(No Model.) 2 Sheets—Sheet 1.

W. H. H. STINEMAN.

STREET RAILWAY MOTOR.

No. 524,961. Patented Aug. 21, 1894.

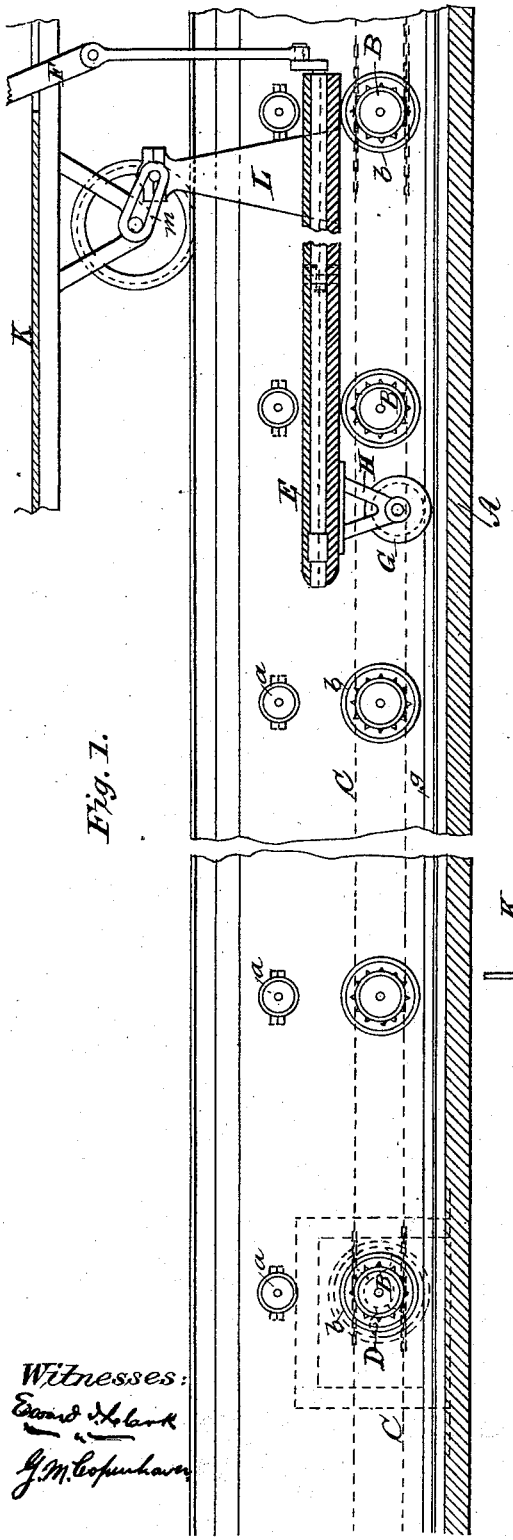

Fig. 1.

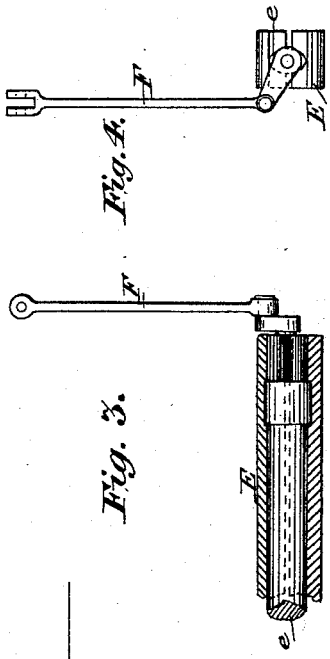

Fig. 4.

Fig. 3.

