No. 756,670. PATENTED APR. 5, 1904.

W. L. MARR.

STEERING GEAR FOR AUTOMOBILES.

APPLICATION FILED JULY 27, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

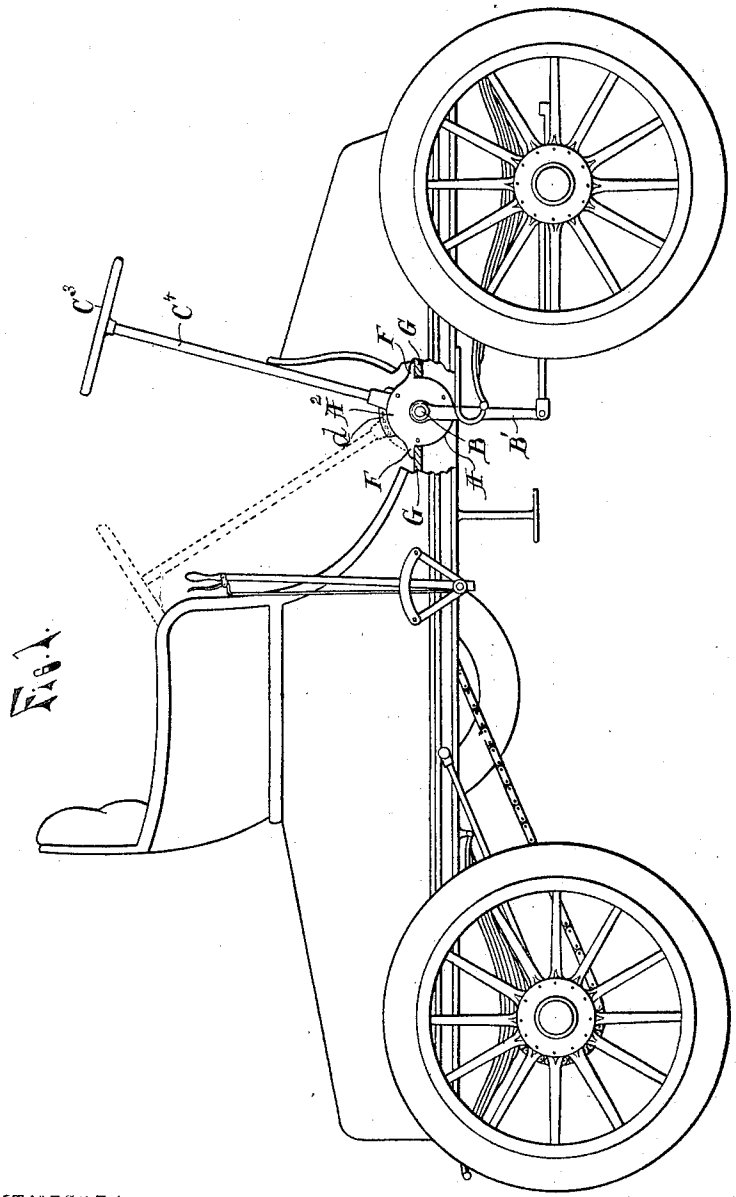


Fig. 1.

WITNESSES.

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NO MODEL. 3 SHEETS—SHEET 2.

