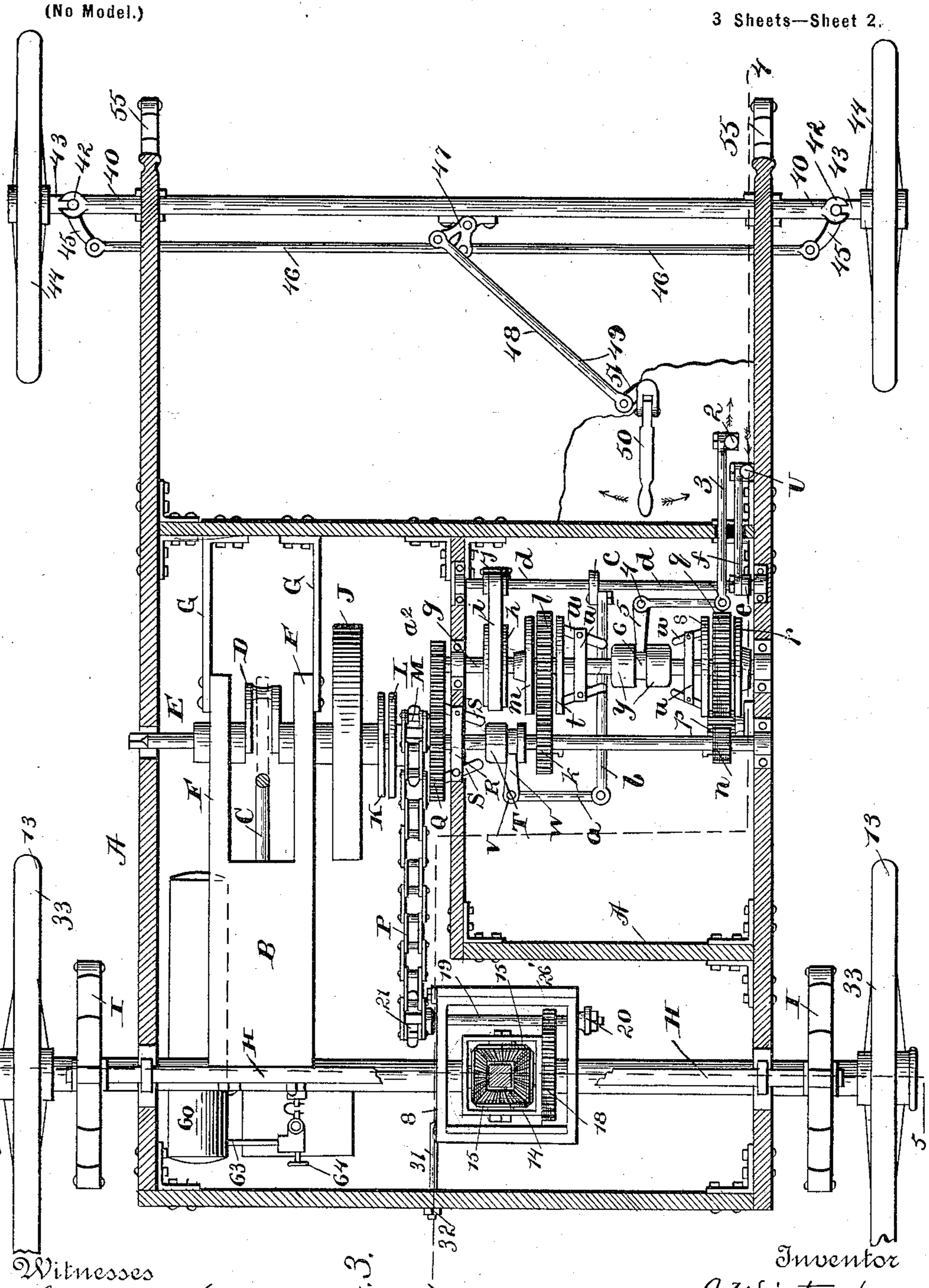

Fig. 3.

Witnesses
Geo. E. Frech.
B. E. Seitz

Inventor
A. Winton
by A. S. Pattison
Attorney

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A. WINTON.

