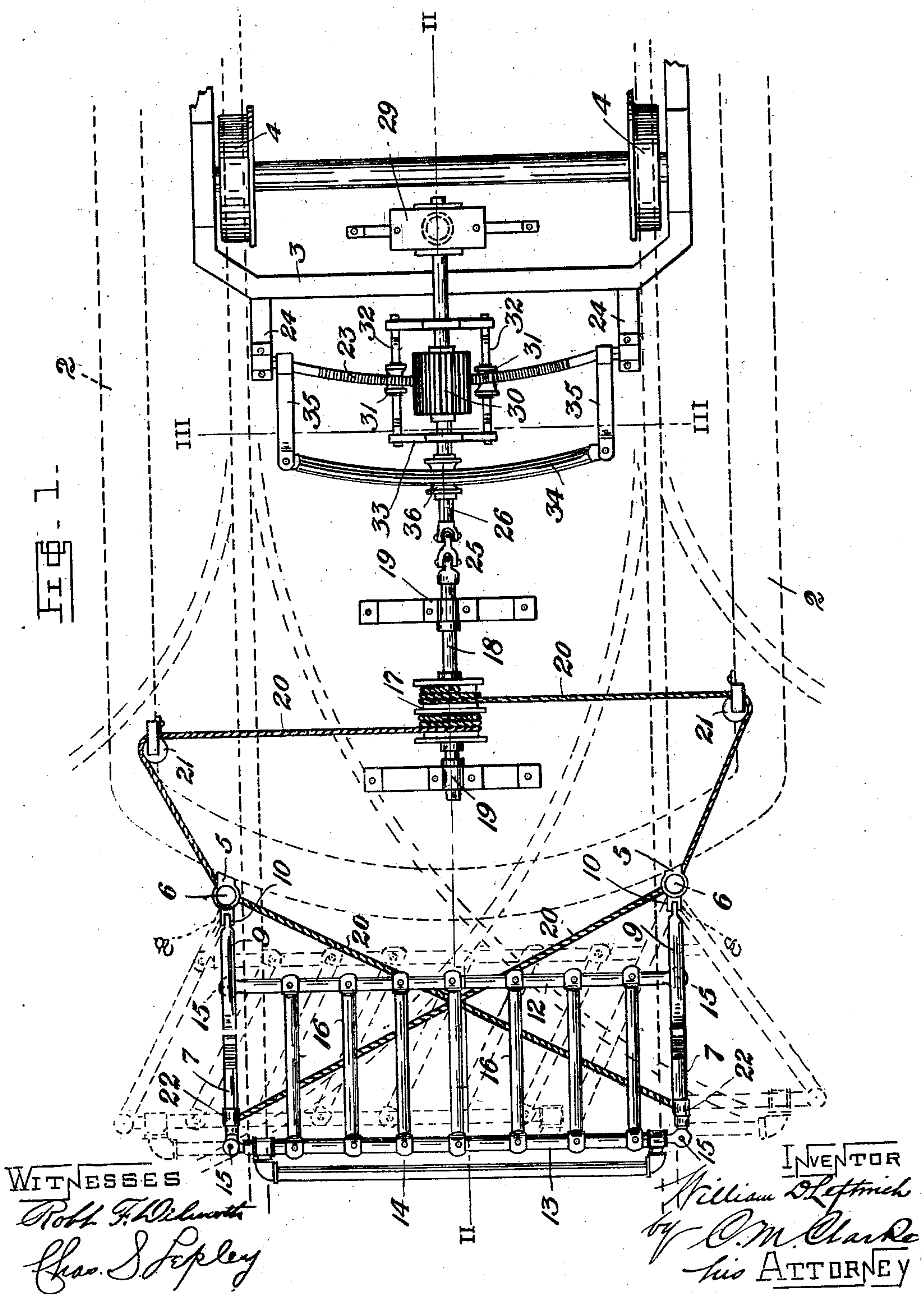


No. 847,084.

PATENTED MAR. 12, 1907.

