

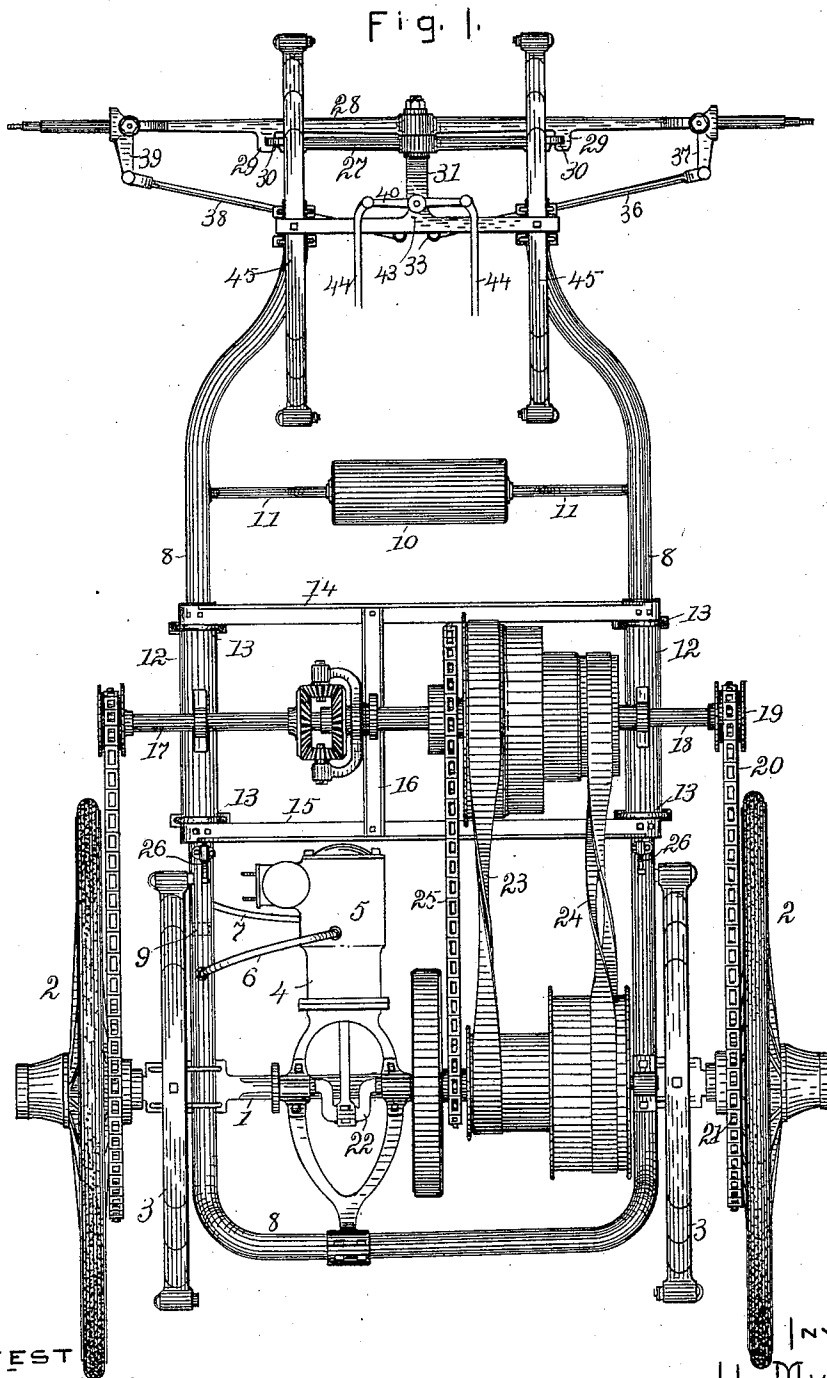
(No Model.)

2 Sheets—Sheet 1.

H. MUELLER.
MOTOR VEHICLE.

No. 582,539.

Patented May 11, 1897.



ATTEST

Lina C. Graham.
Nora Graham.

INVENTOR
H. MUELLER
by L. P. Graham
att'y.

(No Model.)

