(No Model.) 4 Sheets—Sheet 1.

A. L. RICH.

STREET CAR MOTOR.

No. 373,853. Patented Nov. 29, 1887.

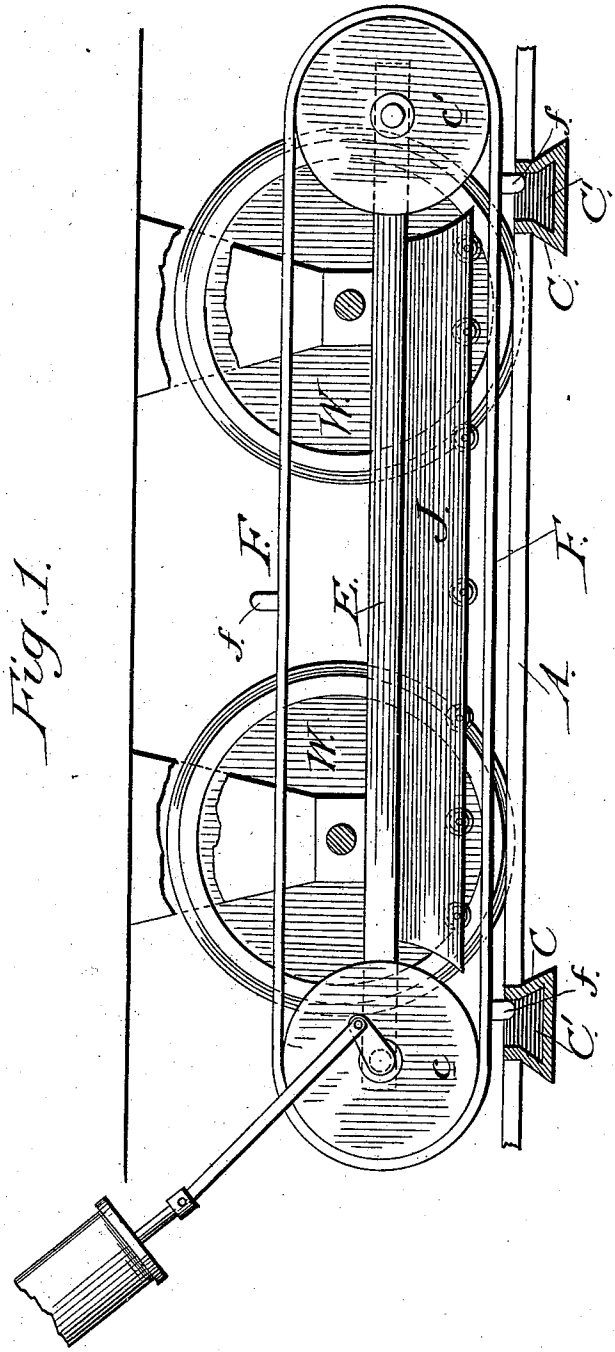


Fig. 1.

