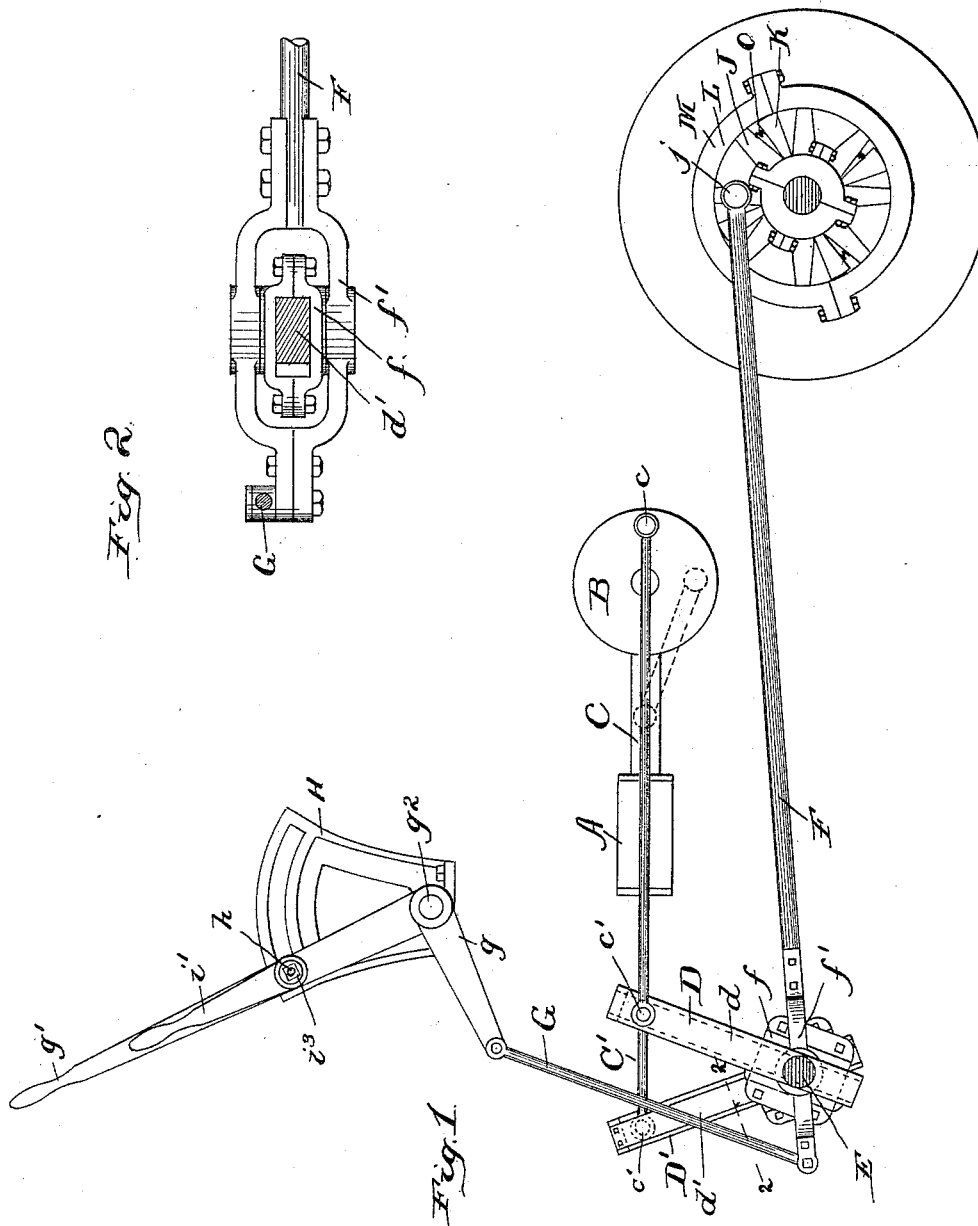


E. PROUTY.
POWER TRANSMITTING DEVICE.

No. 491,759.

Patented Feb. 14, 1893.