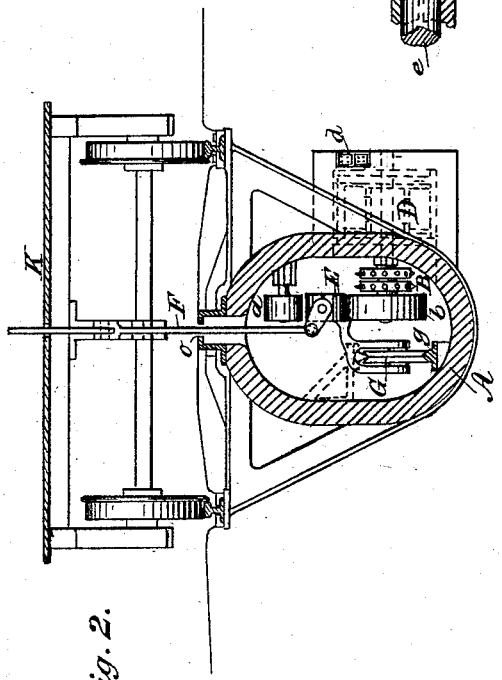

Fig. 2.

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J. M. Coppenhaver

Inventor:
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(No Model.) 2 Sheets—Sheet 2.

W. H. H. STINEMAN.

STREET RAILWAY MOTOR.

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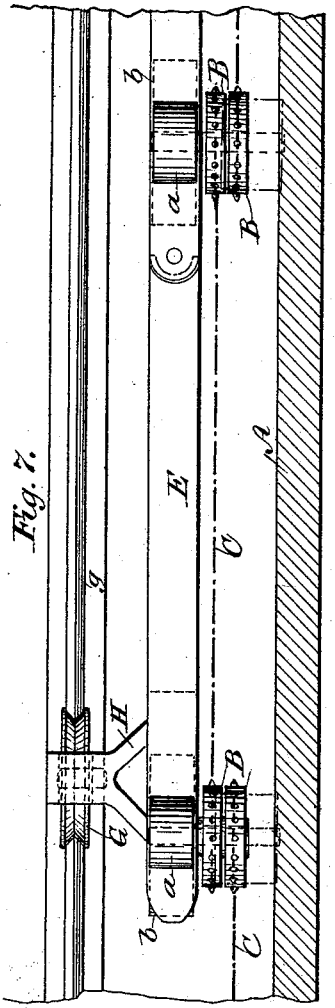

Fig. 7.

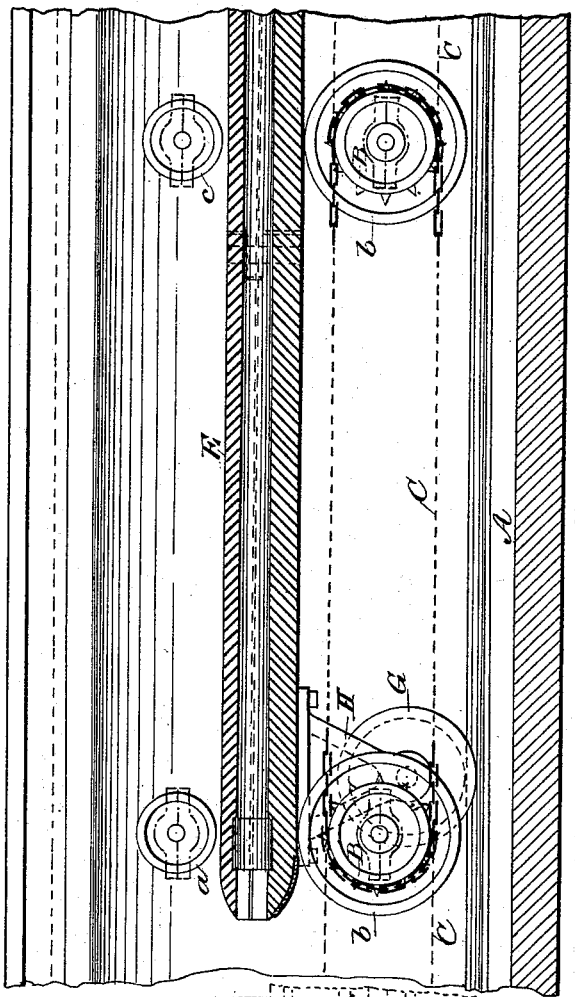

Fig. 6.

