

(No Model.)

S. E. MOWER.
ELECTRIC MOTOR MECHANISM.

No. 474,328.

Patented May 3, 1892.

Fig: 1.

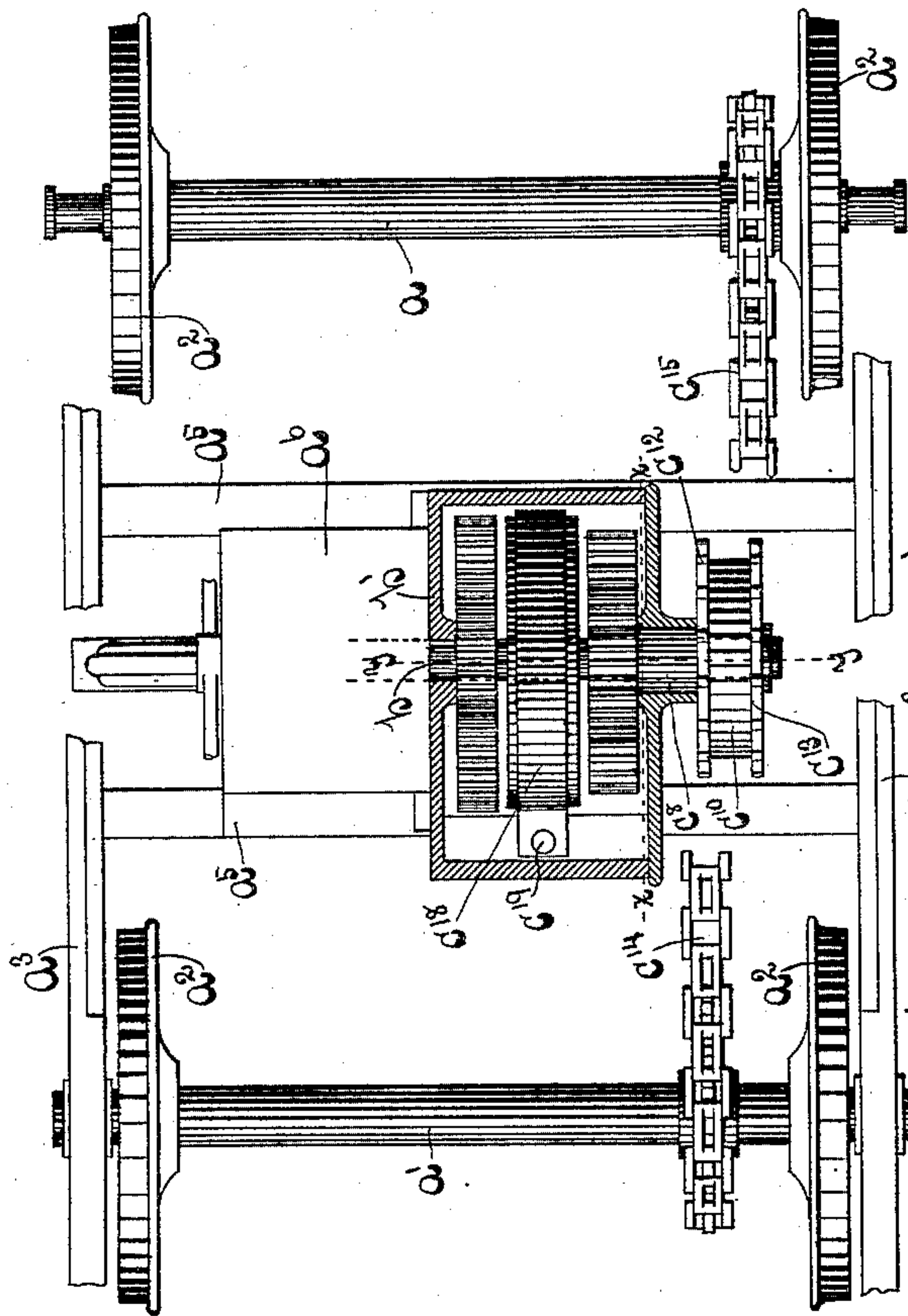


Fig: 3.