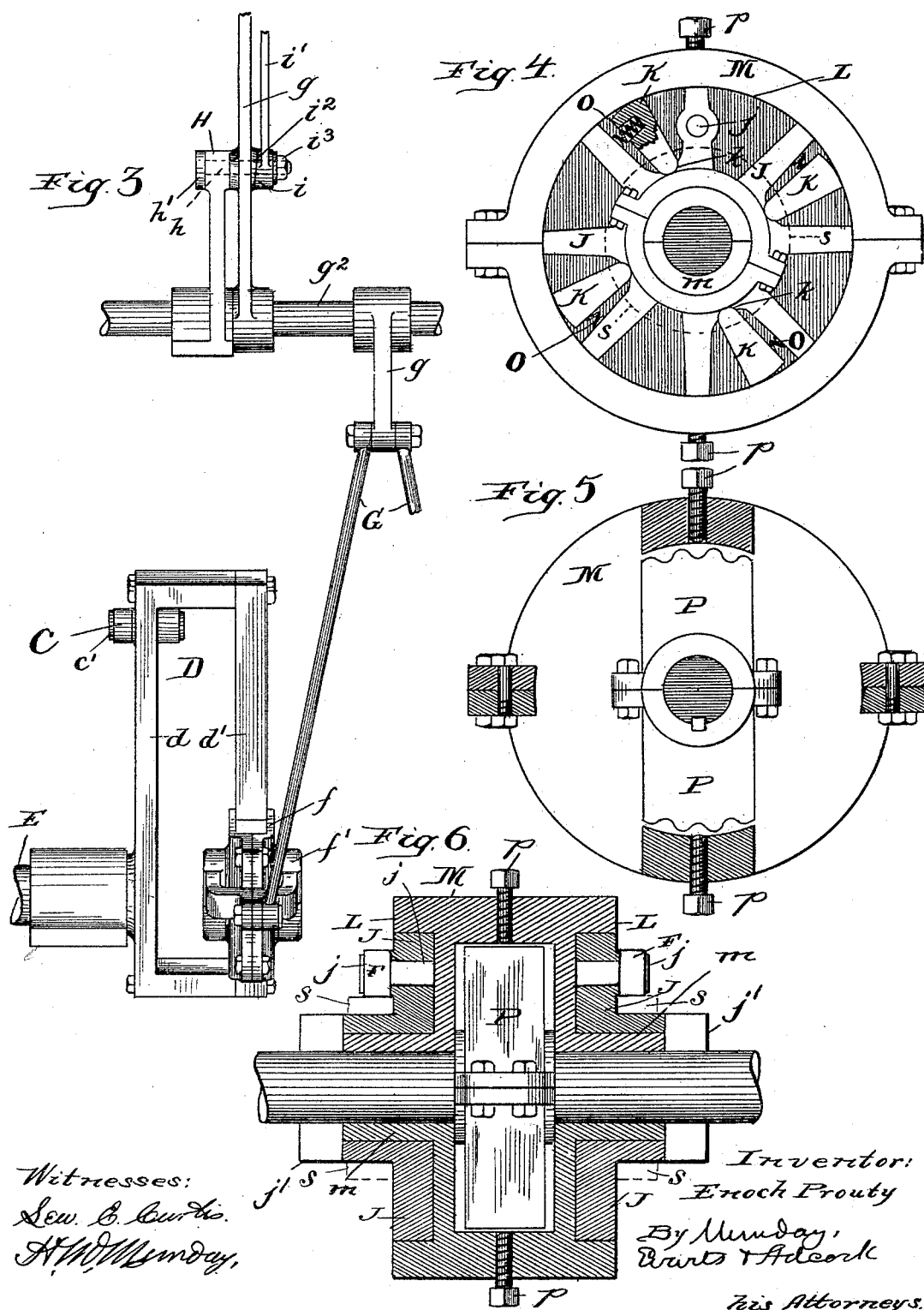
Witnesses
Lew. E. Curtis
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Inventor:
Enoch Prouty
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His Attorneys.

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UNITED STATES PATENT OFFICE.

ENOCH PROUTY, OF CHICAGO, ILLINOIS.

POWER-TRANSMITTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 491,759, dated February 14, 1893.

Application filed September 12, 1892. Serial No. 445,613. (No model.)

To all whom it may concern:

Be it known that I, ENOCH PROUTY, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Power-Transmitting Devices, of which the following is a specification.

This invention relates to transmitting devices for carrying power from a motor to the axle of a railway or tram car. In it I have sought to improve prior constructions and to obviate difficulties encountered in their operation, and especially to make the clutch very quick and certain in its action.

It consists in the novel construction of the several parts and in the novel combination of parts as hereinafter more particularly set forth.

In the accompanying drawings Figure 1 is a side elevation of my invention; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a front elevation of a portion of the mechanism; Fig. 4 is a section across the axle showing an enlarged side view partly broken away, of the clutch; Fig. 5 is a central vertical section of the clutch at right angles to the axle and Fig. 6 is a section thereof parallel with the axle.