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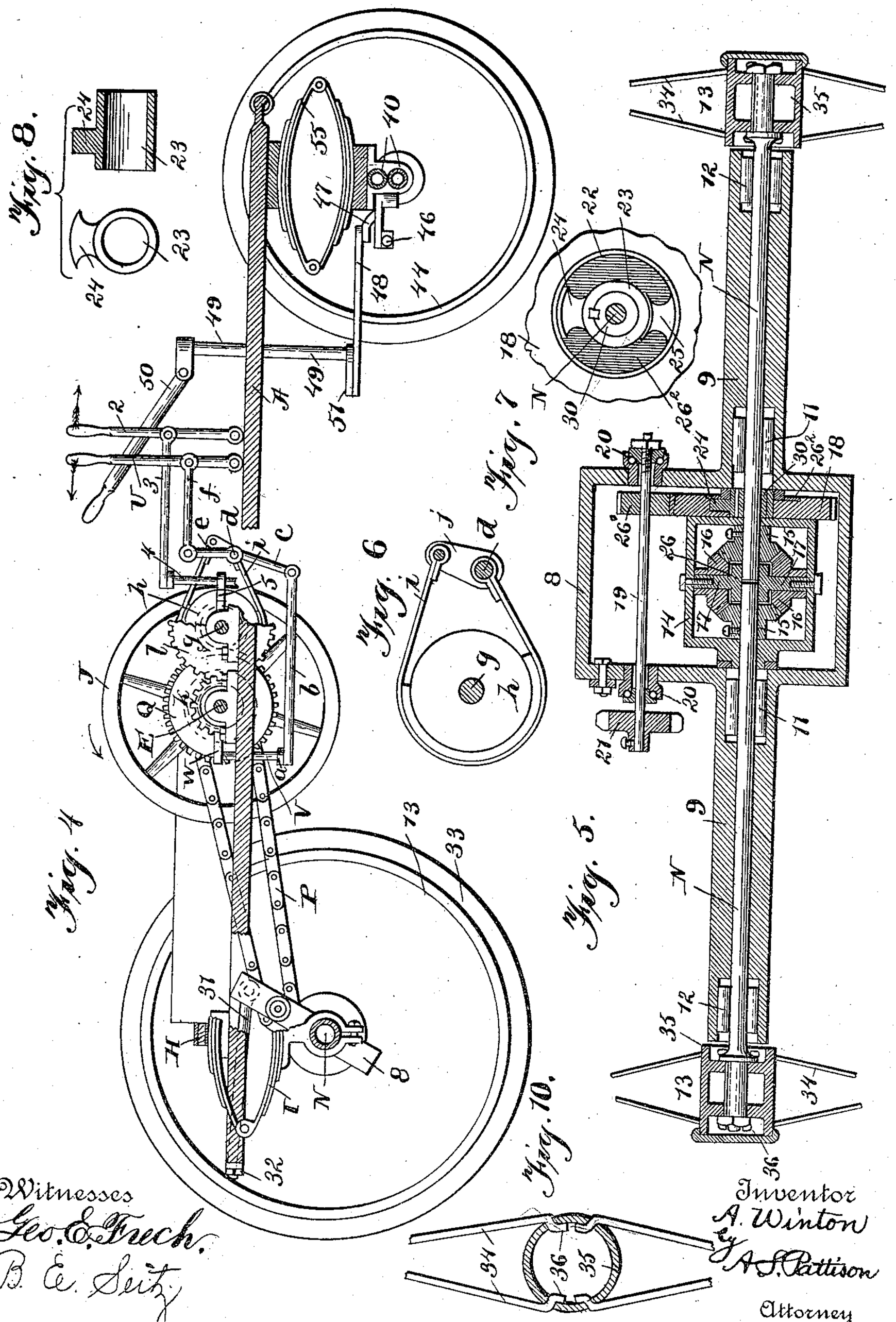
(No Model.) 3 Sheets—Sheet 3.



Witnesses
Geo. E. Frech.
B. E. Seitz.

Inventor
A. Winton
by A. S. Pattison
Attorney

UNITED STATES PATENT OFFICE.

ALEXANDER WINTON, OF CLEVELAND, OHIO.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 610,466, dated September 6, 1898.

Application filed January 12, 1898. Serial No. 666,439. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Motor-Vehicles; and I 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in motor-vehicles; and it consists in the construction and arrangement of parts, which will be fully described hereinafter and particularly referred to in the claims.

The object of my present invention is to produce a motor-vehicle in which there is a compact, simple, and convenient arrangement of all the parts which together make a complete motor-vehicle.

