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Patented July 30, 1901.

F. FRANZ.

SHORT TURNING GEAR FOR VEHICLES.

(Application filed Apr. 29, 1901.)

(No Model.)

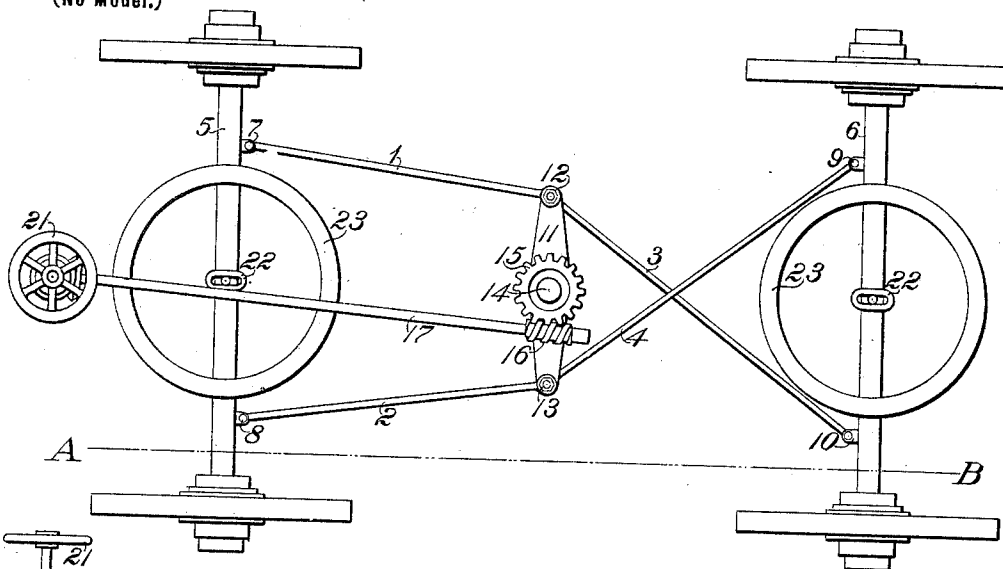


FIG. 1.

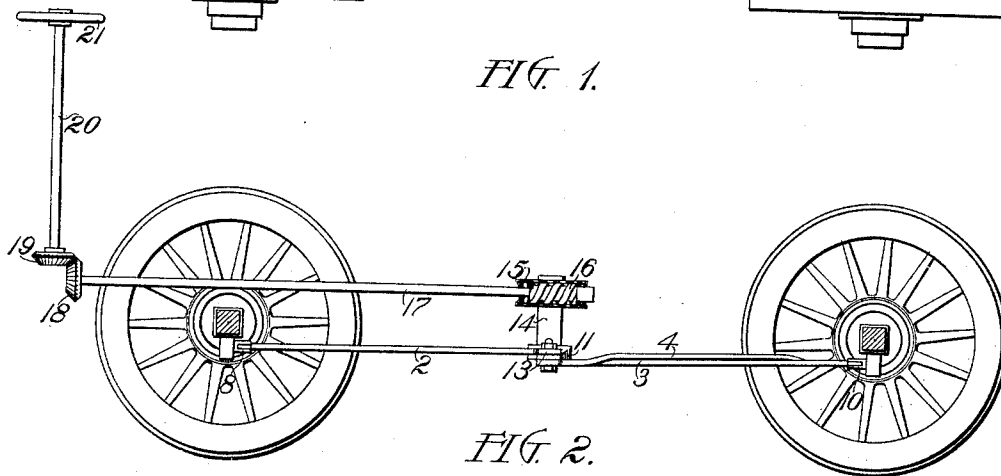


FIG. 2.

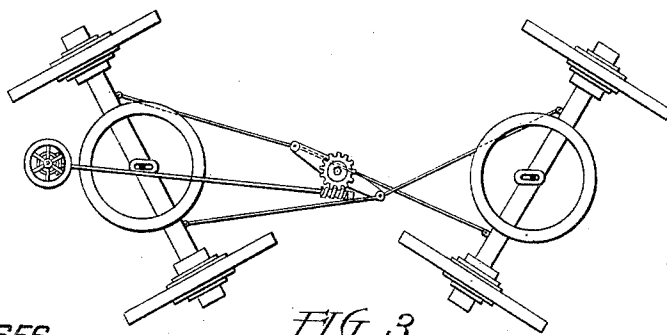


FIG. 3.

WITNESSES

J. W. Ewald
L. Seeligsherg

INVENTOR

Friedrich Franz

UNITED STATES PATENT OFFICE.

FRIEDRICH FRANZ, OF BROOKLYN, NEW YORK.

SHORT-TURNING GEAR FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 679,669, dated July 30, 1901.

Application filed April 29, 1901. Serial No. 58,072. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH FRANZ, a citizen of the United States, residing in the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Vehicle, of which the following is a specification.

My invention relates to improvements on carriages and wagons, the object of my invention being to produce a simple and efficient mechanism whereby a carriage or wagon can be steered easily and quickly.

A further object is to produce a vehicle with a simple and efficient steering-gear, whereby a carriage or wagon can be made to turn sharp corners by a slight swinging of the axles of the wagon.