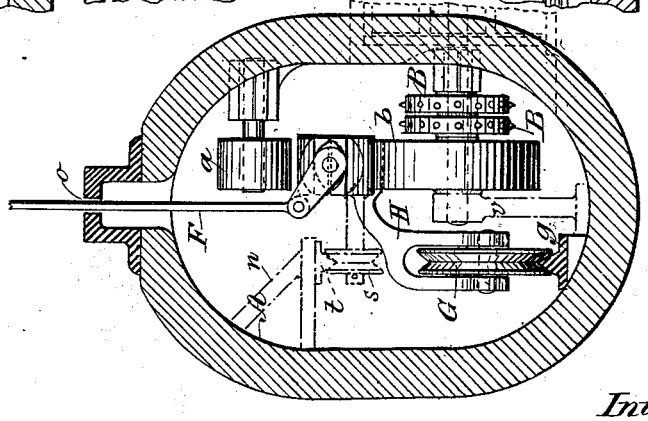

Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM H. H. STINEMAN, OF HICKS'S MILL, ASSIGNOR OF ONE-HALF TO EDWARD I. CLARK, OF BALTIMORE, MARYLAND.

STREET-RAILWAY MOTOR.

SPECIFICATION forming part of Letters Patent No. 524,961, dated August 21, 1894.

Application filed February 23, 1894. Serial No. 501,243. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. H. STINEMAN, a citizen of the United States, residing at Hicks's Mill, in the county of Prince George's and State of Maryland, have invented certain new and useful Improvements in Street-Railway Motors; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in a new system of "street-car-propulsion."

It is a well-known fact that in the "cable-traction-railways" as now known, by the employment of the endless cables now in use, which are operated from a central power-house with large engines and boilers, not only great waste of power is occasioned by the pulling of the entire continuous cable, as well as to pass around numerous corners and curves, also by the strain they have thus to sustain, they are very often broken, causing great inconvenience to passengers, as well as extra expense to the company.

The object of my invention is therefore to overcome these objectionable features at present experienced with said cable-traction-railways, and the trolley-systems with electric wires. Another object is to produce a system of street-car-propulsion, which is not as expensive either in the first outlay of expenditure or in the current running and operating expenses; furthermore to facilitate the manipulation of the cars during running in a very simple and convenient manner, and also the repairing or substitution of any of its parts, when worn out or broken from any cause.

My invention consists of a street-railway-system in which the tunnel is provided with a series of double friction-wheels journaled in the sides of the tunnel and which serve for conveying a shuttle connected to and operated from the car. Said friction-wheels are actuated by a series of sprocket-wheels and chains, which receive motion by means of a series of electric motors placed at intervals along the entire line.

It also consists in the construction of details and the arrangement of parts, as more fully described hereinafter and specifically pointed out in the claims, reference being had to accompanying drawings, in which—

Figure 1 represents a longitudinal section of a tunnel with my appliances in position. Fig. 2 is a transverse section of Fig. 1; Fig. 3 a detail view on an enlarged scale of the shuttle-operating device. Fig. 4 is an end view of the same. Fig. 5 is an enlarged cross section of part of Fig. 2. Fig. 6 is a longitudinal section of Fig. 5. Fig. 7 is a part plan view of the same.

In the accompanying drawings, A, represents a tunnel, preferably made of concrete, cement, or its equivalent, to prevent as much as possible, any influence on the electric wires employed.

At regular intervals, of about four feet from center to center, are placed two sets of friction-wheels, an upper set *a* and a lower set *b*, which are arranged on short shafts suitably journaled in the sides of the tunnel. On the shafts of the lower friction wheels are placed the sprocket-wheels B, connected by the sprocket-chains C. These sprocket-wheels are connected to the friction-wheels at heavy grades or sharp curves by suitable gearing, to assist them in turning. They are operated by a series of electric motors D placed at proper distances, but so that they can be continuously actuated by the electric wires connecting them, to form a continuous motive power, and to dispense with the ordinary cable and yet attain the same or better result.

The friction-wheels are made slightly conical at corners or curves to prevent binding of the shuttles. Between the friction-rollers is arranged what I term the shuttle E, made in two parts hinged or jointed together in any proper manner.

