No. 851,026. PATENTED APR. 23, 1907.

F. A. NELSON.

AUTOMOBILE.

APPLICATION FILED JAN. 22, 1906.

2 SHEETS—SHEET 1.

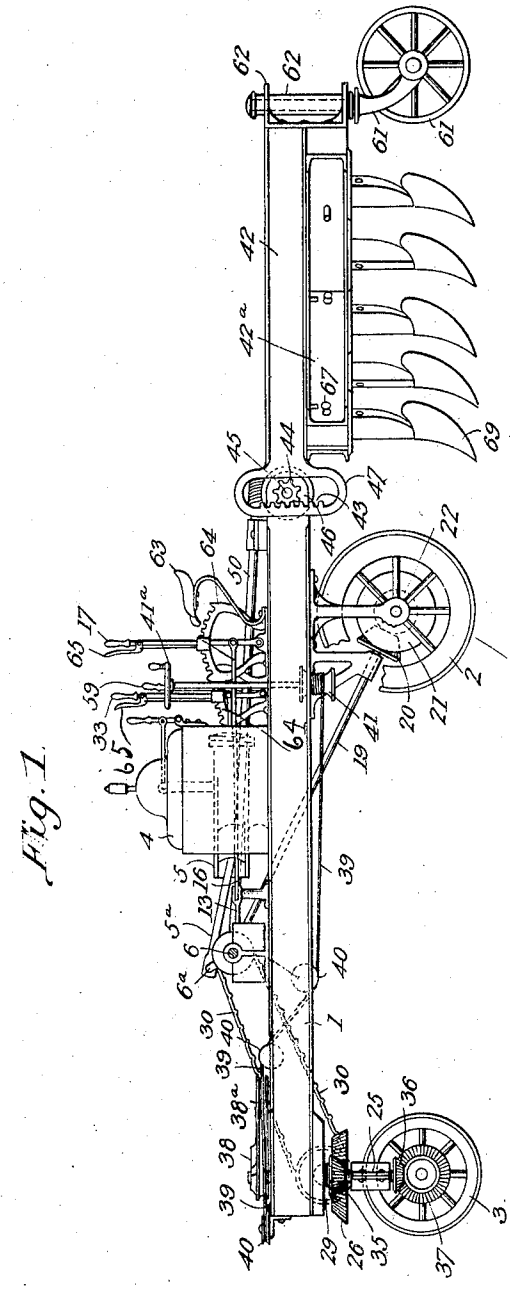


Fig. 1.

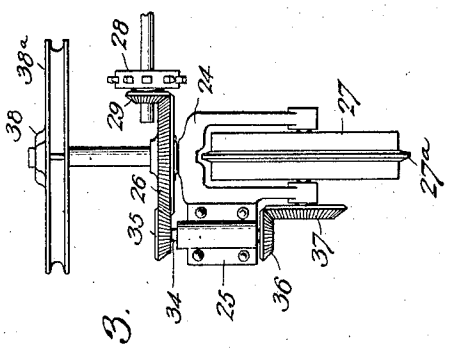


Fig. 3.

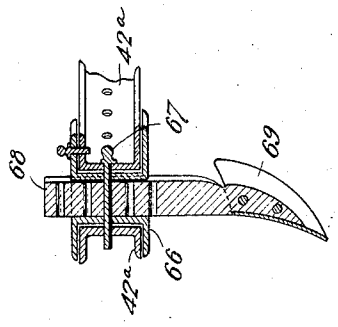


Fig. 2.

Witnesses:
Pearl Martin
D. L. Fairchild

Inventor,
Frank A. Nelson
by James T. Watson
his Attorney

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2 SHEETS—SHEET 2.