In the accompanying drawings, Figure 1 is a plan view, partly in section, of a motor-vehicle embodying my invention. Fig. 2 is a side elevation of the same, partly in section. Fig. 3 is a top plan view of the interior mechanism, the framework being in section. Fig. 4 is a longitudinal vertical section taken on line 4 4, Fig. 3. Fig. 5 is a longitudinal sectional view of the vehicle drive-shaft, taken on line 5 5 of Fig. 3. Fig. 6 is a detail view of the brake. Fig. 7 is an interior face view of the yielding gear. Fig. 8 is a detail view of the sleeve forming part of the yielding gear. Fig. 9 is a detached front view of the front axle. Fig. 10 is a detached sectional view showing the manner of attaching the spokes to the wheel-hubs.

A is the frame or body of the vehicle, and B the engine, which is here shown of the reciprocating type, the piston C of which is connected to the crank D of the engine driving-shaft E. This shaft E extends across the vehicle and supports a portion of the driving and controlling mechanism, whereby a very compact and simple arrangement of the driving and controlling mechanism is effected, as will more fully appear hereinafter. As shown, the front end of the engine is in the main supported by its drive-shaft E through the medium of the forwardly-extending arms F, the auxiliary stays G also serving to support it. The rear end of the engine, as shown, is bolted to a rear body-shaft H, which in turn has its ends secured to the springs I. The springs are supported by the rear axle in a manner to be hereinafter explained.

A balance-wheel J and a friction-plate K are carried by the shaft E, and both are made fast thereto. Situated adjacent the friction-plate K are a coacting friction-plate L and a sprocket-wheel M, the plate L and wheel M being fast to each other and loose upon the shaft. Motion is transmitted from the sprocket-wheel M to the vehicle driving-axle N through the medium of a sprocket-chain P and an intermediate gearing, which will be fully described hereinafter. The plates K and L and wheel M constitute what I term a "fast go-ahead" clutch. Also attached to the sprocket-wheel M and loose upon the shaft E is a gear-wheel Q, all of which are adapted to be moved upon the shaft to bring the friction-plates K and L together. For the purpose of moving these parts I provide a collar R, situated upon the shaft E and preferably composed of two halves and, if desired, may be threaded to screw on the shaft to take up the wear of the friction-faces. Intermediately pivoted upon this collar are the two dogs or levers S, having one of their ends abutting against the adjacent face of the wheel Q and their opposite and preferably longer ends adapted to be separated by the end thrust of a cone-shaped collar T. This collar T is moved back and forth upon the shaft E for engaging or releasing the "fast go-ahead" clutch by the driver through the medium of an operating-lever U, situated at the right-hand side of the vehicle and just in front of the seat, as clearly shown in Figs. 1, 2, and 3. Situated adjacent the collar T is a vertical rod or shaft V, carrying at its upper end an arm W, engaging a groove in said collar, and at its lower end the shaft or rod is provided with a second arm *a*, to the free end of which is pivotally connected a rod *b*. The opposite end of this rod *b* is pivotally connected with the free end of a crank *c*, carried by a shaft *d*, and the operating-lever U is connected with the shaft *d*

by means of a crank *e* of said shaft *d* and a rod *f*, connecting the lever and crank *e*.

Extending parallel the shaft E is a counter-shaft *g*, carrying a friction-disk *h*, which together with the band *i*, passing around it, produce a brake. One end of the band *i* is attached to the shaft *d* and the other end attached to the free end of a crank *j*, which is attached to the shaft *d*.

From the foregoing it will be seen that the "fast go-ahead" clutch and the brake are operated by the same mechanical element—namely, the shaft *d*—and that the shaft is oscillated by the lever U. Now by reference to Figs. 2 and 4 this lever U is in its normal condition when in a vertical position and both the brake and the "fast go-ahead" clutch are out of operation. A movement of this lever in the direction indicated by arrow in Fig. 4, and the clutch is applied and the brake-band *i* still further slackened. A movement of the lever in the opposite direction past a vertical line applies the brake by tightening the band *i* and moves the collar T still farther away from the clutch-operating arms S. It will be understood, therefore, that it is impossible to apply the brake when the clutch is applied and that by a single movement of the one lever the engine is thrown out of gear with the drive-shaft and the brake applied. This is exceedingly advantageous, in that when the occasion arises for a sudden stop of the vehicle a single movement of one lever accomplishes it and makes it impossible for the operator to become confused between a clutch-lever and a brake-lever, thus perchance applying both.