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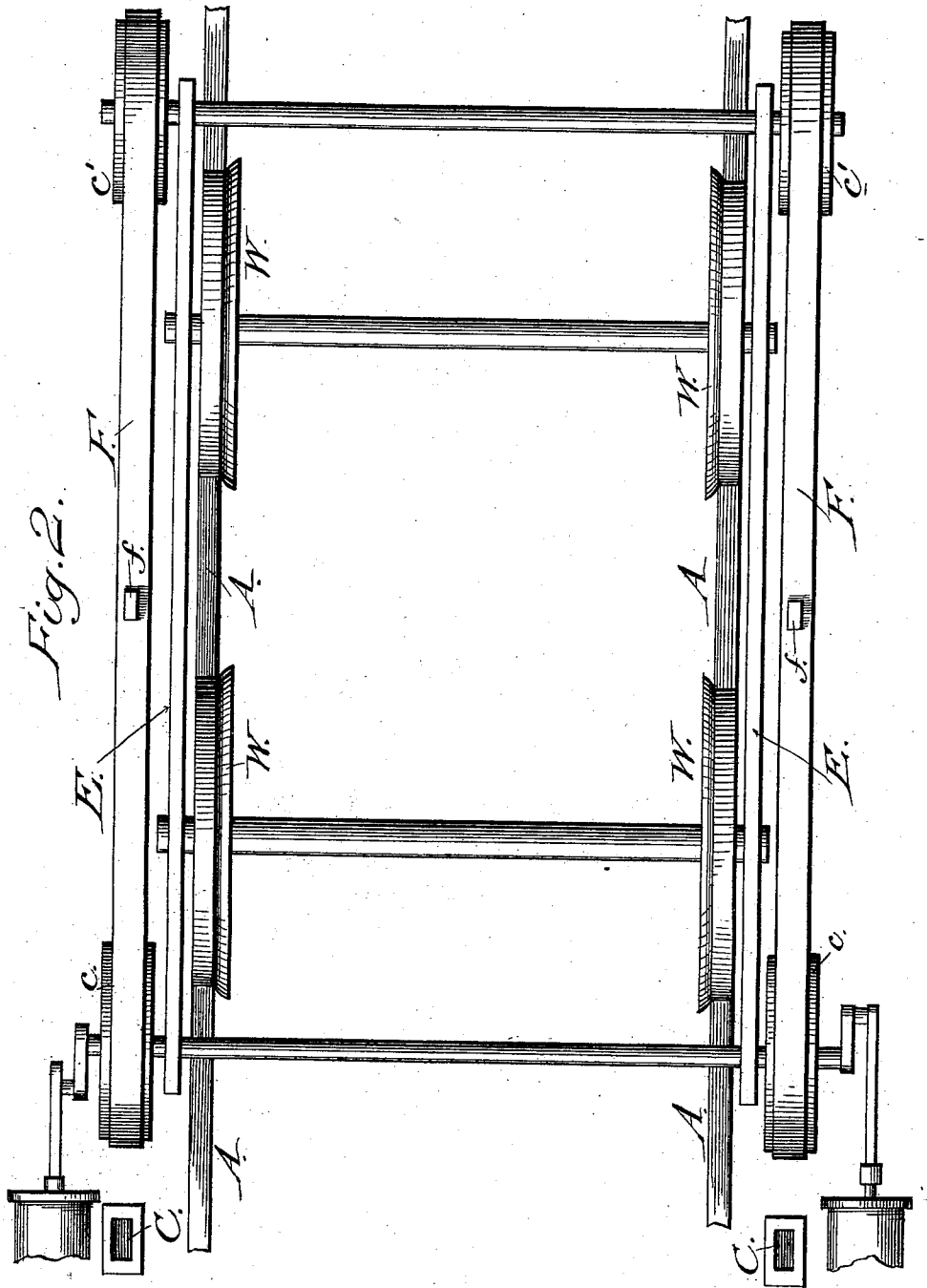
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Fig. 2.



