

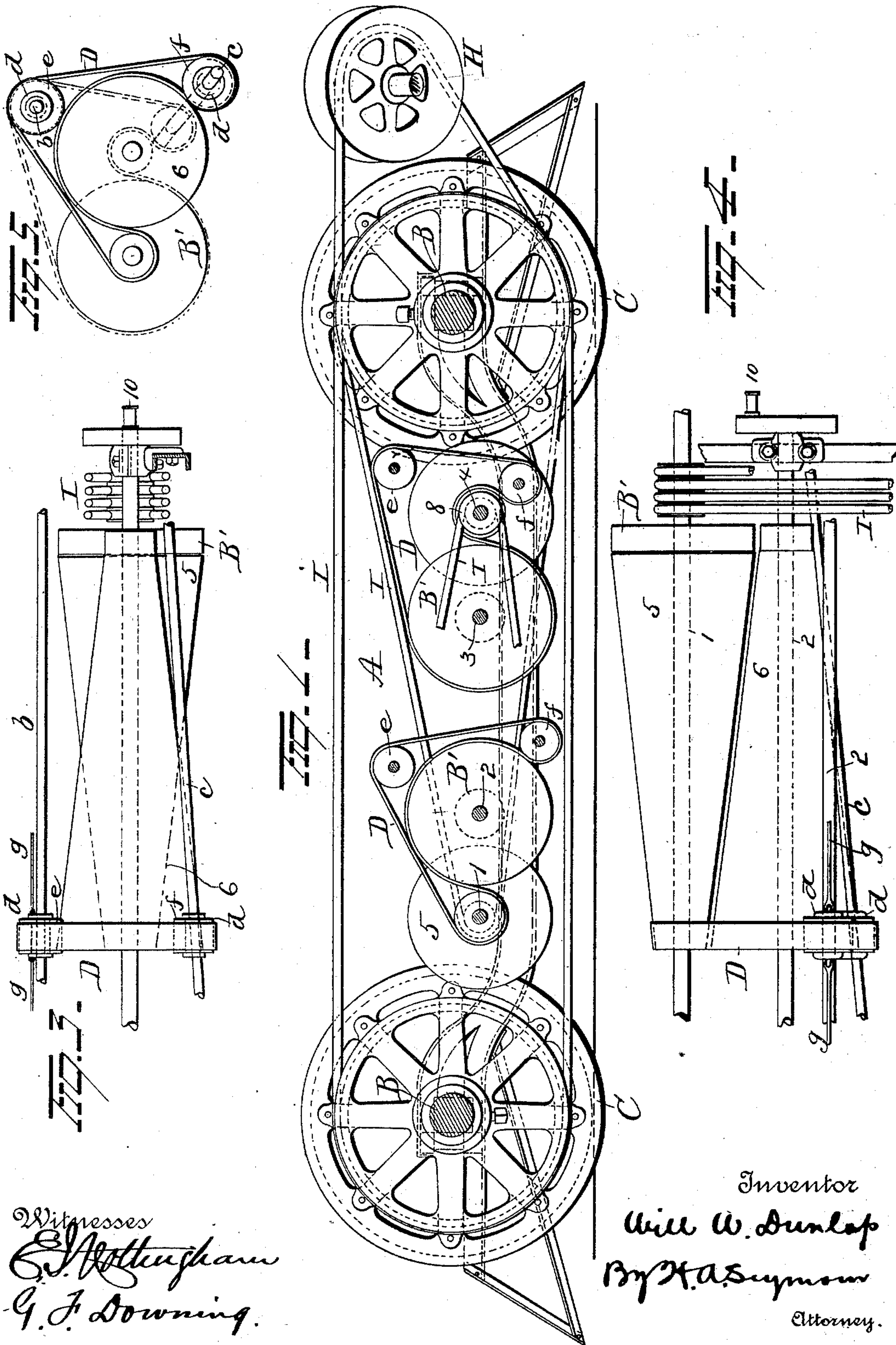
(No Model.)

2 Sheets—Sheet 1.

W. W. DUNLAP.
GEARING FOR PROPELLING CARS.

No. 485,179.

Patented Nov. 1, 1892.