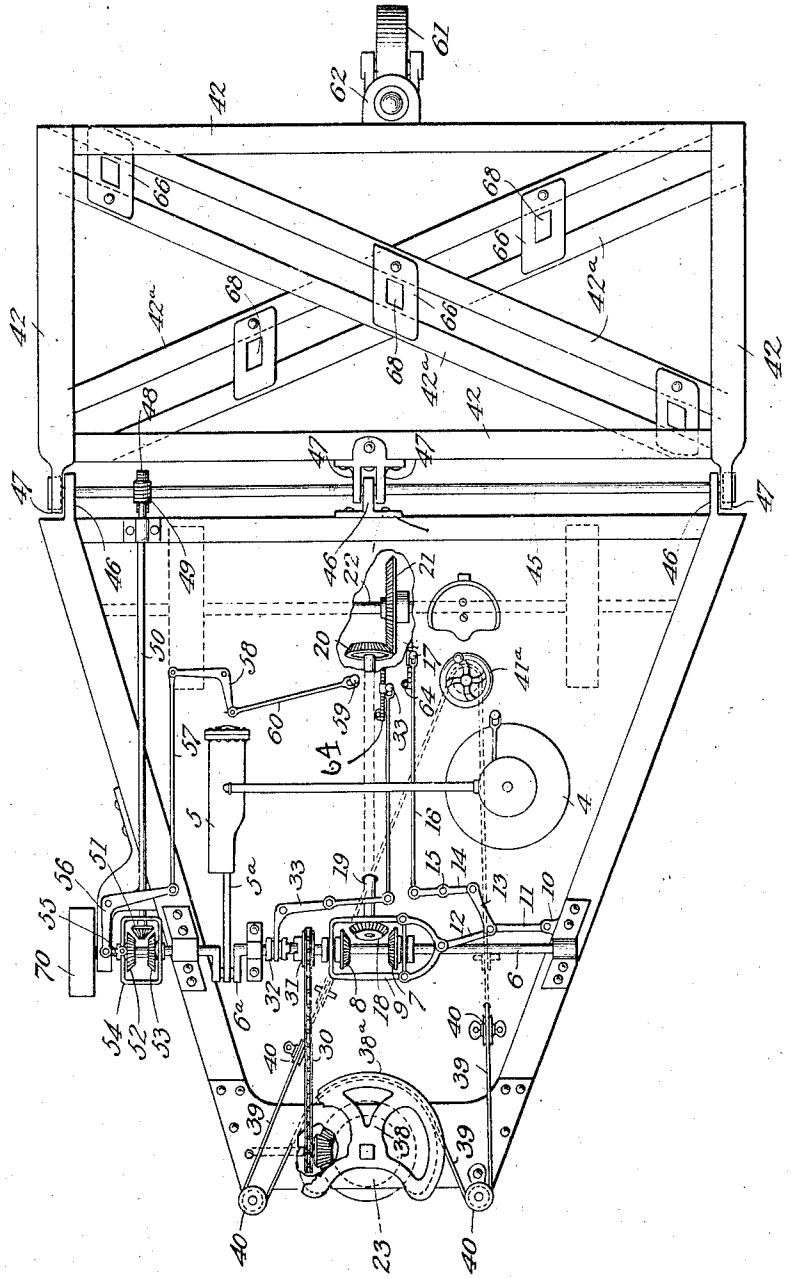


Fig. 4.

Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK A. NELSON, OF DULUTH, MINNESOTA.

AUTOMOBILE.

No. 851,026. Specification of Letters Patent. Patented April 23, 1907.

Original application filed October 12, 1905, Serial No. 282,384. Divided and this application filed January 22, 1906. Serial No. 297,213.

To all whom it may concern:

Be it known that I, FRANK A. NELSON, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Automobiles; 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 appertains to make and use the same.

My invention relates to automobiles, and has for its object the provision of a simple, durable, easily-controlled automobile machine adapted to carry plows or cultivators or harrows or various other ground-working implements during their operation, as well as to perform other services.

It consists of the constructions, combinations, and arrangements of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my said invention. Fig. 2 is a detail, partly in elevation and partly in section, of a cultivator-tooth and of the sleeve in which it is mounted. Fig. 3 is an enlarged detail side elevation of a portion of said invention, showing the steering-wheel turned at right angles to that view of said wheel which is shown in said Fig. 1; and Fig. 4 is a top plan view of said invention, partly broken away.