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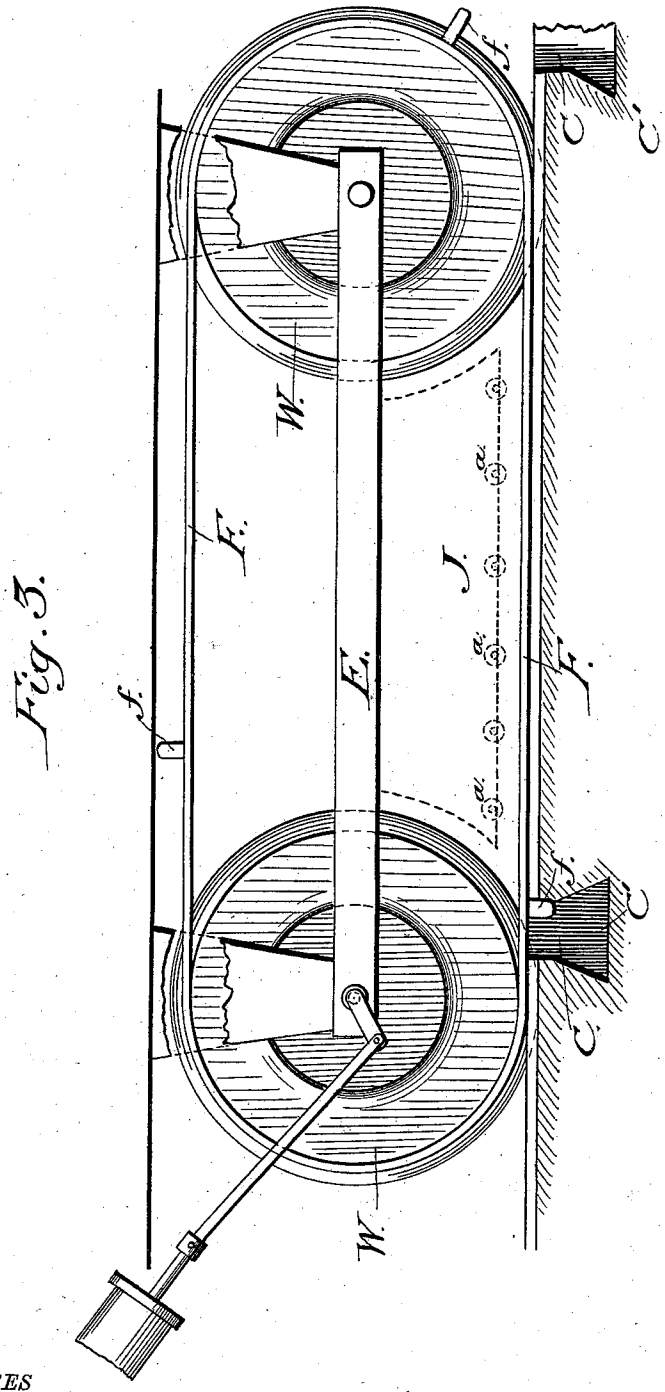


Fig. 3.

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(No Model.) 4 Sheets—Sheet 4.

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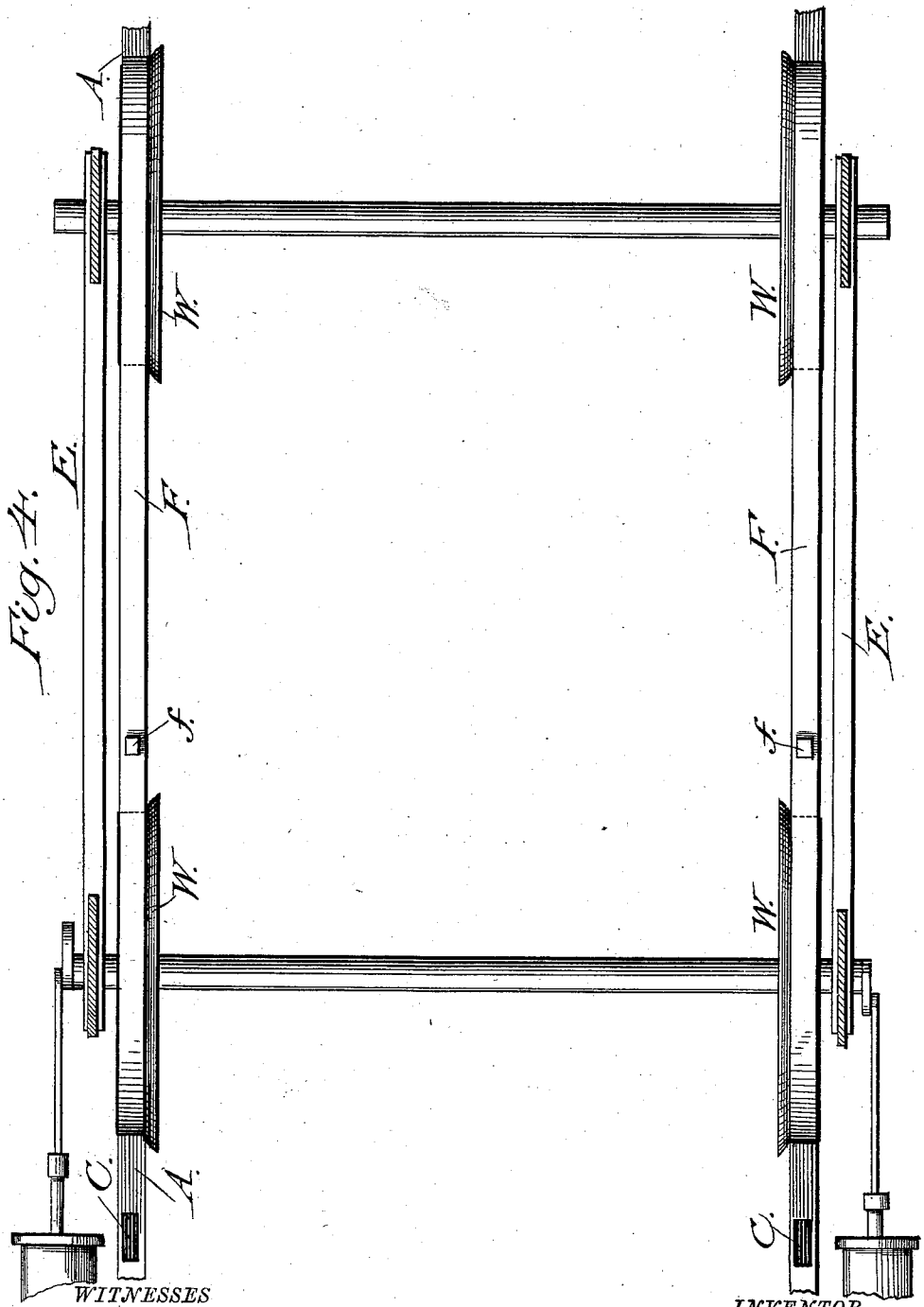