In order to provide a "slow go-ahead" mechanism and clutch for increasing the power applied to the drive-wheels of the vehicle by the engine or for running the vehicle slow when an engine capable of but one speed is used, the engine drive-shaft E is provided with a pinion *k*, keyed thereto, which meshes with a gear-wheel *l*, loose upon the counter-shaft *g*. Situated at one side of the gear *l* is a friction-plate *m*, keyed to the counter-shaft, and at the opposite end of the gear-wheel is a second friction-plate *t*, also keyed to the shaft, but longitudinally movable thereon, for clamping the gear *l* between said plates, thus making it fast to the counter-shaft.

A backing mechanism is provided through the medium of a pinion *n*, fast upon the engine drive-shaft E, which meshes with an idler-pinion *p*, that in turn meshes with a gear *q*, loose upon the counter-shaft *g*. The inner end of the counter-shaft is provided with a gear a^2, which meshes with the gear Q. A friction-plate *r* is fast to the counter-shaft at one side of the gear *q*, and a second friction-plate *s* is at the opposite side of said gear and keyed to the counter-shaft, but longitudinally movable in respect thereto, for clamping the loose gear between said friction-plates, thus making said gear fast to the counter-shaft.

It will be noted that the movable friction-plates are between and at adjacent sides of the loose gears *l* and *q*. Suitably attached to the counter-shaft *g* are the two collars *u*, each carrying two dogs or levers *w*, having one of their ends engaging the adjacent face of their respective friction-plate and their opposite ends adapted to be separated by the collar *y*, which has its ends tapered or rounded for that purpose. When the collar is moved in one direction, it operates the "slow go-ahead" clutch, and when moved in the opposite direction it releases said clutch and applies the "backing" clutch. The collar *y* is operated through the medium of a lever 2, situated near the lever U. This lever has one end of a rod 3 pivotally connected therewith, the opposite end of said rod being connected to an arm or crank extending from the upper end of a vertical shaft 4, said shaft having at its lower end a crank-arm 5, engaging a groove 6 in said collar. The operation of this mechanism is as follows: When the lever 2 is in a vertical position, the collar is out of operation with either the "slow go-ahead" or the backing clutch. When moved forward, as indicated by arrow in Fig. 4, it applies the backing clutch, which transmits power through the gears *n*, *p*, *q*, a^2, and Q to the sprocket-wheel M. When, however, the lever is moved in the opposite direction beyond a vertical position, the "slow go-ahead" clutch is applied and power transmitted through the gears *k*, *l*, a^2, and Q to the sprocket-wheel M, and the backing-clutch is released.

8 is a casing having firmly connected therewith oppositely-extending shaft-housings 9, through which the shafts N extend. This housing is provided at its outer ends with bearings 12 and at its inner ends with bearings 11 for the shafts, both of said bearings being preferably of the roller type, as shown. The rear wheels 13 of the vehicle, which are the drive-wheels, are keyed fast to the outer ends of their respective shafts.

Situated within the casing 8 is a differential gear-casing 14, in which are placed the differential bevel-gears 15 and 16. The gears 15 are firmly connected to the inner ends of said shafts, and the gears 16 are journaled at right angles to said gears 15 upon the trunnions 17, upon which they freely revolve. Uniting the inner ends of these trunnions or bearings 17 is a box 26, which, though not absolutely essential, serves to strengthen the trunnions and make them more rigid and also forms an additional support for the inner ends of the shafts. Attached to this casing 14 is a driving-gear 18, meshing with pinion or gear 26′ upon a counter-shaft 19, said shaft having ball-bearings 20 and carrying on its projecting end a sprocket-wheel 21, around which the driving sprocket-chain P passes. Owing to this construction of gearing when the carriage is running in a straight line the gears 15 and 16 stand still; but when the car-

riage is turned from a straight line one of the shafts, and consequently one of the wheels 13, will revolve faster than the other, and this is permitted by the revolving of the gears 16 upon their trunnions or bearings, which is very advantageous, as will be readily understood.

In motor-vehicles it is desirable to prevent the impulses of the motor being conveyed to the drive-wheels to avoid a jerky motion being imparted thereto. To accomplish this end, I provide a yielding connection for the gear 18 to the casing 14. This is effected by providing said gear 18 with a cavity 22 in its outer face, firmly connecting a sleeve 23 to a sleeve 30 of the differential casing, the sleeve having an arm 24, providing gear 18 with an arm or shoulder 25, extending into the cavity, and placing in the cavity soft rubber 26^2, abutting against the arms 24 and 25. It will be noted that by this construction the movement of the gear-wheel in either direction will compress the rubber, thus producing a yielding connection between the motor and the drive-wheels of the vehicle.