W. D. LEFTWICH.
STREET CAR FENDER.
APPLICATION FILED DEC. 29, 1906.

2 SHEETS—SHEET 1.



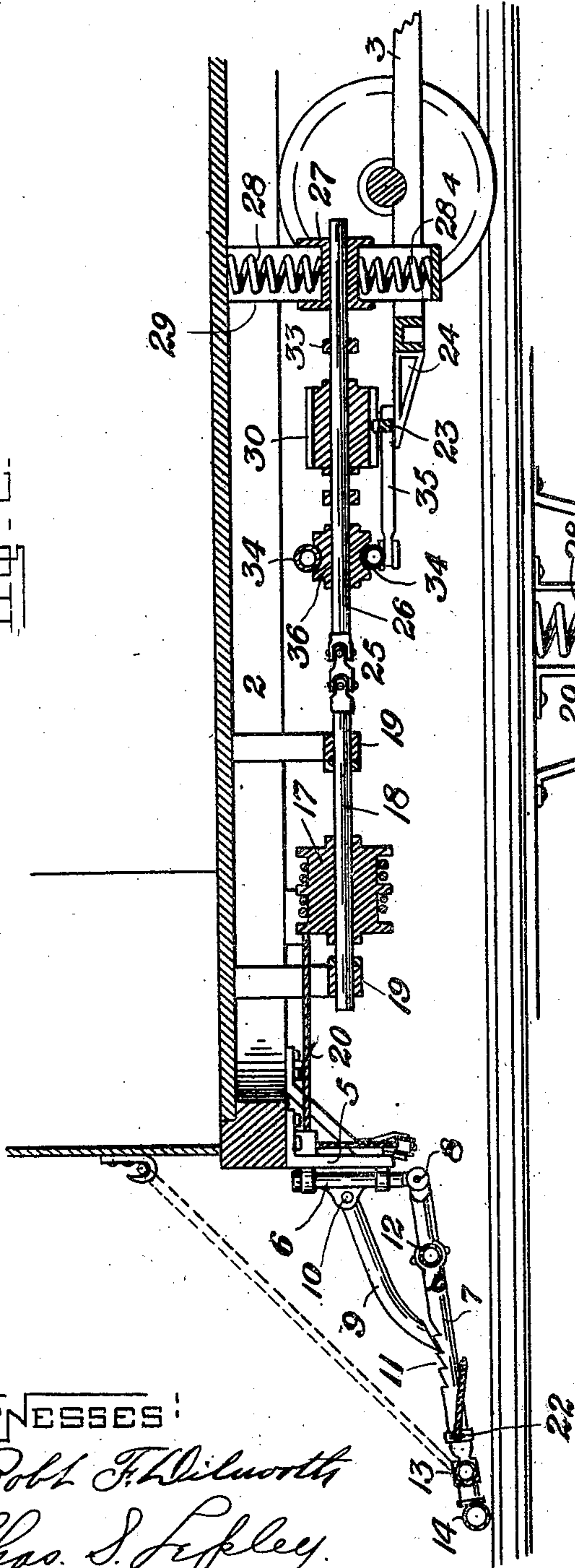
No. 847,084.

PATENTED MAR. 12, 1907.

W. D. LEFTWICH.
STREET CAR FENDER.
APPLICATION FILED DEC. 29, 1906.

2 SHEETS—SHEET 2.

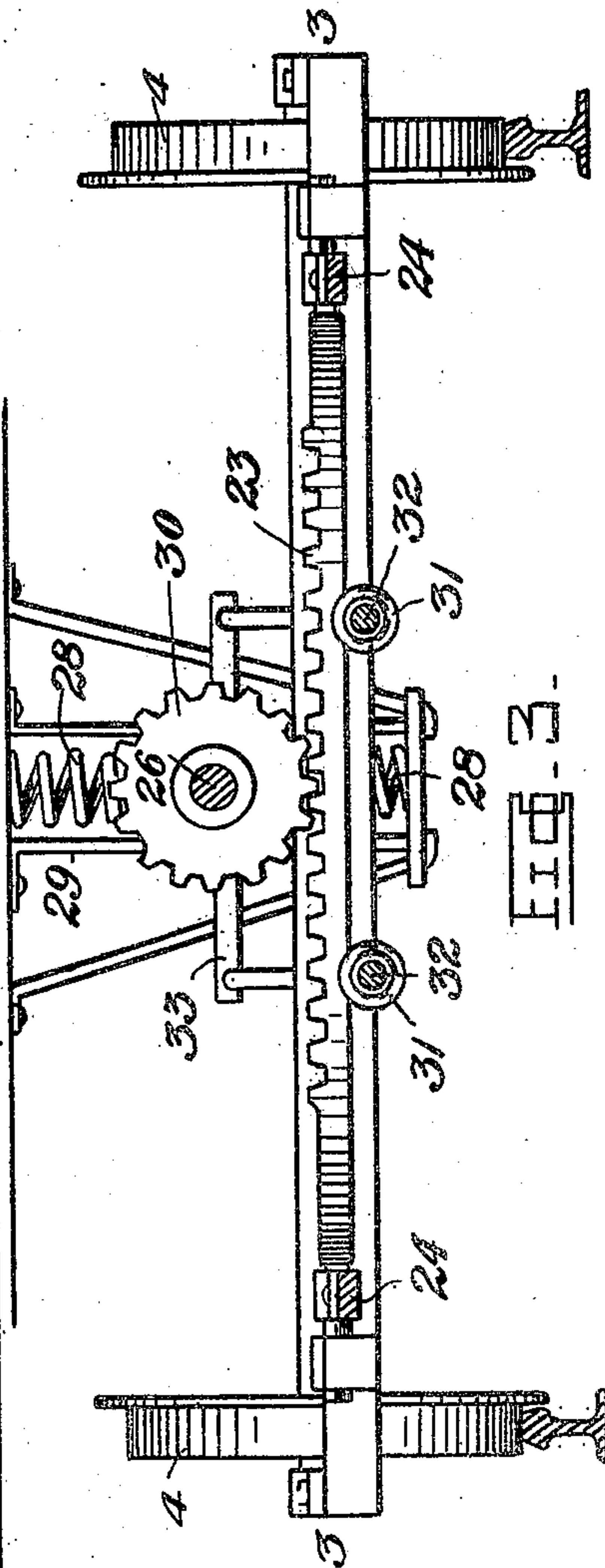
FIG. 2.



