(No Model.)

# A. M. G. DE LA ROCHEFONTENILLES.

## STARTING MECHANISM FOR DRAFT VEHICLES.

No. 550,845. Patented Dec. 3, 1895.

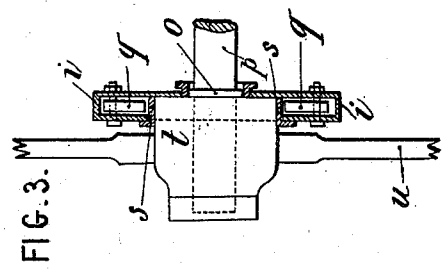

FIG. 3.

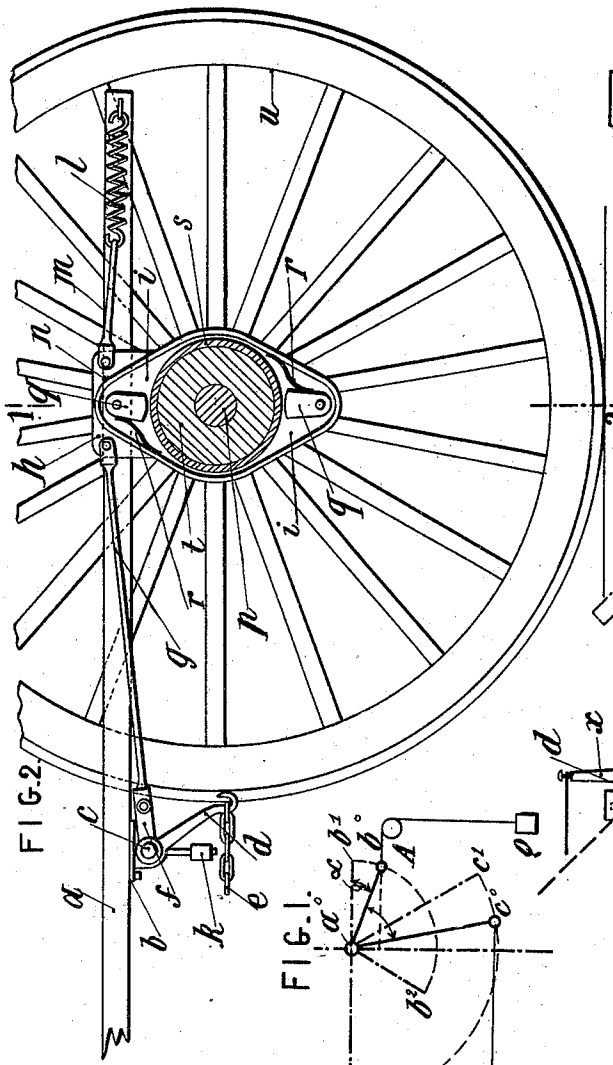

FIG. 2.



FIG. 1.