Witnesses
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(No Model.)

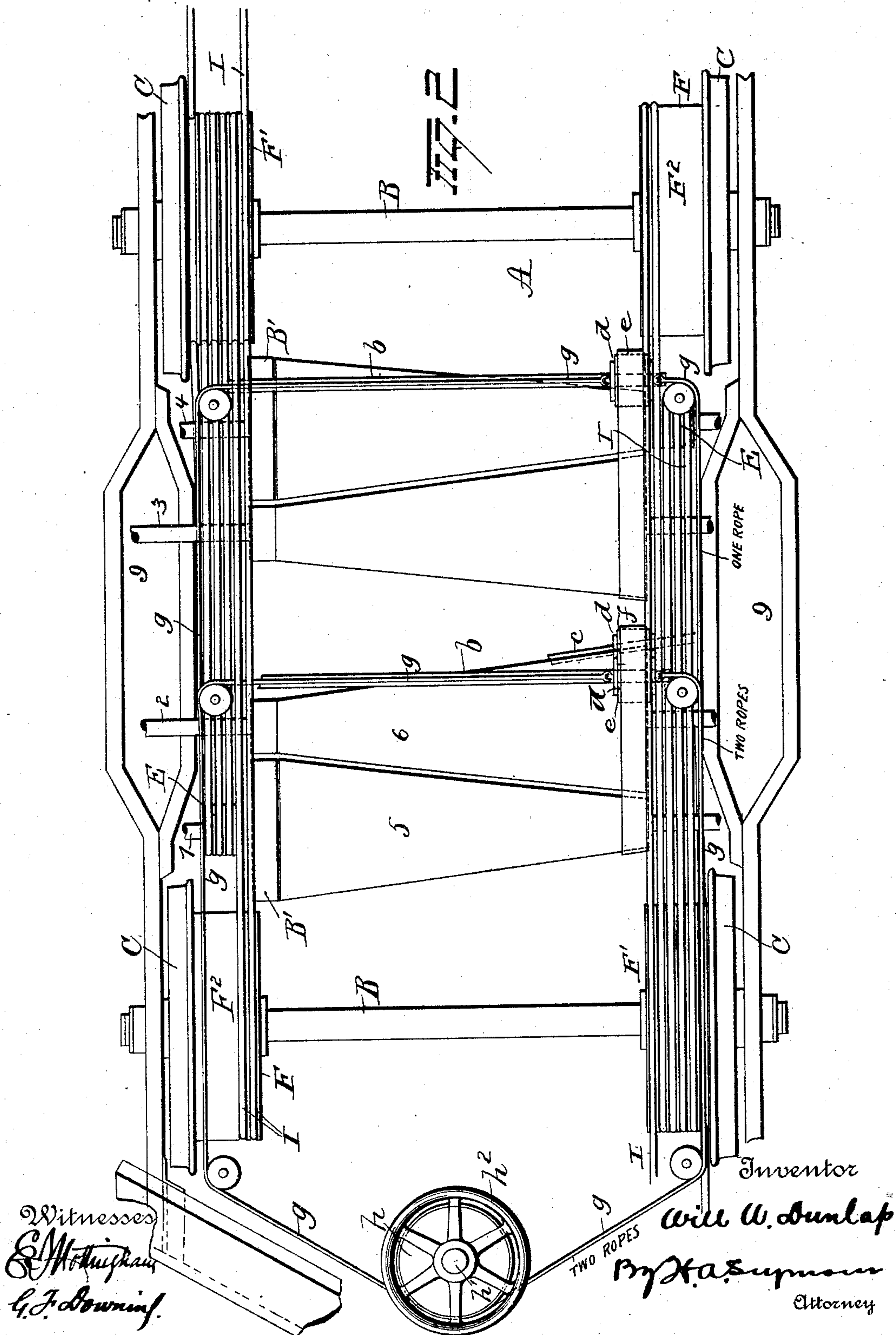
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UNITED STATES PATENT OFFICE.

WILL W. DUNLAP, OF DETROIT, MICHIGAN.

GEARING FOR PROPELLING CARS.

SPECIFICATION forming part of Letters Patent No. 485,179, dated November 1, 1892.