2 Sheets—Sheet 2.

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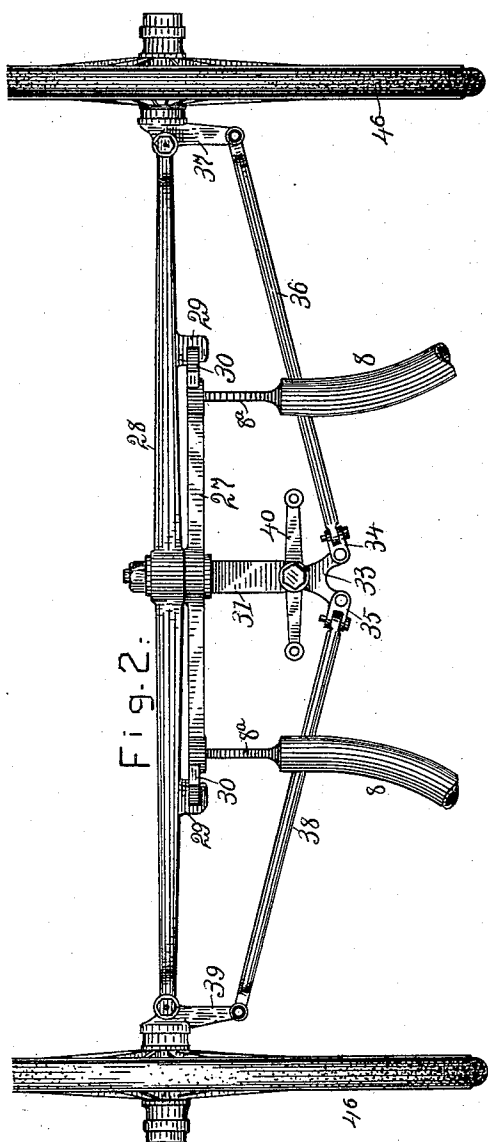


Fig. 2.

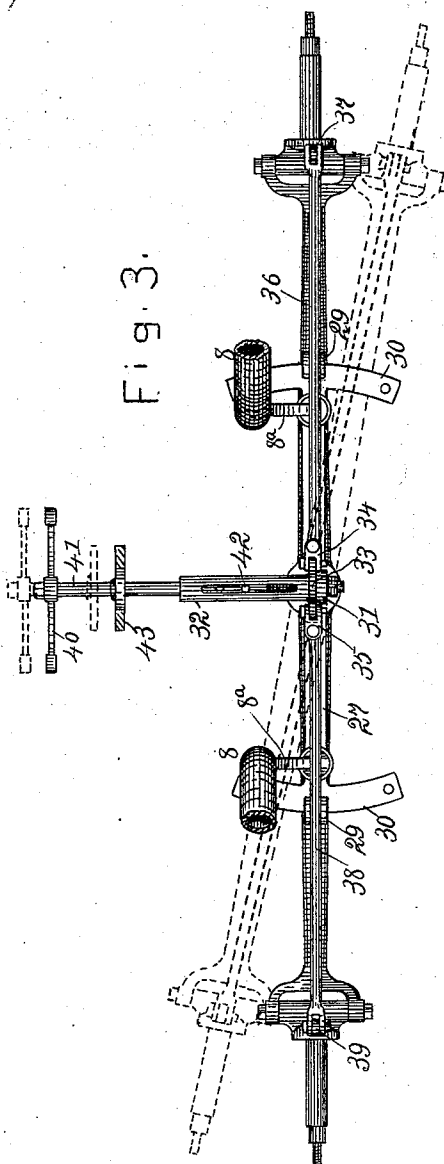


Fig. 3.

ATTEST

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UNITED STATES PATENT OFFICE.

HIERONYMUS MUELLER, OF DECATUR, ILLINOIS.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 582,539, dated May 11, 1897.

Application filed April 20, 1896. Serial No. 588,257. (No model.)

To all whom it may concern:

Be it known that I, HIERONYMUS MUELLER, of Decatur, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Motor-Cycles, of which the following is a specification.

This invention relates to the running-gear of a motor-cycle or self-propelling vehicle. It resides in part in provision whereby the frame is utilized in cooling water from the jacket of the cylinder of the propelling-engine, in part in provision whereby the driving mechanism is carried independent of the carriage-bed of the vehicle, in part in means for shifting the counter-shaft lengthwise of the frame, and in part in novel steering mechanism.

It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a plan of running-gear constructed in accordance with my improvements. Fig. 2 is a plan of the steering-gear. Fig. 3 is a rear elevation of the details shown in Fig. 2.

In constructing a motor-cycle embodying my improvements a rear axle 1 is provided and is supplied with carrying-wheels 2, each of which has a sprocket-wheel, as 21. Springs, as 3, are fastened to the axle, inside the wheels, and they extend upward to an extent sufficient to carry the bed (not shown) well above the engine and driving mechanism.

An engine, preferably a gas-engine, is placed at or near the position indicated by 4. It has a water-jacket at 5 of the customary or any desirable construction, and it is supported in part from the axle 1 and in part from the rear end of frame 8. The frame 8 is made of metal tubing bent to about the form indicated and also turned upward in a manner to raise the rear cross-bar above the general plane. The ends of the tube are presented forward and are suitably plugged, and a partition at 9 divides the interior of the tube into two compartments. A pipe 6 forms a communication between the water-jacket and one compartment of the tube and pipe 7 forms a communication between the jacket and the other compartment. A tank 10 is placed between the side bars of frame 8

in front of the engine and the driving mechanism, and it communicates with such bars through pipes 11, with the result that circulation of water from the jacket is made through pipe 6 to one compartment of the tube, from one compartment to the other through tank 10 and the communicating-pipes, and back to the jacket through pipe 7. By this provision a large amount of water may be stored in the tank and in the tubular frame. The frame exposes a large surface to the cooling action of the air, the tank is in position to strike cool air in traveling, and the entire arrangement makes it possible to attain the very desirable effect of keeping the cylinder of the engine from becoming overheated.