To provide for the tightening or loosening of the drive-chain P, I attach one end of an adjustable rod 31 to the casing 8 and provide its opposite end with a nut 32, abutting against the frame of the vehicle.

By attaching the rear axle to the vehicle by the springs I, before referred to, a double cushion is provided for the vehicle and machinery through the pneumatic tires 33 and said springs.

The wheel-spokes 34 pass into the hubs 35 and have their ends bent L-shaped, as shown at 36, which is found to be a very strong and durable connection.

I provide an easily-manipulated and sensitive steering mechanism by having the front wheels journaled upon independently turning or oscillating bearings connected by a rod. In this arrangement the front axle is composed of two tubes 40, placed one on top the other and secured together by welding and the straps 41 near each end thereof. The ends of these tubes are turned respectively upward and downward and then outward to form elongated vertical bearings or sockets 42, between which the short wheel-bearings 43 of the front wheels 44 are vertically journaled. Projecting rearward and preferably inclined inward from each wheel-bearing 43 is an arm 45, and these arms are connected by a rod 46, extending parallel with the axle 40. A bell-crank lever 47 is intermediately pivoted to said axle, one of its ends being pivotally connected with said rod 46. Pivotally connected with the other end of said bell-crank lever is a link 48, which has its opposite end pivotally connected to a crank-arm 51 at the lower end of a vertical shaft 49. Pivotally attached to the upper end of this shaft is an operating-lever 50. By pivoting the lever 50 to swing vertically the driver's hand and arm can move freely up and down, thus preventing the tiresome and cramping tendency of holding them in one position.

As shown, the forward end of the vehicle is attached to the front axle 40 through the medium of springs 55, which are firmly connected with both.

The bottom of the body is open, and the top of the body in rear of the seat is provided with wire-netting windows or doors, whereby there is at all times a free circulation of air and a free escape of the heated air from the motor.

Since the engine B is preferably of the explosive type, it is provided with the usual water-jacket, (not specifically shown,) and a water-tank 57 is provided. Water circulates from this tank to the water-jacket through a top pipe 59 and a bottom pipe. (Not shown.) This tank 57 is situated at the right side of the vehicle and is provided with a plurality of radiating ribs 58 around its surface, which carry off the heat so rapidly that the water seldom reaches a temperature of 212°.

Situated at the left side of the vehicle is gasolene-tank 60, having an indicator 61 and a filling-orifice 62.

63 is a pipe which conveys gasolene to the engine, and 64 a regulating-valve therefor, of any desired form.

The specific construction of my engine forms no part of my present invention, and hence need not be shown or described.

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

1. A motor-vehicle comprising a motor, a motor drive-shaft, a clutch carried thereby, drive-wheels, a connection between said clutch and drive-wheels, a counter-shaft actuated by the motor and carrying a brake member, a shaft extending parallel the counter-shaft, a coacting brake member actuated by said parallel shaft, and a connection between the parallel shaft and the clutch for operating the latter.

2. A motor-vehicle comprising a motor, a motor drive-shaft extending transverse the vehicle, a clutch carried by said shaft, a gear-wheel driven by the clutch, drive-wheels, a connection between said clutch, motor-shaft and drive-wheels, a counter-shaft parallel with said drive-shaft and driven by said clutch gear-wheel, a brake member carried by the counter-shaft, an oscillating shaft parallel with the counter-shaft, a connection between said oscillating shaft and clutch for actuating the latter, a coacting brake member actuated by the oscillating shaft, and a reciprocating operating-lever connected with the oscillating shaft, the parts operating for the purpose described.

3. The combination with the drive-shaft of a friction-plate fast thereto, a second coacting friction-plate keyed thereto but movable upon and longitudinal the shaft, intermediately-pivoted dogs having one end adapted to move

the movable toward the rigid plate, and a member for separating the opposite ends of the dogs.

4. The combination of the motor, a drive-shaft, a friction-plate fast to said shaft, a second friction-plate keyed to the shaft but movable longitudinally thereon, a gear loose upon the shaft and situated between said friction-plates, and dogs adapted to move the movable plate in contact with the gear and thereby clamp it between said friction-plates.

5. A motor-vehicle comprising a motor, a drive-shaft carrying a "fast go-ahead" mechanism, a single counter-shaft operatively connected with the drive-shaft, the counter-shaft carrying a "slow go-ahead" and a "backing" mechanism, each driven by the drive-shaft, and means for controlling said mechanisms.