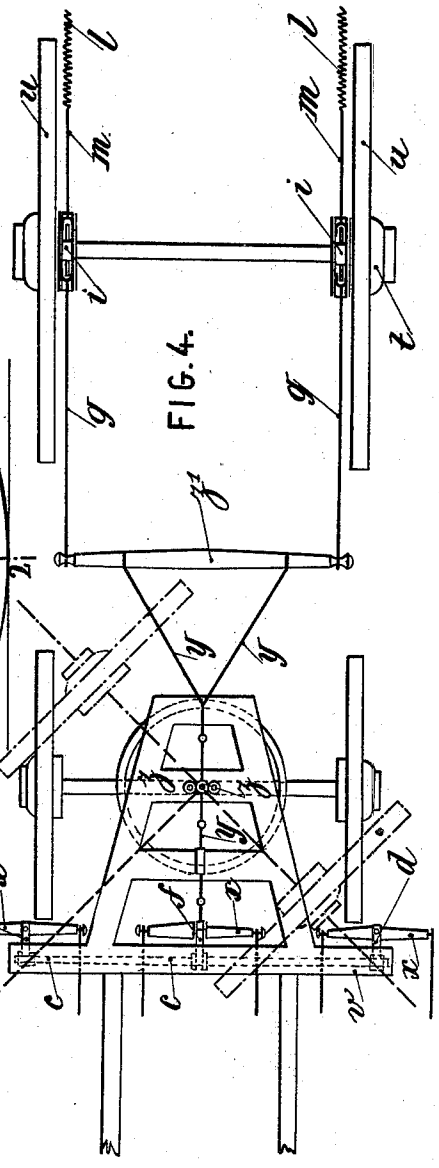

FIG. 4.

WITNESSES.

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AUGUSTE MARIE GILBERT DE LA ROCHEFONTENILLES, OF PARIS, FRANCE.

## STARTING MECHANISM FOR DRAFT-VEHICLES.

SPECIFICATION forming part of Letters Patent No. 550,845, dated December 3, 1895.

Application filed August 23, 1894. Serial No. 521,129. (No model.) Patented in France November 29, 1893, No. 234,359; in Belgium February 28, 1894, No. 108,762, and in England March 3, 1894, No. 4,562.

*To all whom it may concern:*

Be it known that I, AUGUSTE MARIE GILBERT DE LA ROCHEFONTENILLES, of the city of Paris, France, have invented a new and useful Starting Mechanism for Draft-Vehicles, (for which I have obtained Letters Patent in France for fifteen years, dated November 29, 1893, No. 234,359; in Belgium for fifteen years, dated February 28, 1894, No. 108,762, and in England for fourteen years, dated March 3, 1894, No. 4,562,) of which the following is a full, clear, and exact description.

This invention has for its object to facilitate the starting of draft-vehicles; and it consists, essentially, in mechanism whereby the putting of the vehicle in motion is effected by applying the tractive force to turn the wheels, the mechanism ceasing to act and the tractive force being applied directly to the vehicle only when the wheels have acquired the velocity they would have had if the draft had been applied directly to the axles at the outset.

Reference is to be had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a diagram illustrative of the principle of the mechanism. Fig. 2 is a longitudinal vertical section of the mechanism as applied to a two-wheeled vehicle; and Fig. 3 is a cross-section thereof on line 1 2, Fig. 2. Fig. 4 is a plan illustrating the mechanism applied to a four-wheeled vehicle drawn by three horses abreast.

In all these figures the same letters indicate similar parts.

Referring to Fig. 1, it will be seen that the invention is based on the application of the tractive and resisting forces P Q, to the unequal arms $a^0\ b^0$, $a^0\ c^0$, of an elbow-lever, the arms being at an invariable angle of, say, from sixty degrees to ninety degrees, (indicated by the letter A,) and turning about the axis $a^0$ from the position $b'\ a^0\ c'$ to the position $b^2\ a^0\ c^2$, the arrangement being such that at first the turning moment of the force P is infinitely greater than the resistance Q to be overcome, the turning moment decreasing gradually to zero when the force P acts only by translation and not by rotation. In this manner the sudden strain on the collar which the horses must give to put the vehicle in motion by a direct pull is obviated, and it is only when the wheels have acquired the velocity which they would have if the draft had been applied directly to the axles that the starting mechanism ceases to act and the draft is applied directly to the axles.

Referring to Figs. 2 and 3, it will be seen that upon each shaft $a$ of the vehicle is fixed a bracket $b$, in which is journaled the axis $c$ of an elbow-lever, to the longer arm $d$ whereof is attached the draft chain or trace $e$, while the shorter arm $f$ is connected by a rod, chain, or rope $g$ to the lug $h$ of a clutch-box $i$. When no draft-strain is applied, the arm $f$ and the link $g$ are maintained in a straight line by a counterweight $k$ and a spring $l$ made fast to the rear end of the shaft and connected by a link $m$ with the lug $n$ of the clutch-box $i$. The clutch-box turns freely about the collar $o$ on the axle $p$, and within it are pivoted eccentric gripping jaws or dogs $q$, placed symmetrically at opposite sides of the hub $t$ of the wheel $u$ against a rim $s$, on which they are caused to grip by springs $r$ when the apparatus is put in operation, as hereinafter described.