Fig. 4.

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UNITED STATES PATENT OFFICE.

ABRAHAM LINCOLN RICH, OF ALLEGHENY, PENNSYLVANIA.

STREET-CAR MOTOR.

SPECIFICATION forming part of Letters Patent No. 373,853, dated November 29, 1887.

Application filed October 5, 1887. Serial No. 251,548. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM LINCOLN RICH, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Street-Car Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of a motor embodying my invention, showing the engaging-sockets in section. Fig. 2 is a plan view of the motor and sockets. Fig. 3 illustrates a side elevation, and Fig. 4 is a plan view showing the sockets formed in the bearing-rails

My invention relates to motors for propelling street-cars; and it consists in the constructions and combinations of devices, which I shall hereinafter fully describe and claim.

To enable others skilled in the art to make and use my invention, I will now describe its construction and indicate the manner in which the same is carried out.

In the drawings, A represents the usual rails of a street-railway, outside of which and at regular intervals or spaces of from five to eight feet, or whatever distance practice may determine, there are placed stationary sockets C, adapted to be secured in the road-bed or other place in such a manner that should they become broken or worn they may be readily removed and others inserted in their stead. These sockets C consist of a plate of dimensions approximating six by four inches, and into each of which there is mortised an orifice or opening about four inches long by about two inches wide, the end walls of said casting serving as stationary cogs or bearings for the teeth or projections of endless belts which engage therein. These sockets may also, if desirable, be provided with an underlying recess or receptacle, C′, within which any accumulation of dirt or other foreign substance may be collected, the said receptacles being of such size and construction as to admit of their being readily cleaned.

In the longitudinal rigid frame E, upon which the car-body rests, there are mounted wheels *c c′*, around which a plural number of endless bands or belts, F, of suitable material and construction, are passed, said bands being preferably composed of a link or chain belt of steel, and are about three inches in width and of a thickness requisite for the purpose for which they are used.

At regular intervals or spaces and at suitable distances apart there are placed on the belt projections or teeth *f*, having a size and shape which will permit them to enter and work freely within the openings in the castings C, and thereby not be affected by any lateral motion or variation of the car.