If desired, a small pump may be used to hasten circulation of water through the frame and tank.

Saddle-bearings 12 are made to fit on the side bars of the tubular frame 8, and they are secured to such bars by U-bolts 13 or equivalent means. Cross-bars 14 and 15 extend across the frame and connect the saddles together, and intermediate bar 16 is preferably used to connect bar 14 with bar 15. Set-screws 26 have bearings in nut-blocks fastened to the side bars of the tubular frame in the rear of cross-bar 15, and their headless ends bear against said bar. The counter-shaft, which is composed of shafts 17 and 18, connected through compensating gearing, is journaled in bearings mounted on the saddles. It receives motion from the crank-shaft 22 of the engine through chain 25 and belts 23 and 24, for instance, and it imparts motion to the drive-wheels 2 through sprocket-wheels, as 19, and chains, as 20. By this means the driving mechanism is supported independent of the carriage-bed and the counter-shaft is adjustable with relation to the engine-shaft. The first-named peculiarity gives greater stability to the driving mechanism and relieves the carriage-bed of the somewhat disagreeable sensation resulting from impulses of the engine, while the last-named provision enables slack in the different connecting-belts to be taken up by moving the counter-shaft bodily away from the crank-shaft. This effect is dependent on the fact that all belts run in substantially the same direction from

the counter-shaft, such direction being toward the crank-shaft. The shifting of the counter-shaft is effected by loosening the U-bolts, turning up the set-screws until a sufficient degree of tightness is developed and then retightening the U-bolts.

From the ends of tube 8 bars 8^a extend forward and downward, and they connect at their front ends with the cross-bar 27, the ends of which have arc-formed guides 30, disposed in a vertical plane, such arcs being concentric with the bar 27. The front axle 28 is pivoted on a pin extended horizontally through the center of bar 27, and it has hooks 29, that embrace the guides 30. Bar 31 forms the pivot on which the axle 28 turns. It extends rearward from bar 27, and it has a vertical sleeve 32 journaled in its rear end. A plate 33 is fixed onto the sleeve, and it extends rearward therefrom. Blocks 34 and 35 connect one with each side of the plate 33, such connections being in the form of knuckle-joints, so disposed as to permit horizontal swing in the blocks.

A rod 36 connects with block 34 through a knuckle-joint the pivot-pin of which is horizontal, and it also connects pivotally at its opposite end with crank-arm 37 of one of the spindles of front wheels 46. Rod 38 similarly connects with block 35 and with the crank-arm 39. The ends of axle 28 fork vertically and in the forks the spindles of the front wheels are swung on vertical pivots. The crank-arms 37 and 39 extend rearward from the spindles, and they connect with the rods, as hereinbefore stated.

A rod 41 is set into sleeve 32 in a manner permitting independent longitudinal motion and precluding independent rotary motion, slots in the sleeve and a pin, as 42, through the rod being preferably employed to effect the desired result. The rod is held in a part of the carriage-bed, exemplified in this instance by cross-bar 43 on front springs 45, and its independent longitudinal motion is intended to accommodate the rise and fall of the springs. A cross-arm 40 is fastened to the upper end of rod 41, and steering-rods 44 extend rearward from the ends of the cross-

arm and provide means for controlling the direction of travel of the vehicle. This enables the front axle to turn vertically to accommodate uneven roads and the like, thereby avoiding all tendency to twist the frame and disarrange the mechanism thereon, and the operation of steering may be performed in the usual way, whatever the relation of the bed or the axle may be to the tubular frame. The pivotal connection of bar 31 with cross-bar 27 enables the sleeve 32 to swing sidewise with the swaying of the carriage-bed, the universal-joint connections between rods 36 and 38 and plate 33 permit independent swing of the axle and the sleeve without interfering with proper control of the steering-wheels; and the telescopic rod 41 provides for up-and-down motion of the bed.

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

1. In a motor-cycle, the combination of a frame, an axle pivoted to swing vertically, horizontally-swingable spindles on the ends of the axle, such spindles having horizontally-extended crank-arms, a vertical steering-sleeve pivotally connected with the frame and having a horizontal plate, rods connecting the crank-arms of the spindles with the plate of the steering-sleeve, through universal joints located next the plate, and a rod in the sleeve having independent longitudinal motion but not independent rotary motion with relation to the sleeve.

2. In a motor-cycle, the combination of a tubular frame divided into two compartments, a pipe connecting one compartment with the water-jacket of the engine, another pipe connecting the water-jacket with the other compartment, and a communication between the two compartments, such communication including a tank and its location being in front of the engine.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

HIERONYMUS MUELLER.

Attest:

ADOLPH MUELLER,
L. P. GRAHAM.