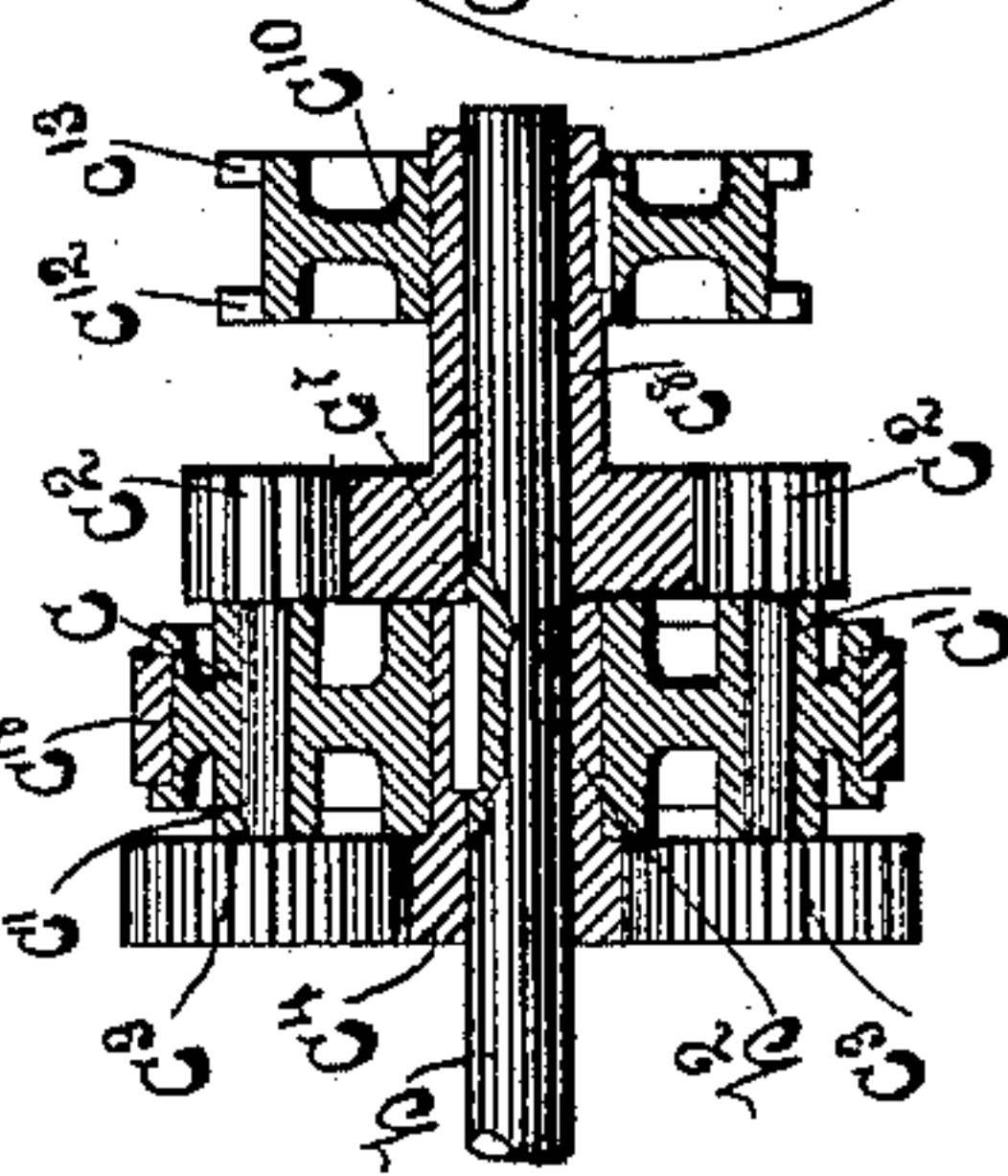
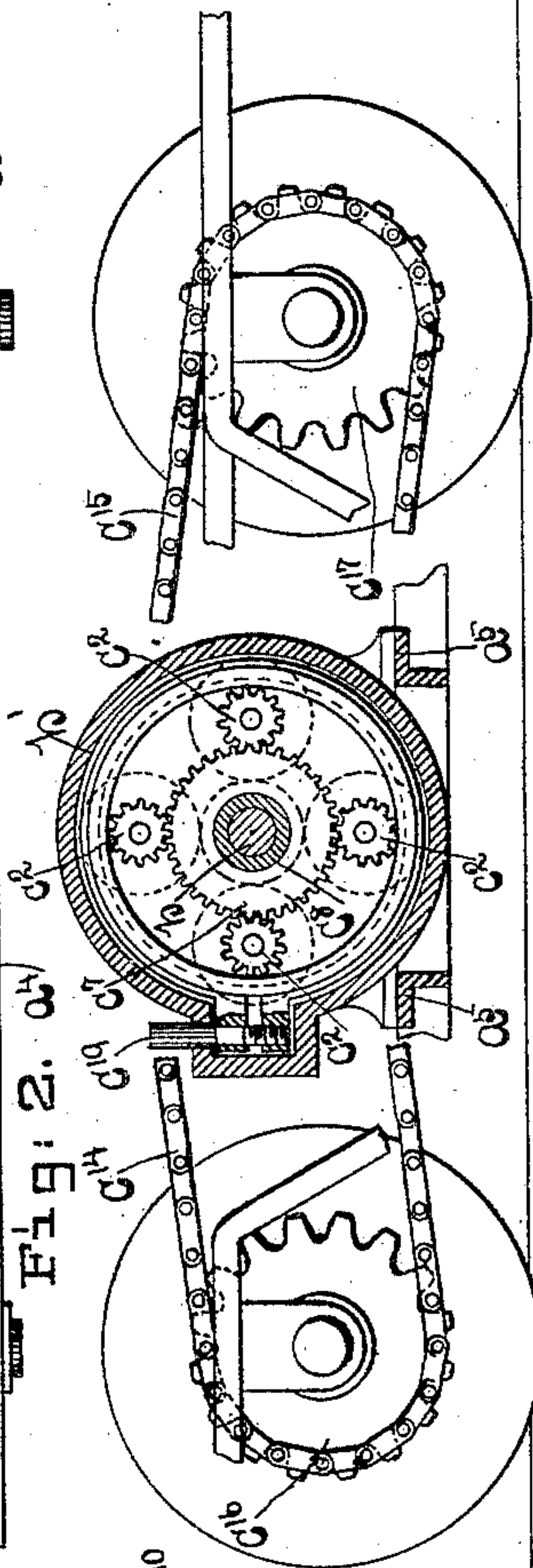