WITNESSES:

Robt. F. Whitworth
Chas. S. Lefley

FIG. 3.



INVENTOR

William D. Leftwich
by C. M. Clarke
his ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM D. LEFTWICH, OF PITTSBURG, PENNSYLVANIA.

STREET-CAR FENDER.

No. 847,084.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed December 29, 1906. Serial No. 349,979.

To all whom it may concern:

Be it known that I, WILLIAM D. LEFTWICH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Street-Car Fenders, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention refers to improvements in fenders for street-cars or other similar vehicles; and it has for its object to provide a fender which will be automatically turned to the right or left as the car turns, so as to locate the fender so far as possible across the roadway between the tracks during the turning of the car, as around a corner, and to automatically relocate the fender in central position in front of the car for a straight track.

Referring to the drawings, Figure 1 is a plan view of the apparatus in its normal position for operation, indicating the adjusted positions in dotted lines. Fig. 2 is a vertical longitudinal sectional view on the line II II of Fig. 1. Fig. 3 is a transverse sectional view, on an enlarged scale, taken on the line III III of Fig. 1.

In the drawings, 2 represents the car-body or underframe (indicated in dotted lines in Fig. 1) mounted upon the usual truck 3, supported by wheels 4, as will be readily understood.

At the front of the car are mounted in brackets 5 the usual supporting-bolts 6, supporting the fender. The fender, as a whole, is similar to fenders in common use, consisting of a rectangular framework made of pipe-sections or other suitable material, having the main side bars 7 7, which extend backwardly and are pivotally mounted at 8 to the lower ends of supporting pins or bolts 6 in such a manner that the entire fender may be thrown up against the front of the car when not in use. Ordinarily it is maintained in its lowered position by any suitable supporting mechanism, as pawls 9, pivoted at 10 to supporting-bolts 6, whereby its angle may be adjusted, the pawls 9 engaging teeth 11 in bars 7 in the same manner as is in common use in other fenders.

12 13 are the main transverse back and front bars of the fender, the front bar being preferably provided with a supplemental bar 14, and said bars 12 and 13 are pivotally connected at their terminals, as indicated at 15,

with the main side bars 7, so that when the structure is thrown to the right or the left, as indicated in dotted lines in Fig. 1, the entire frame will readily adjust itself by reason of such pivotal connection. Likewise transverse bars 16 of the fender are pivotally mounted at their ends to the bars 12 and 13, so that the entire structure is thus rendered flexible for the objects in view.

For the purpose of throwing the fender appropriately toward the right when the car is turning in that direction, and vice versa, I have provided mechanism consisting of a winding drum or sheave 17, secured upon shaft 18, mounted in suitable bearings 19 19, depending downwardly from underneath the underframe 2, and therefore rigidly connected with the car, so as to rise and fall with it independent of the truck. Secured to said drum 17 are operating cables or ropes 20 20, passed around guiding-sheaves 21 21, adjacent to each corner of the car, as shown, and then crossed over toward opposite sides and connected, as at 22 22, to the opposite corners of the fender structure. By this construction it will be seen that as the drum 17 rotates in one direction or the other it will wind in one cable and pay out the other at the same rate, resulting in the movement of the fender, as desired, and when the drum is reversed the fender will be relocated in its original position.