Application filed January 26, 1892. Serial No. 419,333. (No model.)

To all whom it may concern:

Be it known that I, WILL W. DUNLAP, a resident of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Gearing for Propelling Cars; 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 an improvement in driving mechanism for cars, and more particularly for street-cars, its object being to construct a car-motor in such manner that it shall always run at a uniform speed regardless of the speed of the car and regardless of the stopping and starting of said car.

A further object is to so construct a car-motor that the wheels at opposite sides thereof shall be independently driven.

A further object is to arrange a series of cones and gearing in such manner that the car will be driven and the speed of the car regulated through the medium of said cones.

A further object is to construct and arrange driving mechanism for a car in such manner that two or more wheels of the car can be driven from a single shaft or cone through the medium of multiple-wound rope belting.

A further object is to produce a car-motor which shall be simple in construction, sure of operation, not easily deranged, and which shall be effectual in the performance of its functions.

With these objects in view the invention consists in certain 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 is a side elevation of a car-truck having my improvements applied thereto, the axles and shafts being shown in section. Fig. 2 is a plan view. Figs. 3, 4, and 5 are detail views.

A represents the frame of a car-truck, B the axles, and C C the car-wheels. Mounted on the truck-frame A is a series of shafts 1 2 3 4, each of said shafts carrying a cone 5 6 7

8, respectively. The shafts 2 3 preferably terminate at one end in an open space 9 in the frame of the truck, where they are provided with crank-arms 10 or other suitable means, whereby power may be transmitted to the cones 6 7 from a steam-engine, gas or compressed-air engine, electric motor, or other suitable power. A loose pulley B' is mounted on each shaft 1 4, adjacent to the larger ends of the cones 5 8, and in proximity to these cones 5 8 two shafts *b c* are mounted in the truck-frame, the shaft *b* being disposed parallel with the longitudinal axes of the cones, and the shaft *c* being preferably disposed substantially parallel with the peripheries of the cones 6 7. On the shafts *b c* collars or sleeves *d* are mounted to slide, and carried by these collars or sleeves are loose pulleys *e f*. Bands D pass over the loose pulleys *e f* and over the larger end of one cone and the smaller end of another cone of each pair of cones. When the car is running at its highest speed, the bands D pass over the larger ends of the cones 6 7 and the smaller ends of the cones 5 8. Attached to the ends of the sleeves or collars *d*, which carry the pulleys *f*, are cords or chains *g*, said cords or chains also passing over small pulleys or wheels located at opposite sides of the truck and around a drum *h*, located at the forward end of the car. This drum *h* has attached to it a shaft *h'*, to the top of which a wheel or handle *h²* is secured, whereby to rotate the drum, these parts thus constituting a speed-regulator, as by rotating said drum the sleeves carrying the pulleys *e f* will be slid on the shafts *b c* and the belts or bands D made to travel on the cones of each pair from the larger end of one cone toward the larger end of the adjacent cone of each pair of cones. By thus moving the driving-belt from the larger end to the smaller end of the driving-cone and from the smaller end toward the larger end of the driven cone, the speed of the driven cone will be diminished to an extent commensurate to the extent of movement of the driving-belt toward the larger end of the driven cone and thus regulate the speed of the car which receives its propelling

power from the driven cone, without in the slightest degree affecting the speed of the motor which drives the driving cone or cones.

Should the driving belts or bands D, which
5 transmit motion from the driving to the driven cones, be moved beyond the larger ends of the driven cone onto the loose pulleys B', there will of course be no motion transmitted to the driven cones, and consequently no motion will be transmitted to the car-wheels.
10 Thus it will be seen that not only can the speed of the car be regulated without affecting the speed of the motor, but the car may be completely stopped or started without affecting in the slightest degree the speed of the source of power, whether that motor or source of power be a steam-engine, gas or air engine, or an electric motor.

By the construction and arrangement of the
20 loose pulleys *e f*, the driving-bands D may be moved from one end of the cones to the other for regulating the speed of the car, and also by such construction and arrangement a very large surface of the bands D is subjected to or made to bear on said cones, thus causing a more positive transmission of power from the driving to the driven cones than could be effected by simply passing the bands over the cones without the use of the loose pulleys *e f*.