The power for operating the motor can be connected to the shaft of one of the wheels *c c′* in any practicable manner, and, if desirable, may be mounted upon the frame E. The wheels *c c′* may be mounted in the frame in such a manner as to sustain a part of or the entire weight of the car, or they may be arranged so that the belt passing around them will be slightly higher than and not come into actual contact with the sockets C. With this arrangement the bearing-wheels W of the car are made to bear the weight of the latter.

Where it is desirable to place the entire weight of the car upon the wheels *c c′*, they will be provided with flanges on the inner side of their periphery to enable them to move around curves readily. This latter construction is not absolutely necessary on straight tracks.

The power for operating the motor may be furnished by any practicable method, as by a steam, gas, oil, or electric engine.

The operation of my motor is substantially as follows: The engine being started, power is communicated to the wheel *c*, thereby moving the belts whose projections or teeth, by engaging the stationary sockets C, propel the car. The mechanism described is also applicable in stopping and checking or controlling speed and when descending heavy grades by applying power in reverse motion, thereby enabling the lugs on the belt to offer a resistance to the onward motion of the car.

The motor is capable of moving in either direction, backward or forward, on same track. If necessary, the wheels *c c′* may be provided with teeth or projections on their periphery to prevent the slippage of the belt thereon. If

in practice there should be discovered a liability of the belt to rise and throw the projections out of gear between the two belt-wheels, there may be fastened under the longitudinal frame E, between the wheels *c c*, and extending down until it almost touches the inside of the belt, a block, J. (See Figs. 1 and 3.) This block may be freely lubricated, or there may be fastened to its bottom a number of small wheels, *a*, which would prevent friction on the inside of the belt. A motor of this description would be capable of climbing heavy grades and of overcoming obstacles which are often unsurmountable to other motors, and would provide a more pleasant and rapid means of traveling than is afforded by horse-cars.

On short curves the sockets C may be placed radially to correspond with direction of the track and made with greater transverse surface or space to allow for the lateral movement to which the motor would be subject.

The sockets C may be secured in any practicable manner, as by bolting to the rails A or upon a stringer, or, if desirable, may be mortised into a metal strip running longitudinally throughout the entire length of the track. In addition to these features the motor may be constructed of such a gage as would throw the belt F and projections thereon directly over the head of the rails A to engage sockets C, which in this case would be mortised into the head of the rails A, as shown in Figs. 3 and 4.

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

1. The combination, with a traveling motor, of an endless band or belt carried by said motor and having lugs or projections, and a series of independent stationary sockets for receiving the projections, substantially as herein described.

2. A motor having a rigid frame and pulleys or wheels mounted in said frame, in combination with a plural number of endless bands or belts passing around said pulleys or wheels, having lugs or projections, and a plural series of fixed independent sockets having openings into which said lugs or projections enter and against the end walls of which said lugs bear, substantially as herein described.

3. The combination, with a traveling motor carrying endless bands or belts with teeth or projections thereon, of a plural series of spaced and fixed independent sockets for receiving the lugs and resisting the movements of the belts whereby the motor is propelled.

4. The combination, with a traveling motor carrying endless bands or belts with lugs or projections thereon, of a plural series of sockets fixed in the road-bed outside the bearing-rails and receiving the lugs or projections, said lugs bearing against the end walls of the sockets, whereby the motor is propelled, substantially as herein described.

5. A traveling motor having the rigid frame E, the wheels or pulleys mounted therein, and a power mechanism connected with the shaft of one of said wheels or pulleys, in combination with endless bands or belts passing around said wheels or pulleys and having lugs or projections extending therefrom, and fixed sockets in the road-bed outside the main rails for receiving the lugs, substantially as and for the purpose specified.

6. As an improvement in street-car motors, an endless power band or belt having lugs or projections extending therefrom and a wheeled frame carrying said belt, in combination with fixed independent sockets located in the path of the band or belt and receiving the lugs or projections.

7. The combination, with a traveling motor and endless bands or belts carried thereby, having lugs or projections, of fixed sockets having each an underlying receptacle for dirt or other accumulation and an opening for the reception of the lugs or projections, substantially as herein described.

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Witnesses:
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