With these objects in view the invention consists of several novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 shows a plan or top view of the running-gear, in which the operating wheel or lever of the steering-gear is located at one end of the vehicle, although this wheel or lever may be located between the axles of same. Fig. 2 shows a sectional side view of Fig. 1, taken on the line A B; and Fig. 3 is a top view or plan of Fig. 1, showing the position of the axles and other parts of the mechanism when the vehicle is in the act of turning around a corner.

Similar numbers of reference refer to similar parts in all the figures.

Referring to Figs. 1 and 2, 1, 2, 3, and 4 are rods one end of which is fastened to the axles 5 and 6, respectively, at the points 7 and 8 and 9 and 10, the other ends of the rods being fastened to the lever 11, the rods 1 and 3 to the end 12 of the lever, and the rods 2 and 4 to the end 13 of the lever. The lever 11 is provided with a stem 14, the upper end of which carries a worm-wheel 15, which works with a worm 16. To the worm 16 is fastened a rod 17, having fastened on its other end a gear-wheel 18. Meshing with this gear-wheel is another gear-wheel 19, fastened on one end of a vertical rod 20, to the other end of which is fastened a hand wheel or lever 21, by means of which the steering mechanism is operated.

The stem 14, and therefore the lever 11 and the worm-wheel 15, are held in place by a suitable bearing in which they work. The worm 16 is also held in place by suitable bearings. (Not shown.) So are also the rods 17 and 20. Each of the axles 5 and 6 is provided with a fifth-wheel 23 and a center-plate 22, so that the axles may be revolved about their centers independently and simultaneously. The center-plates are so constructed that while the axles can swing about them they will also admit of a lateral movement of the axles simultaneously or independently. This is necessary in order to provide for the irregularities of the mechanism caused by the angularity of the rods 1, 2, 3, and 4.

The operation of this mechanism is as follows: On turning the hand-wheel or lever 21 motion is imparted to the worm-wheel 15 through the medium of the rods 20 and 17, the gears 19 and 18, and the worm 16. The worm-wheel 15 and the lever 11 being rigidly fastened to the stem 14, the lever 11 will therefore swing around 14 as a center and in so doing will cause the axles 5 and 6 and the running-gears of which they form a part to swing about the center-plates 22 through the medium of the rods 1 and 2 and 3 and 4. This motion will swing the axles in opposite directions, so that the inner wheels will be brought closer together and the outer wheels farther apart, as shown in Fig. 3, thus enabling the wagon to turn a sharp corner with a comparatively small swing of the axles.

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

1. In a vehicle, the combination of two axles free to swing pivotally; a lever pivoted at its center between the axles of the vehicle; four rods, each fastened pivotally at one end to one of the axles and at the other end to one end of the lever, two rods being fastened to each axle, one set crossing each other between the lever and the axle, the other set not crossing each other; and two guides for permitting the axles to have a translatory motion while revolving pivotally substantially as set forth in the specification.

2. In a vehicle, the combination of two axles free to swing pivotally; a lever pivoted at its center between the axles of the vehicle; four

rods, each fastened pivotally at one end of the lever, two rods being fastened to each axle, one set crossing each other between the lever and the axle, the other set not crossing each other; two guides for permitting the axles to have a translatory motion while revolving pivotally; and means for turning the lever substantially as set forth.

3. In a vehicle, the combination of two axles free to swing pivotally; a lever pivoted at its center between the axles of the vehicle; four rods, each fastened pivotally at one end to one of the axles and at the other end to one end of the lever, two rods being fastened to each axle, one set crossing each other between the lever and the axle, the other set not crossing each other; a worm-wheel or other gear-wheel mounted on said lever so as to swing with it; a worm or gear wheel meshing with said worm-wheel or other gear-wheel; and a hand-wheel or lever for turning said worm or gear substantially as and for the purpose set forth.

4. In a vehicle, the combination of two axles free to swing pivotally; a lever pivoted at its center between the axles of the vehicle; four rods, each fastened pivotally at one end to one of the axles and at the other end to one end of the lever, two rods being fastened to each axle, one set crossing each other between the lever and the axle, the other set not crossing each other; two guides for permitting the axles to have a translatory motion while re-

volving pivotally; the worm-wheel or other gear-wheel mounted on said lever so as to swing with it and a worm or gear wheel meshing with said worm-wheel or other gear-wheel; and a hand-wheel or lever for turning said worm-wheel and gear substantially as and for the purpose set forth.

5. In a vehicle, the combination of two axles free to swing pivotally; a lever pivoted at its center between the axles of the vehicle; four rods, each fastened pivotally at one end to one of the axles and at the other end to one end of the lever, two rods being fastened to each axle, one set crossing each other between the lever and the axle, the other set not crossing each other; a worm-wheel or other gear-wheels mounted on said lever so as to swing with it; a worm or gear wheel meshing with said worm-wheel or other gear-wheel; and a hand-wheel or lever for turning said worm or gear wheel; and a guide for permitting the stem on which the lever is mounted to have a translatory motion while said lever swings pivotally substantially as and for the purpose set forth.

Signed at the city of New York, borough of Manhattan, county of New York, and State of New York, this 5th day of April, 1901.

FRIEDRICH FRANZ.

Witnesses:

L. W. SEELIGSBERG,
F. W. EWALD.