Fig: 2.



Witnesses:

Frederick S. Greenleaf.
Edward F. Allen.

Inventor.

Samuel E. Mower
by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

SAMUEL E. MOWER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO HENRY G. THOMPSON & SONS, OF SAME PLACE.

ELECTRIC-MOTOR MECHANISM.

SPECIFICATION forming part of Letters Patent No. 474,328, dated May 3, 1892.

Application filed May 21, 1891. Serial No. 393,600. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. MOWER, of New Haven, county of New Haven, State of Connecticut, have invented an Improvement in Electric-Motor Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention, relating to the rotation of a shaft or axle by means of electricity, is especially adapted to be used on electrically-propelled cars, and is an improvement upon the mechanism shown and described in United States Patent No. 440,717, granted to me November 18, 1890.

My present invention has for its object to construct apparatus as will be described, whereby the speed-reducing mechanism shown and described in the said patent may be employed to transmit motion to a shaft or axle from the armature-shaft of an electric motor independent of the said axle.

The particular features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 is a top or plan view of a sufficient portion of a car-truck provided with an electric-motor mechanism embodying my invention to enable it to be understood; Fig. 2, a longitudinal section of the apparatus shown in Fig. 1 on line $x x$; Fig. 3, a sectional detail on line $y y$, Fig. 1.

The axles $a a'$, provided with the wheels a^2 , are and may be of any usual or well-known construction, such as now commonly employed on electric-railway cars. The car-axles $a a'$, as herein represented, support bars $a^3 a^4$, upon which rest cross-bars $a^5 a^5$, constituting the supports for an electric-motor mechanism. The electric motor, which may be of any usual or well-known type of machine and the field-magnets of which are represented by a^6 , has its armature-shaft b extended through the box or case b' and supported at its ends by bearings in said box or case.

The armature-shaft b has keyed or otherwise fastened to it a collar b^2 , upon which is supported frictionally a disk c , through which is extended, preferably, a plurality of shafts c' , upon which are mounted, on opposite sides

of the said disk c , pinions c^2 and gears c^3 of a diameter substantially larger than the said pinions. The gears c^3 mesh with a substantially small gear c^4 , formed integral with or secured to the collar b^2 . The pinions c^2 mesh with a substantially large gear c^7 , formed integral with or secured to a sleeve c^8 , loose on the armature-shaft. The sleeve c^8 has keyed or otherwise secured to it a wheel c^{10} , having on it two series of sprocket-teeth $c^{12} c^{13}$, which receive, respectively, sprocket-chains $c^{14} c^{15}$, which in turn pass over sprocket-wheels $c^{16} c^{17}$, secured to axles $a' a$. The disk c is encircled by a friction strap or brake c^{18} , having its ends adapted to be brought together to hold the disk stationary by a rod c^{19} , having its end screw-threaded to engage threaded openings or sockets in the ends of the said strap.