In the drawings, 1 is the main frame or body of the traction portion of said machine, which is mounted at one end upon the drive-wheels 2 of any suitable construction and at the opposite end upon the steering-wheel 3. Supported in any suitable manner upon said frame is an engine of any suitable character or construction—as, for example, a steam-engine comprising the boiler 4 and the engine proper, 5. It is not thought necessary to describe the details of the engine, since any of many forms of engines well known to the art are available for this purpose. Journaled in suitable bearings upon said frame is a shaft 6, provided with a crank-arm 6^a, engaging a pitman 5^a, connected to the piston-rod of said engine. Slidably keyed or splined to said shaft are opposite gears 7 and 8, respectively, spaced apart and held in fixed relation to each other by a yoke 9. Said yoke is attached to a fixed anchorage of any suitable character, as at 10, by a pair of links 11 and 12, one of which is pivoted to said yoke and the other to said anchorage, their respective opposite ends being pivotally connected together. Pivotally connected to the co-pivoted ends of said links is a lever 13, which at its opposite end is pivoted to a second lever 14, which is pivoted intermediate of its ends, as at 15, to a fixed support and is pivoted at its opposite end to a draw-rod 16. Said draw-rod is pivoted at its opposite end to a lever 17, which is adapted to be manually operated. By operating said lever 17 in one direction said gears are forced in one direction along said shaft, and by operating said lever 17 in the opposite direction said gears are moved in the opposite direction along said shaft. Interposed between said gears and adapted to be engaged by one or the other of them, according to the position in which they are for the time being held by said links and levers, is a gear 18, fixed on a shaft 19, journaled in any suitable bearings on said frame. Said shaft 19 is provided at its opposite end with a gear or spur wheel 20, engaging a gear 21, fixed to the rotatable axle 22, upon which latter shaft the said drive-wheels 2 are fixed. It is obvious that with the engine operating continuously in one direction said drive-wheels may be driven in one or the other direction, according to which of said gears 7 or 8 is made to engage said gear 18, or said drive-wheels may be deprived of power by holding the lever 17 on center, at which time neither of said gears 7 or 8 will engage said gear 18.

Journaled in any suitable bearings or in said frame, as at 23, is a depending fork 24, provided with a bracket 25. Journaled on the post or shank of said fork is a gear-wheel 26, and between the tines of said fork is positioned a steering-wheel 27, preferably provided with an annular central flange 27^a on its periphery. Rotatably mounted in any suitable manner on said frame is a belt-wheel 28, adapted to rotate a pinion 29, engaging said gear 26. Said belt-wheel is preferably a sprocket-wheel and is driven by any suitable form of belt—as, for example, the sprocket-chain belt 30, engaged by a loose pulley 31, mounted on said shaft 6. A clutch 32 is slidably splined or keyed on said shaft 6 and is adapted in operation to engage said loose pulley to operate the same. Said clutch is adapted to be operated or retracted by one

or more levers 33 in the usual manner of operating clutches for such purposes. Supported in bearings in said bracket 25 is a shaft 34, provided at each end with pinions 35 and 36, respectively. Upon the rotatable axle of said steering-wheel is fixed a gear 37, which is engaged by said pinion 36, while said pinion 35 engages said gear 26. It will now be obvious that power may be transmitted from said shaft 6 to said steering-wheel through said belt-wheels, gears, and pinions without regard to the direction in which said steering-wheel is turned. The post of said frame 24 preferably projects above said frame, and a lever or tiller 38 is rigidly mounted on the upper end of said post for turning said fork. This tiller is preferably provided with a segmental peripherally-grooved guide-tongue 38ª, to the center of which is secured a tiller-rope 39, which extends in opposite directions and around suitable guide-wheels 40 to the shaft or drum 41 of the hand steering-wheel 41ª. Thus by proper operation of the lever or levers 33 power can be communicated from the engine to the steering-wheel 27 to make it tractive, and by manipulation of the wheel 41ª said wheel 27 can be turned in any suitable direction to steer the machine, whether said wheel 27 be tractive or not.