In the drawings A represents the cylinder of the car motor, which is geared to and drives the crank wheel B.

At opposite sides of the crank wheel are joined two pitman rods C C' by means of suitable wrist pins c, and the pitman rods at their other ends are respectively united to vibrating levers D and D' by means of wrist pins c'. These levers each consist of a rectangular frame composed of a U-shaped piece d and a straight piece d' bolted to the extremities of the piece d. The junction with the pitman rods is preferably made with the U-shaped piece as is clearly illustrated at Fig. 3, and each lever is supported upon an independent shaft E also joined to the piece d, so that the part d' is unobstructed and may be utilized as a slide way for its entire length and be encircled by the box by which the lever is joined to the connecting rod carrying power to the clutch upon the axle. The stroke of the levers is of course uniform, but the point upon them from which power is taken is made variable at the will of the car driver

so that the car may be started gradually and its speed be regulated as desired. Duplicate devices are employed for varying the power point upon the levers and for transmitting the power, and hence in the drawings I have illustrated the means employed for these purposes with but one of the levers, viz, the lever D. At f is a sliding box encircling the straight member d' of lever D, such box being pivotally supported in a frame f' secured upon the end of the rod F connecting the lever D with the clutch. The box is free to slide up and down on member d', and in its lowest position is opposite the center of shaft E, this being its neutral or non-acting position, giving no motion to the rod. The pivoting of the box also allows the various changes in position to which the box is subjected by reason of the vibrating movement of the lever. The amount of the throw imparted to the rod F is varied by raising and lowering the end of the rod which carries the sliding box, and this is done by the car driver at will through the medium of the rod G and bell crank lever g having one member terminating in a handle g' and having a supporting pivot at g². Both the rods F are connected to the bell crank lever by rods G so that both are raised and lowered simultaneously and to the same extent, and consequently the throw imparted to the two rods F is always the same and both are out of action at the same time. The rods G are joined to extensions of the frame f' located upon the further side of the boxes f as clearly shown.

The lever g must be locked in its various positions because otherwise there will be a constant tendency for it to yield to impulses caused by the movements of the connecting rod F when the latter is acting. For this purpose I provide a slotted frame H adjacent to the upper member of said lever g and secure a wrist pin h in the lever and extend it into the slot with a collar h' upon the pin outside of the slotted frame, and upon the other end of the pin I mount a face cam i provided with a hand lever i' and acting against the correspondingly shaped face cam i² formed upon the lever g. The cam i is readily rotated by its hand lever so as to cause such friction between the lever g and the slotted frame as to securely hold and posi-

tively hold the lever, the cam being confined upon the wrist pin by a nut ²³.

I have specially aimed in my invention to make the clutch both speedy in its action and noiseless, and hence have been led to adopt the following construction: The connecting rods F are connected each to a separate oscillating spider J located at opposite sides of a friction wheel M having laterally extending rims L adapted to receive the impact of the friction pawls hereinafter described: The spiders are loosely mounted upon the laterally extending portion *m* of the hub of the wheel M as clearly indicated at Fig. 6 and are confined in such position by the collars *j'*. The levers are connected to the spiders by wrist bands *j*. The friction exerting devices are the friction pawls K of the peculiar shape shown, that is they are provided with narrow rounded inner ends and rounded outer ends, the circle of the outer ends being struck from the middle line of the inner ends as a center. Seats *k* are provided in the spider for the rounded inner ends of these pawls and between the arms of the spiders. I employ preferably four pawls disposed radially at equal distances apart around the axle. Springs O are placed between each of the pawls and one of the adjacent spider arms, which keep the pawls at all times in contact with the opposing rims. The pawls are of such length as compared with the distance from their inner seats to the inner surface of the wheel rims as to permit their being placed in position when inclined, and when the oscillation of the spiders occurs, such oscillation imparts a movement to the inner ends of the pawls, whereby their position is so changed or tipped as to cause an active engagement by their outer ends with the wheel rims. This engagement takes place simultaneously with the beginning of the movement of the spider, and continues until the direction of the oscillation of the spider is reversed. During the reverse movement the pawls are moved back against the springs and into position where they exert no power upon the wheel rim, so that they may slip along the latter. The releasing of the acting contact is as speedy as the commencement, there being no lost motion in any of the parts to delay action. The pawls being also continuously in contact with the rims and simply rocked so as to tighten them against the same when the clutch is thrown into action, no noise results such as would be the case if the pawls were not in contact at the time the clutch begins its action.