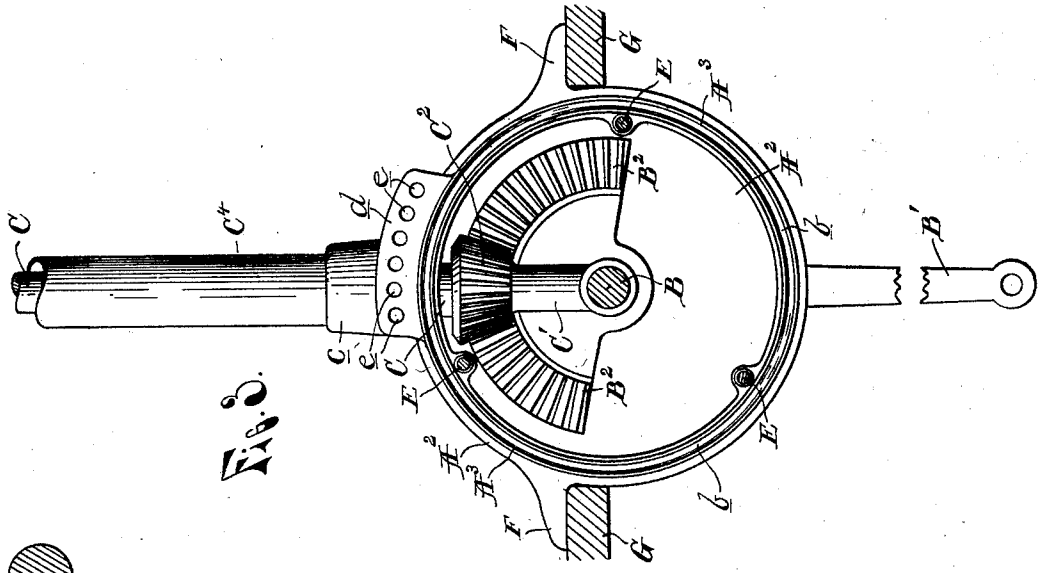


Fig. 2.

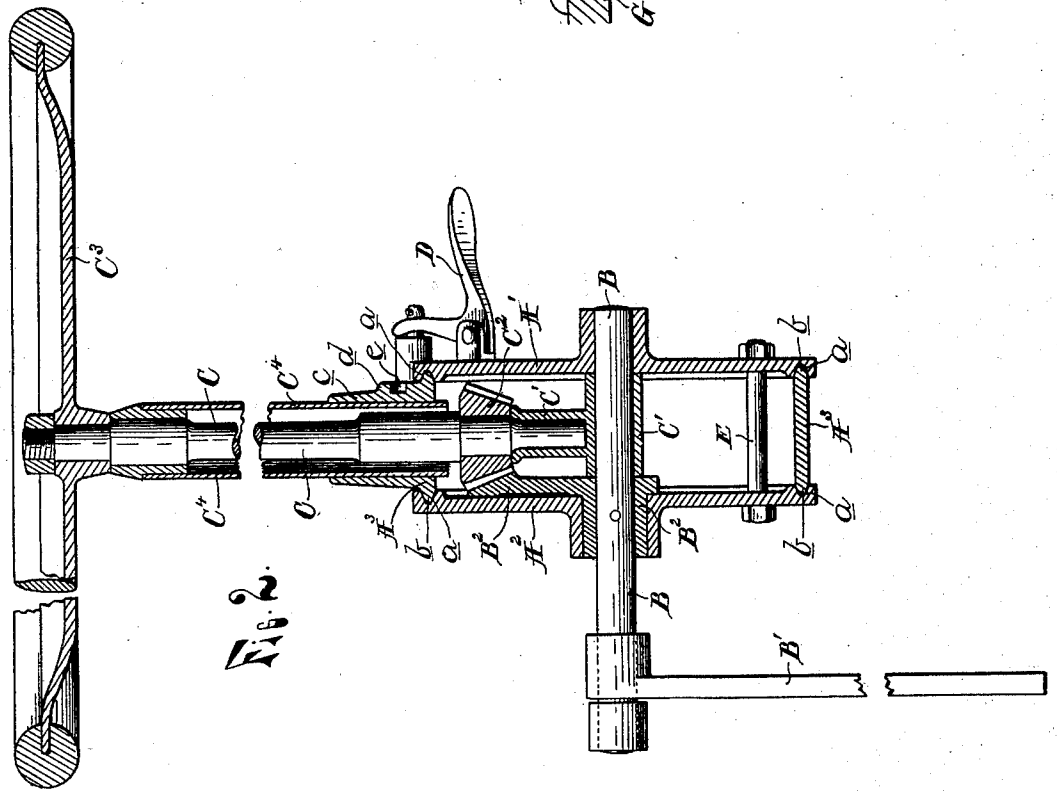


Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 1.

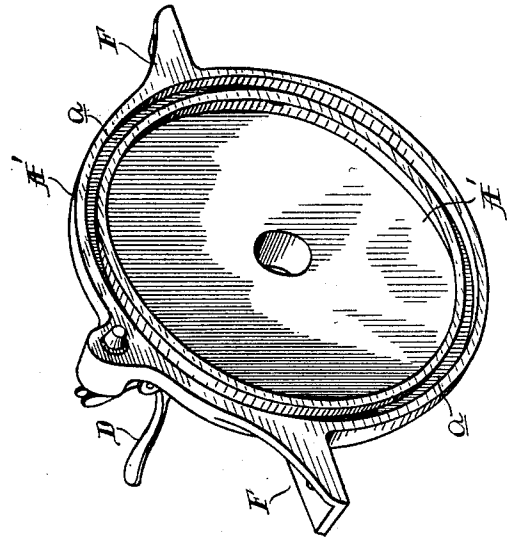


Fig. 3.