In operation, the car being in motion, the armature-shaft b , the collar b^2 , and gear c^4 , firmly secured thereon, are continuously rotated, and the disk c being held in fixed position by the brake-band the gears c^3 are revolved, rotating the pinions c^2 , and thereby rotating the gear c^7 and sprocket-wheel. While the car is at rest the friction or brake strap c^{18} is loose upon or relaxed from the disk c , and the said disk being loose on the collar b^2 will travel around said shaft with the gears c^2 and c^3 without producing movement of the gear c^7 , which is held stationary by the load. When it is desired to start the car, the operator turns the rod c^{19} , so as to bring together the ends of the split ring, brake-band, or friction-strap, and thus clutch the disk c and hold it stationary. The gear c^4 , revolving with the shaft, rotates the gears c^3 and pinion c^2 , and thereby causes the gear c^7 to revolve. The car may be set in motion at any desired or required speed by regulating the friction upon the disk c^{18} . In practice the inclosing case b' will preferably be filled or partially filled with oil or other lubricant.

The gears and pinions herein represented are toothed gears and pinions, and thereby positively engage each other and do not slip.

I do not desire to limit myself to a sprocket-chain passing over and driven by sprocket-wheels as a means of transmitting power from the sleeves on the armature-shaft to the driv-

ing-axle, as it is obvious that other means may be employed.

I claim—

1. The combination, with an axle, of an electric motor to rotate it independent of the said axle, a sprocket-wheel on the axle, a sprocket-chain, a sleeve on the armature-shaft of the motor, a sprocket-wheel on said sleeve, a gear on said sleeve, and reducing-gearing between said gear on the sleeve and the armature-shaft, substantially as described.

2. The combination, with an axle, of an electric motor to rotate it independent of the said axle, a sprocket-wheel on the axle, a sleeve on the armature-shaft of the motor, a sprocket-wheel on said sleeve, and sprocket-chain, a gear on said sleeve, a disk, as *c*, mounted on the armature-shaft, one or more shafts carried thereby and provided with a pinion in mesh with the said gear on the sleeve and also with a gear meshing with a gear fast to the shaft, and means for varying the relative speed of the disk and shaft, substantially as described.

3. The combination, with an axle, of an electric motor to rotate it, a sprocket-wheel on the axle, a sprocket-chain, a sleeve on the shaft and sprocket-wheel thereon, a gear on said sleeve, a disk, as *c*, loose on the shaft, one or more shafts carried by it and provided with a pinion engaging the gear on the sleeve, and with a gear engaging a gear fast to the shaft and with a friction device engaging said disk, substantially as described.

4. The combination, with two axles, of a sprocket-wheel on each axle, an electric motor and supports therefor for supporting it between the said two axles, a sleeve on the armature-shaft of said motor, two sprocket-wheels on said sleeve, two sprocket-chains connecting the sprocket-wheels on the sleeve with the sprocket-wheels on the axles, and reducing-gearing between the said sleeve and

the armature-shaft and means for controlling the operation of said reducing-gearing, substantially as described.

5. In combination with an axle of a railroad car, an electric motor mounted on an axle between the driving-wheels to rotate the same, a sleeve mounted on the armature-shaft for transmitting the power to the axle, and speed-reducing mechanism connecting the sleeve to the armature-shaft, comprising a toothed gear on the sleeve, a toothed gear on the shaft, a disk or drum located between said gears and mounted loosely on the shaft, differential toothed gears and pinions borne by said disk on either side thereof, adapted to respectively engage the toothed gear on the shaft and toothed gear on the sleeve, substantially as described.

6. In combination with an axle of a railroad-car, an electric motor mounted on the axle under the car and between the driving-wheels to rotate the same, a sleeve loosely mounted on the armature-shaft for transmitting the power to the axle, and speed-reducing mechanism connecting the sleeve to the armature-shaft, comprising a toothed gear on the sleeve, a toothed gear on the shaft, a disk or drum located between said gears and mounted loosely on the shaft, differential toothed gears and pinions borne on either side by said disk, adapted, respectively, to engage the toothed gear on the shaft and toothed gear on the sleeve, and means for holding and releasing said disk or drum at will, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL E. MOWER.

Witnesses:

HENRY G. THOMPSON,
L. H. DAYTON.