6. A motor-vehicle comprising a motor, a drive-shaft, a "fast go-ahead" mechanism carried by said drive-shaft, a single counter-shaft driven by said mechanism, said shaft carrying a "slow go-ahead" and a "backing" mechanism, each of the latter mechanisms adapted to be driven by the drive-shaft, and controlling members for all of said mechanisms.

7. A motor-vehicle comprising a motor, a drive-shaft, a "fast go-ahead" mechanism carried by but normally loose thereon, a counter-shaft driven by the "fast go-ahead" mechanism and carrying a "slow go-ahead" a "backing" mechanism, and a brake-wheel, the mechanisms of the counter-shaft driven by the drive-shaft independent of the "fast go-ahead" mechanism, and a coöperating brake member, whereby the brake is adapted to be used when either of the mechanisms is in operation.

8. A motor-vehicle comprising a motor, a "go-ahead" mechanism and a "backing" mechanism, a controller for each mechanism, and a member common to both mechanisms and adapted to apply one and by the same movement release the other for the purpose described.

9. A motor-vehicle comprising a motor, a drive-shaft connected therewith and carrying a "go-ahead" and a "backing" mechanism, a clutch for each mechanism, an actuating member situated between the clutches, a lever connected with the actuating member and adapted when at a central position to hold the actuating member out of contact with both clutches and to operate one clutch when moved in one direction and to release the applied clutch and apply the unapplied clutch when moved in the opposite direction beyond said central position.

10. A motor-vehicle comprising drive-wheels, separate shafts therefor and to which the wheels are attached, bevel-gears attached to adjacent ends of the shafts, bevel-gears 16 fitting between and engaging opposite edges of said shaft-gears, a support rotatable around said wheel-shafts, the support carrying a driving-gear having the axis of the shafts the center of its rotation.

11. A motor-vehicle comprising a vehicle drive-shaft, a revolving gear-casing operatively connected therewith, a casing-gear, and a yielding connection between said casing and its gear-wheel.

12. A motor-vehicle comprising a drive-shaft, a propelling member operatively connected therewith, a gear having a cavity receiving said member, and having itself a co-acting propelling member within said cavity, and rubber situated within said cavity and filling the spaces at opposite sides of said members and receiving the propelling force.

13. A motor-vehicle comprising a drive-shaft, a casing surrounding said shaft, a sprocket or belt wheel supported by said casing and operatively connected with the shaft, a motor, a sprocket chain or belt operatively connecting the motor and said sprocket or belt wheel, and means for adjustably moving said casing in respect to the motor connection for the purpose described.

14. In a motor-vehicle, a steering mechanism comprising a rigid axle having at its ends sockets with vertical bearings, short wheel-axles supported by said bearings and having laterally-extending arms, a member connecting said arms, a bell-crank lever intermediately pivoted and having one end flexibly connected with said connecting member, and an operating-handle operatively connected with the opposite end of said bell-crank lever.

15. In a motor-vehicle, the body provided with a seat and a portion extending rearward of the seat, a motor situated in this rear extension of the body, the rear extension having an open bottom and ventilated top, whereby there is a free upward circulation of air, and in rear of the occupant of the vehicle, substantially as described.

16. In a motor-vehicle, the body, the seat supported by the body, a steering mechanism, and a controlling-lever for the steering mechanism having its lower end pivoted in front of and below the plane of the seat, said pivoted lever extending rearwardly and upwardly, substantially as and for the purpose described.

17. A motor-vehicle comprising a motor, the drive-wheels operatively connected with the motor, the body, a seat, the body having an entrance-way in front of the seat, controlling-levers for the propelling mechanism situated just in front of and at one end of the seat and in rear of the passage-way to be operated by one hand of the driver, and a steering-handle situated at a point inside of said levers at a point adapted to be operated by the other hand of the driver, substantially as described.

18. A motor-vehicle comprising a motor, the drive-wheels operatively connected with

the motor, the body, a seat, the body having an entrance passage-way in front of the seat, controlling-levers for the propelling mechanism situated just in front of and at one end of the seat and in rear of the passage-way to be operated by one hand of the driver, and an upwardly and rearwardly extending lever pivoted at its forward and lower end at a point in front of and inside of the controlling-levers, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER WINTON.

Witnesses:

GEO. H. BROWN,

THOS. HENDERSON.