For the purpose of actuating drum 17 and the fender, as stated, I employ a rack-bar 23, mounted rigidly in bearings 24 upon the front end of truck 3, whereby when the truck turns toward the right or the left the rack-bar 23 will correspondingly turn. Owing to the mounting of the car-body upon the trucks, the front end of the car extends outwardly in alinement with the straight tracks and is not ordinarily thrown across around the curve until an appreciable time after the wheels of the truck have commenced to travel around the curved tracks, and due to this fact the fender ordinarily projects outwardly in front of the car and usually entirely at one side of the curved tracks, which is the effect I desire to obviate.

Connected with shaft 18 by double universal joints 25 is a shaft 26, slidingly mounted at its back end in box 27, mounted between buffer-springs 28 28 in a vertically-arranged housing 29, said bearing 27 being flanged front and back of said housing, as shown.

Such construction permits of compensation for any variations of the housing 29, due to jolting, &c., and permits of free longitudinal motion of the shaft in its bearing.

5 30 is a pinion-wheel having a length considerably greater than the face of rack 23, as shown, whereby to always maintain the teeth of said pinion and rack in engagement independent of any longitudinal movement, 10 while 31 31 are rollers slidingly mounted on arms 32 of frames 33, secured on shaft 26, engaging underneath the rack 23, further supporting and stiffening the structure and holding the pinion 30 in mesh with the rack.

15 In front of rack 23 is an additional guiding-frame 34, extending by arms 35 from bearings 24, and preferably consisting of an upper and lower guiding-bar of any suitable construction.

20 Both frame 34 and rack-bar 23 conform to the arc of a circle struck from the center of the truck, and between the upper and lower guide-bars 34 is a grooved roller 36, mounted on shaft 26 and adapted to facilitate the operation of said shaft in swinging toward one 25 side or the other.

The operation is as follows: When the truck 3 and its connected rack 23 swings to one side or the other, rotary motion is im- 30 parted to shafts 26 and 18, effecting corresponding rotation of drum 17 and causing the fender to swing in the desired direction during the passage of the car around the curve as controlled by its mounting upon the 35 truck. When the truck passes forwardly onto the straight tracks, the fender is correspondingly straightened out into alinement in front of the car, and such operation will occur at each curve and will operate in the 40 same way whether the curve be toward the right or left.

By reason of the universal joints 25 the driving connection from shaft 26 to shaft 18 will be maintained irrespective of vertical 45 variations of the car-body with relation to the truck.

The mounting of the cable as to its guiding-sheaves, its connection with the fender, or other details of construction are entirely 50 within the province of the designing engineer or skilled mechanic, and all such changes or

variations are to be considered as within the scope of the following claims.

What I claim is—

1. The combination with a car provided 55 with a winding-drum, of a laterally-adjustable fender, flexible connections between the fender and the drum, and mechanism automatically operative upon turning of the car-truck, to actuate said winding-drum and fen- 60 der, substantially as set forth.

2. The combination with a car provided with a winding-drum, of a laterally-adjustable fender, flexible connections between the fender and the drum, a truck provided with 65 a rack-bar, and a shaft connected with said drum and provided with a pinion engaging said rack-bar, substantially as set forth.

3. The combination with a car provided with a winding-drum, of a laterally-adjust- 70 able fender, flexible connections between the fender and the drum, a truck provided with a rack-bar, and a shaft connected with said drum and provided with a pinion engaging said rack-bar, with flexible connections be- 75 tween said shaft and drum, substantially as set forth.

4. The combination with a car provided with a winding-drum, of a laterally-adjust- 80 able fender, flexible connections between the fender and the drum, a truck provided with a rack-bar, a shaft connected with said drum and provided with a pinion engaging said rack-bar, and supporting and guiding de- 85 vices for said shaft and pinion, substantially as set forth.

5. The combination with a car provided with a winding-drum, of a laterally-adjust- 90 able fender, flexible connections between the fender and the drum, a truck provided with a rack-bar, a shaft connected with said drum and provided with a pinion engaging said rack-bar, supporting and guiding devices for said shaft and pinion, and a rear sliding bear- 95 ing for said shaft having upper and lower cushioning-springs, substantially as set forth.

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

WILLIAM D. LEFTWICH.

Witnesses:

CHAS. S. LEPLEY,
C. M. CLARKE.