Attached to the frame 1 in any suitable manner is a frame 42, provided with cross-frames 42ª. Said frame 42 is preferably adjustable with relation to the frame 2 and is preferably provided with suitable racks, as 43, adapted to engage pinions 44, fixed on a shaft 45, which is journaled in suitable circular bearings 46, extending from said frame 1. Said shaft 45 also extends through vertically-slotted bearings 47, extending from said frame 42. Said shaft 45 also carries a gear-wheel 48, fixed thereto and adapted to engage a worm 49, which is operated by a shaft 50, which is provided at its opposite end with a gear-wheel 51, interposed between two spaced gears 52 and 53, mounted on said shaft 6. Said gears 52 and 53 are spaced apart and held in proper relation to each other and to said gear 51 by a yoke 54, engaging annular grooves in their respective hubs. Said yoke 54 is pivotally connected to one end of a link 55, which is pivoted at its opposite end to one arm of a bell-crank lever 56. Said lever 56 is pivoted intermediate of its ends to a fixed support and at the end of its other arm to a link or draw rod 57. Said link or draw rod is operated by other suitable levers and link, as, respectively, 58, 59, and 60. It will be obvious that by operating the train of levers in which the lever 58 is included the mechanism may be operated to transmit power from the engine to said gear 48 to raise or lower the forward end of said frame 42 as desired. The rear end of said frame 42 is preferably carried on a caster or trailing wheel 61 of any suitable construction mounted in bearings 62, carried by said frame 42.

A seat 63 is preferably provided for the engineer or machine operator, in the vicinity of which the manually-operated levers of the various governing mechanisms are assembled. Suitable notched stationary segments, as 64, are provided for holding the respective hand-levers in the desired operative or inoperative positions. These segments and the latches, as 65, for engaging them are well known to the art, and it is not thought necessary to more particularly illustrate or describe them.

Said cross beams or frames 42ª are preferably of flanged construction and adapted to support sliding boxes or bearings 66. The webs of said frames 42ª are preferably apertured at intervals to receive pins, as 67, extending through the boxes 66 and through the implement-post, as 68, of whatever ground-working implement (as, for example, a cultivator 69) it may be desired and suitable to use with such machine. Said posts 68 may be apertured at intervals, so that each implement may be independently adjusted in said boxes. The boxes themselves may be horizontally adjusted as desired, according to the space desired between furrows or otherwise. It is obvious that any suitable ground-working implement having a suitable suspending-post may be inserted in said boxes instead of such cultivators. I do not, therefore, desire to be limited to the use of such cultivators in said machine, but other suitable implements (not shown) may be used therein or therewith within the spirit and scope of my said invention.

A balance-wheel 70 may, if desired, be mounted on said shaft 6 or may, if desired, be omitted therefrom.

In turning corners or in proceeding from the barn to the ground to be worked the forward end of the frame 42 is raised.

Said machine may of course be put to additional uses, as for carrying loads of various natures on said frame 42 or for towing wagons, and the power thereof may be geared or transmitted to other machines. (Not shown.)

I have already applied for a patent on a convertible-implement agricultural machine, of which such automobile formed a part, which application was filed in the Patent Office on the 12th day of October, 1905, and was numbered Serial No. 282,384, this application being a divisional application of my first said application.

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

1. In an automobile, the combination of a frame or body portion mounted on wheels, one of said wheels being a steering-wheel,

means including a motor mounted on said frame and adapted to drive some of said wheels independently of the steering-wheel, a second frame adjustably secured at one end to the first said frame, a caster for supporting the opposite end of the second frame, means including said motor for changing the adjustment of said second frame, and means for changing the direction of said steering-wheel.

2. In an automobile, the combination of a frame mounted upon wheels, one of which is a steering-wheel, means including a motor mounted on said frame and adapted to drive said steering-wheel in any direction, means including part of the first said means adapted to drive another of said wheels independently of said steering-wheel, and means for turning said steering-wheel on a vertical axis.

3. In an automobile, the combination of a frame or body portion, a depending fork journaled on said frame, a steering-wheel rotatably mounted in said fork, a gear mounted on the axle of said steering-wheel, a bracket on said fork, a pinion carried by said bracket and engaging said gear, a second pinion carried by said bracket, a gear mounted on the shaft of said fork and adapted to rotate therewith and engaging said second pinion, means carried by said frame for actuating the last said gear, and means for turning said fork on a vertical axis.

4. In an automobile, the combination of a frame mounted on wheels, and provided at one end with a transversely-directed rotatable shaft, pinions and a worm-gear carried by said shaft, a worm, adapted to engage said worm-gear, means carried by said frame for actuating said worm, a second frame provided at one end with slotted bearings adapted to receive said shaft, and with racks adapted to engage said pinions, and a wheel adapted to support the opposite end of said second frame.

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

FRANK A. NELSON.

Witnesses:
JAMES T. WATSON,
JOHN HEITMANN