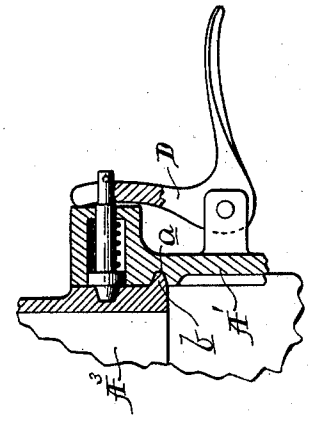
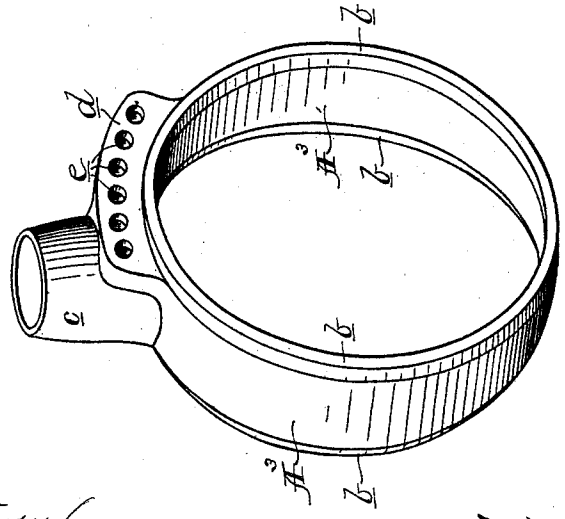


Fig. 2.



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UNITED STATES PATENT OFFICE.

WALTER L. MARR, OF DETROIT, MICHIGAN.

STEERING-GEAR FOR AUTOMOBILES.

SPECIFICATION forming part of Letters Patent No. 756,670, dated April 5, 1904.

Application filed July 27, 1903. Serial No. 167,070. (No model.)

To all whom it may concern:

Be it known that I, WALTER L. MARR, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Steering-Gear for Automobiles, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to new and useful improvements in steering-gears for automobiles and refers more particularly to that type of steering-gear in which the steering-wheel may be drawn toward or pressed away from the operator.

To this end the invention consists in the peculiar construction, arrangement, and combination of parts, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of an automobile provided with a steering-gear embodying my invention. Fig. 2 is a cross-section of the operating mechanism of the steering apparatus. Fig. 3 is a side view of the same, the face-plate which is toward the observer being removed: Fig. 4 is a detail perspective view of the ring forming part of the casing of said mechanism. Fig. 5 is a perspective view showing the inside of one of the face-plates of the casing. Fig. 6 is a detail showing a portion of the ring shown in Fig. 4 and the face-plate shown in Fig. 5 and a latch attached to the latter and adapted to engage with the former to bind the two together.

A is a casing composed of disk-like face-plates A' A^2, provided with circular concentric grooves a, which are in the faces of said plates which are toward each other and near the peripheries of said plates. A^3 is a ring of like circumference to that of the grooves a, provided on its edges with annular projections b, adapted to fit into the grooves a. To form said casing, the face-plates A' A^2 are placed axially in line, with the ring A^3 between them, with the annular lips b projecting into the grooves a, and said plates are held together with the ring between them by means of transverse bolts E. It will be observed that the ring A^3 may turn about the center of the face-plates A' A^2 in the grooves a.

B is a rock-shaft pivoted in the casing A, concentric therewith.

B′ is an arm upon the rock-shaft B outside of the casing A.

B^2 is a sector within the casing A, sleeved upon and pinned to the shaft B.

C is a steering-rod adapted to be turned by the steering-wheel C^3, secured at the upper end of said rod.

C^4 is a sleeve around the steering-rod. The sleeve C^4 is secured at its lower end in a socket c in the ring A^3. The sleeve C^4 extends through the bore of the socket c.

C′ is a thimble within the casing A, extending radially to the shaft B and sleeved thereon. The steering-rod C fits closely in the sleeve C^4, so as to turn therein, and at its lower end is pivoted, as in a step-bearing, in the thimble C′.

C^2 is a beveled gear-wheel upon the steering-rod C within the casing A, its teeth engaging with the teeth of the sector B^2.

d is a lug upon the ring A^3, provided with a series of sockets e.