The action is as follows: The vehicle being stationary, as shown in Fig. 2, as soon as the horses begin to pull on the lever-arms $d$ the dogs $q$ are caused, by the motion of the clutch-box about the axle, to jam against the rim $s$ on the wheel-hub and thereby to turn the wheels $u$ through a certain angle until the lever-arm $d$ assumes a horizontal position, whereupon the pull is transmitted directly to the body of the vehicle. As long as the pull is maintained, the springs $l$ and links $m\ g$ remain under tension without affecting the draft of the vehicle; but as soon as the vehicle stops or the pull on the traces slackens from any cause the clutch-boxes $i$ are returned to their original position by the springs $l$, the dogs $q$ slipping on the rim in readiness to bite on the next pull being applied.

In applying the invention to four-wheeled vehicles it will be understood that as regards the fore wheels the arrangement will be simi-

lar to that above described, provided that the vehicle is drawn by only one horse or by a team of horses in single file; but when two or three horses are harnessed abreast the axis *c* is preferably formed as a cross-shaft provided with two or three lever-arms *d*, to which the singletrees of the traces are attached, so that whichever horse may pull both wheels will be actuated at the same time.

To apply the starting mechanism to the hind wheels, as in Fig. 4, the shaft *c* is mounted beneath the splinter-bar *v* and provided with the lever-arms *d*, to which the singletrees are attached, the other lever-arm *f* being at the middle of the shaft and connected by the link *y*, (rod, chain, or rope,) passing between two rollers *z*, placed at opposite sides of the king-bolt to the cross-bar *z'*, whose ends are connected by links *g* to the clutch-boxes *i*, so that the starting mechanism will be operative whether the front part of the carriage be in alignment with the rear part or at an angle thereto, as indicated in dotted lines.

It will be apparent from the foregoing description that should the vehicle be stopped on an upgrade the dogs *q* will prevent backward motion; but they might be so arranged as to be put out of engagement with rim *s*, either automatically or at will, so as to permit of the backward motion of the vehicle.

I claim—

1. A vehicle starter comprising a clutch loosely mounted to turn on the wheel and arranged to engage the same when turned and an elbow lever pivoted in advance of the axle of the said wheel, one arm of the elbow lever being operatively connected to the clutch, and the other arm being adapted for connection with a draft device, substantially as described.

2. A vehicle starter, comprising clutch boxes loosely mounted to turn on the axle and embracing the inner ends of the wheel hubs, spring-actuated clutch dogs held in said boxes and arranged to engage the upper and lower faces of the wheel hubs when said boxes are turned, an elbow lever pivoted in advance of the clutch boxes and having one arm connected with the upper parts of the same, and a connection between the other arm of the said lever and the draft device, substantially as set forth.

3. A vehicle starter comprising clutch boxes loosely mounted to turn on the rear axle and embracing the inner end of the wheel hubs, spring-actuated clutch dogs held in said boxes and arranged to engage the wheel hubs when the boxes are turned, an elbow lever pivoted on the splinter bar, a connection between one arm thereof and the draft mechanism, rollers on opposite sides of the king bolt, and a flexible connection between the other arm of said elbow lever and the clutch boxes, arranged when a pull is exerted on the draft mechanism to turn said clutch boxes, said flexible connection passing between the rollers on opposite sides of the king bolt, substantially as set forth.

The foregoing specification of my starting mechanism for draft vehicles signed by me this 28th day of July, 1894.

AUGUSTE MARIE GILBERT
DE LA ROCHEFONTENILLES.

Witnesses:
CLYDE SHROPSHIRE,
ALBERT MOREAU.