30 Fixed to the shafts 1 4 of the driven cones 5 8 are pulleys E, each having a series of grooves, or in lieu of a single pulley E having a series of grooves a series of grooved pulleys may be employed, the pulley or pulleys E being secured at one end of the shaft 1 and at the opposite end of the shaft 4. At each side of the truck grooved drums F F' are secured to or made integral with the wheels C C, the grooves in the drum F being less in
40 number than the grooves in the drum F', thus leaving a space F² on the periphery of the drum F for the reception of a brake of any suitable construction. At the ends of the truck at each side thereof are loose pulleys
45 H, and over these loose pulleys H, which are provided with grooved peripheries, the grooved drums F F', secured to the wheels, and over the grooved pulley E on the shaft 1 of the driven cone 5 is a multiple-wound rope I.
50 The rope I is made to pass through all the grooves of the pulley E, in all the grooves of the drum F', around the loose pulley H, and a portion of the rope carried back and passed through the grooves of the drum F. At the
55 opposite side of the truck the corresponding wheels C C and drums F F' are geared in precisely the same manner with the driven cone 8. By this arrangement of gearing both wheels C C at one side of the truck will be
60 driven from the driven cone 5, and both wheels C C at the opposite side of the truck will be driven by the driven cone 8, the wheels at one side of the truck thus being driven independently of the wheels at the other side, and thus
65 by causing the wheels at one side of the car to run faster than the wheels at the other side

the passage of the car around curves will be facilitated.

In lieu of the loose pulleys B' and the bands D other mechanism may be employed for
70 transmitting motion from the driven to the driving cones.

It may in some cases be desirable to propel a car by means of a single set of gearing, in which case the wheels will be made fast
75 with the axles and the gearing connected with said axles.

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

1. The combination, with a car and a driving-cone, of a driven cone, devices connecting said cones, whereby the motion of the driving-cone is imparted to the driven cone, and devices connecting the driven cone and car-
85 wheels, the said cones and devices connecting them being so constructed that the speed of the driven cone can be regulated without changing the speed of the driving-cone, substantially as set forth.

2. The combination, with a car and wheels, of a pair of cones, means for transmitting motion to one of said cones, means for transmitting motion from one of said cones to the other, and multiple-wound rope gearing for
95 transmitting motion from the driven cone to the car-wheels, substantially as set forth.

3. The combination, with a car and car-wheels, of two pairs of cones, means for transmitting motion to one cone of each pair, means
100 for transmitting motion from the driving-cones to the driven cones, multiple-wound rope gearing connecting one of the driven cones with the car-wheels at one side of the car, and multiple-wound rope gearing for connecting the
105 other driven cone with the wheels at the opposite side of the car, substantially as set forth.

4. The combination, with a car and wheels, of grooved drums carried by said wheels, a loose pulley, a driving-cone, a driven cone
110 adapted to receive motion from the driving-cone, a grooved pulley on the shaft of the driven cone, a multiple-wound rope gearing passing around the grooved pulley on the cone-shaft, the drums on two or more car-
115 wheels, and the loose pulley, substantially as set forth.

5. The combination, with a car and car-wheels, of a pair of cones, means for transmitting power to one of said cones, a loose
120 pulley carried by the shaft of the other or driven cone, a band for transmitting motion from the driving-cone to the driven cone, and means for shifting said band to regulate the speed of the driven cone or to stop the rotation of said driven cone by shifting the band
125 onto the loose pulley, and means for transmitting motion from the driven cone to the car-wheels, substantially as set forth.

6. The combination, with a car and wheels, of a driving and a driven cone, means for
130 transmitting motion to the driving-cone, two

5 shafts, a loose pulley on each shaft, a band passing about said loose pulleys and the two cones for transmitting motion from the driving to the driven cone, and devices for moving said loose pulleys to shift the band and regulate the motion of the driven cone, and gearing connecting the driven cone with the car-wheels, substantially as set forth.

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

WILL W. DUNLAP.

Witnesses:

GEORGE DUNLAP,
FRANK M. DUNLAP.