D is a spring-latch upon the face-plate A′, the bolt of which is adapted to enter the sockets e, so as to bind the ring A^3 to the face-plate A′ and prevent relative angular movement of said ring and plate.

F represents lugs upon the face-plate A' A^2, which are adapted to rest upon the floor G of the carriage and be secured thereto by bolts, the casing A extending partially through an opening in the floor G, as shown in Fig. 3.

The operation of the above-described device is as follows: By turning the steering-rod C upon its axis by means of the hand-wheel C^3 at its upper end the rock-shaft B is turned by the gear-wheel C^2 meshing with the gear-teeth of the sector B^2. The movement of the rock-shaft B carries with it the arm B′, which is connected, as indicated in Fig. 1, with the steering-gear in the usual way, thus turning the wheels to direct the course of the carriage.

If the operator wishes to adjust the position of the steering-rod, he presses with his

foot upon the latch D, disengaging the ring A^3 from the casing A, and forces the steering-rod toward or away from him, as he may desire, as indicated in full and dotted lines in Fig. 1, the rod C being permitted to turn as its angular position is altered.

Instead of using a bevel-gear and sector, as shown, I may use a worm and worm-gear, in which case the worm would travel upon the periphery of the worm-gear. Such a construction being so obvious, I do not deem it necessary to show it. The steering mechanism may also be fastened to the frame instead of the floor of the machine.

What I claim is—

1. In a steering mechanism, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing provided with bearings for said shaft and consisting of a fixed part and a part movable concentrically with the axis of the rock-shaft on the fixed part, a steering-rod extending through said movable portion of the casing and supported at one end to turn upon an axis coincident with the axis of said rock-shaft, and means inclosed by the casing for transmitting motion from the steering-rod to the rock-shaft.

2. In a steering mechanism, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing provided with bearings for said shaft and consisting of fixed face-plates and a ring rotatable thereon concentrically with the shaft, a rotatable steering-rod supported by said ring to turn therewith, and means for transmitting motion from said rod to said shaft.

3. In a steering-gear for automobiles, the combination of an inclosed casing, a rock-shaft adapted to actuate the steering mechanism pivoted in said casing, a part adapted to slide on said casing in a path concentric with said shaft, a rod pivoted on said part, gears within said casing connecting said rod and shaft whereby the motion of said rod shall actuate said shaft, and means for engaging said part with said casing at various angular positions of the latter.

4. In a steering-gear for automobiles, the combination of two face-plates provided with bearings for a shaft, and also provided with ways concentric with said bearings, a ring adapted to engage said ways and slide thereon and provided with a bearing for the steering-rod, and means for securing said face-plates together, with the ring between them, whereby an inclosed casing is formed.

5. In a steering-gear for automobiles, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing consisting of two opposing face-plates provided with bearings in their axes for the rock-shaft and spaced apart by a rotatable ring, a sleeve secured at one end to said ring, a steering-rod in said sleeve and supported at one end to rotate and to turn upon an axis coincident with the axis of the rock-shaft, and means inclosed by the casing for transmitting motion from the rod to the rock-shaft.

6. In a steering-gear for automobiles, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing composed of two opposing disk-like face-plates each provided with a bearing in its axis for the rock-shaft and with a peripheral groove and a ring to engage said groove and turn therein, bolts to secure the face-plates together with the ring between, a steering-rod extending through said ring and supported at its inner end to turn upon the shaft, and gears within the casing for transmitting motion from said rod to the shaft.

7. In a steering-gear for automobiles, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing consisting of two opposing fixed disk-like face-plates provided with bearings at their axes for the shaft and with peripheral grooves in their adjacent faces, a ring engaging said groove and provided with a series of openings, a socket on said ring, a sleeve in said socket, a rotatable steering-rod in said sleeve supported at its inner end upon the shaft to turn upon its own axis and upon the axis of the shaft, a sector secured to the shaft within the casing, a gear on the rod within the casing to engage the sector, and a latch on one of the face-plates to engage the openings in the ring and lock the ring against rotation.

8. In a steering mechanism, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing provided with bearings for said shaft, a sleeve on said shaft within the casing having a transverse bearing, a steering-rod pivotally supported at one end in said bearing free to turn upon an axis coincident with that of the rock-shaft and means inclosed within said casing for transmitting motion from said steering-rod to the rock-shaft.

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

WALTER L. MARR.

Witnesses:
THOMAS G. LONGSTAFF,
OTTO F. BARTHEL.