It will be understood from what has been said above that the spider receives an oscillatory movement from the connecting rod F, and as the extent of the stroke of the rod F is subject to the will of the car driver so also will the oscillation of the spider be subject to his control. When he desires the car to start slowly he will raise the rod F but slightly above the center of the shaft E, thereby causing

only a short stroke, and when the speed is to be increased he raises the rod F a greater distance and causes a corresponding increase of movement by the spider which of course gives a greater motion to the wheel M and the axle.

I provide preferably duplicate clutching devices upon opposite sides of the wheel M in order that one may be acting while the other is returning for a fresh hold, and of course to actuate this duplicate clutching mechanism another rod F and lever D' are provided.

It is sometimes desirable that the clutch be released from the axle so that the latter may turn independently, and hence I mount the wheel M loosely upon the axle and provide means whereby it may be locked thereto or released at will. These means consist of the arms P keyed to the axle and located within the hollow of the wheel and set screws *p* carried on the rim of the wheel and adapted to be forced down into engagement with the corrugated ends of the arms P.

In order that the clutch may be removed for repairs and replaced in position, and in order that the clutch may be applied to axles which are already supplied with their supporting wheels, I make the parts which encircle the axle, namely the wheel M, the spider J, and the arms P each in two pieces and bolt them together as shown. The collars *j'* may be similarly made, or they may be positioned on the axle before the wheels are secured thereto.

The friction pawls may be used until they are so worn as to prevent their acting with the force required, and as the surface which bears upon the rims wears away, the spring forces the pawl a little further so that a fresh portion of the surface begins to act and this continues until the pawl is worn away sufficiently to render it useless. These pawls may be held in position by means of straps *s* indicated by broken lines which extend around the hubs of the spiders and serve to confine the inner ends of the pawls in their seats.

I claim:—

1. The combination with the motor, the axle and the clutches upon the axle, of vibrating levers and rods movably attached to the levers and carrying power from the levers to the clutches, and a hand lever joined to said rods and adapted to change their positions upon the levers, substantially as set forth.

2. The combination with the motor, the axle and the clutches upon the axle, of vibrating levers and rods movably attached to the levers and carrying power from the levers to the clutches, a hand lever joined to said rods and adapted to change their positions upon the levers, and means for locking said hand lever in its positions, substantially as set forth.

3. The combination with the motor, axle, clutch and transmitting mechanism for carrying power from the motor to the clutch, of a hand lever controlling said transmitting mechanism and means for locking said lever

in its various positions consisting of the cam, a slotted frame, a wrist pin and a lever for rotating the cam, substantially as specified.

4. In transmitting mechanism of the kind
5 shown, the lever D, consisting of a frame one side of which forms a slide way for the box of the connecting rod, and the other side as a means of attachment of the actuating pitman and the supporting shaft, in combination
10 with the rod, the pitman, and the shaft, substantially as specified.

5. In transmitting mechanism of the kind shown, the lever D consisting of a frame formed of a U shaped piece *d* and straight
15 piece *d'*, in combination with the supporting shaft and actuating pitman, both attached to piece *d*, and the connecting rod having a sliding attachment to piece *d'*, substantially as specified.

20 6. The combination with the motor, the axle and the transmitting devices, of the axle clutch consisting of a rimmed friction wheel rigidly secured to the axle and made in two parts, an oscillating spider also made in two parts and
25 mounted upon the hub of the friction wheel, the transmitting devices being joined to such spider and serving to oscillate it, and a series of friction pawls confined between the hub of the spider and the rim of the wheel and thrown
30 into action by the movement imparted to them by the spider, substantially as specified.

7. The combination with the motor and the power transmitting devices, of the axle clutch consisting of an oscillating spider, loosely surrounding the axle and actuated by the transmitting devices, a rimmed friction wheel rigid
35 upon the axle, and a series of friction pawls which are confined between the hub of the spider and the rim of the wheel and are thrown into action by the movement imparted to them
40 by the spider, substantially as specified.

8. The combination with the motor, the power transmitting devices, and the car axle, of a clutch the friction wheel whereof is hollow and arms P rigid upon the shaft and located within the hollow of the wheel and with
45 set screws mounted in the wheel and acting upon said arms, substantially as specified.

9. The combination with the car axle of a motor, two vibrating levers actuated by the
50 motor, two connecting rods having sliding attachments to said levers, the oscillating spiders actuated by the rods, a friction wheel rigid with the axle, friction pawls confined between the spiders and the rims of the wheel and a
55 single hand lever joined to the ends of the connecting rods which slide upon the vibrating levers, substantially as specified.

ENOCH PROUTY.

Witnesses:

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