The shuttle is made in hinged sections to facilitate passing around curves, &c., or the friction wheels may be provided with a flange on each side. Between the upper and lower part of the shuttle is arranged a knuckle-jointed shaft or bar *e* of elliptical oblong rect-

angular or equivalent shape, and having on its end a crank gearing or equivalent, connected to and operated by a rod or lever F extending into the car, to be operated as at present. When the operator moves the lever F in one direction the bar *e* will be turned about a quarter of a revolution and force the parts of the shuttle apart, bringing it in contact with both friction wheels, *a* and *b*, and by the friction the car will move, but when the lever is moved in the opposite direction, the two parts of the shuttle will close, freeing the shuttle and the car will gradually stop. To entirely stop the car the hand brake or the ordinary brake must be used.

The shuttle E is supported on flanged wheels or sheaves G, placed at each end and running upon a track *g*, arranged in any suitable manner in the tunnel. An upper track *t* and a wheel *s* is arranged on brackets *n* to prevent the wheel G from leaving the track *g*. One of the wheels G is omitted in the drawings, being the rear-wheel to prevent obscuring the parts "B" and "*b*." Said wheels G are supported in brackets or hangers H, secured to the lower part of said shuttle. The shuttle is preferably made about twelve feet long, to ride on about three pairs of friction-wheels at a time. At crossings a set of sheaves or pulleys are arranged so that one pulley is below the regular line, but the same distance apart as the others, so that the shuttle can pass over to the next wheel without interruption. The front end of the shuttle is made tapering or pointed and is covered with leather, rubber, or its equivalent, to prevent clatter or noise being caused by the shuttle in coming in contact with the friction-wheels in passing from one to the other set.

The electric motors D of suitable size and power are arranged at the side of the tunnel in proper recesses at suitable distances apart, say about one thousand or more feet and connected together by the usual electric wires, which are placed in the conduits *d*, so that the power exerted forms a continuous motive power from one to the other, and by this means the cars are impelled. If desired however, steam, hydraulic or other motive power may be employed, although I prefer electricity, as it can be used to better advantage, and at less outlay of expenditures, and it is believed by employing a series of motors at intervals along the line, more power can be obtained at less expense, than by having one large motor at a power-house.

The shuttle E is connected to the car K, running on the usual track, by a bracket or yoke L and a link *m* in the ordinary manner. This yoke is secured to the lower part of the shuttle and extends up through the slot *o* between the upper rails arranged in the center of the track.

If any of the sprocket-chains should break, the broken one can be easily replaced, or the broken links taken out and new ones substituted.

If desired, a standard *v*, shown in broken lines, may be employed to support the outer ends of the shafts to which the lower friction wheels *a* and the sprocket-wheels B are secured, as is best seen in Fig. 5.

Having thus described my invention, what I claim is—

1. In a system of operating street rail-way cars, the combination of friction-wheels arranged in a tunnel, sprocket-wheels and chains for actuating the same, a series of electric motors placed at intervals to actuate the sprocket-wheels and bisected shuttles, operated by a shaft to force them in contact with said friction-wheels, as specified.

2. In street-railways, the shuttle supported on a track and flanged wheels, and made in two parts acted on by a shaft for bringing it in contact with and releasing them from friction-wheels, receiving motion by means of sprocket-wheels and chains, in combination with a series of electric motors, all as and for the purpose herein set forth.

3. The combination of a series of friction-wheels and bisected shuttles operated by shafts actuated from cars and a series of sprocket-wheels and chains, with a series of electric motors placed at intervals, for operating street-cars in the manner shown and herein specified.

4. The combination with the friction-wheels arranged in pairs, bisected shuttles arranged between said wheels and expanded by longitudinal shafts to cause friction to drive a car, of said wheels actuated by sprocket-wheels and chains, and a series of electric motors, as set forth.

5. The means for operating street-railway-cars herein described, consisting of a series of friction-wheels and shuttles arranged between them, and a series of sprocket-wheels and chains, receiving motion from a series of electric motors, all substantially as specified.

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

WILLIAM H. H. STINEMAN.

Witnesses:

EDWARD I. CLARK,

G. M. COPENHAVER.