

(No Model.)

3 Sheets—Sheet 1.

C. W. THOMAS.  
ELECTRIC RAILWAY.

No. 468,708.

Patented Feb. 9, 1892.

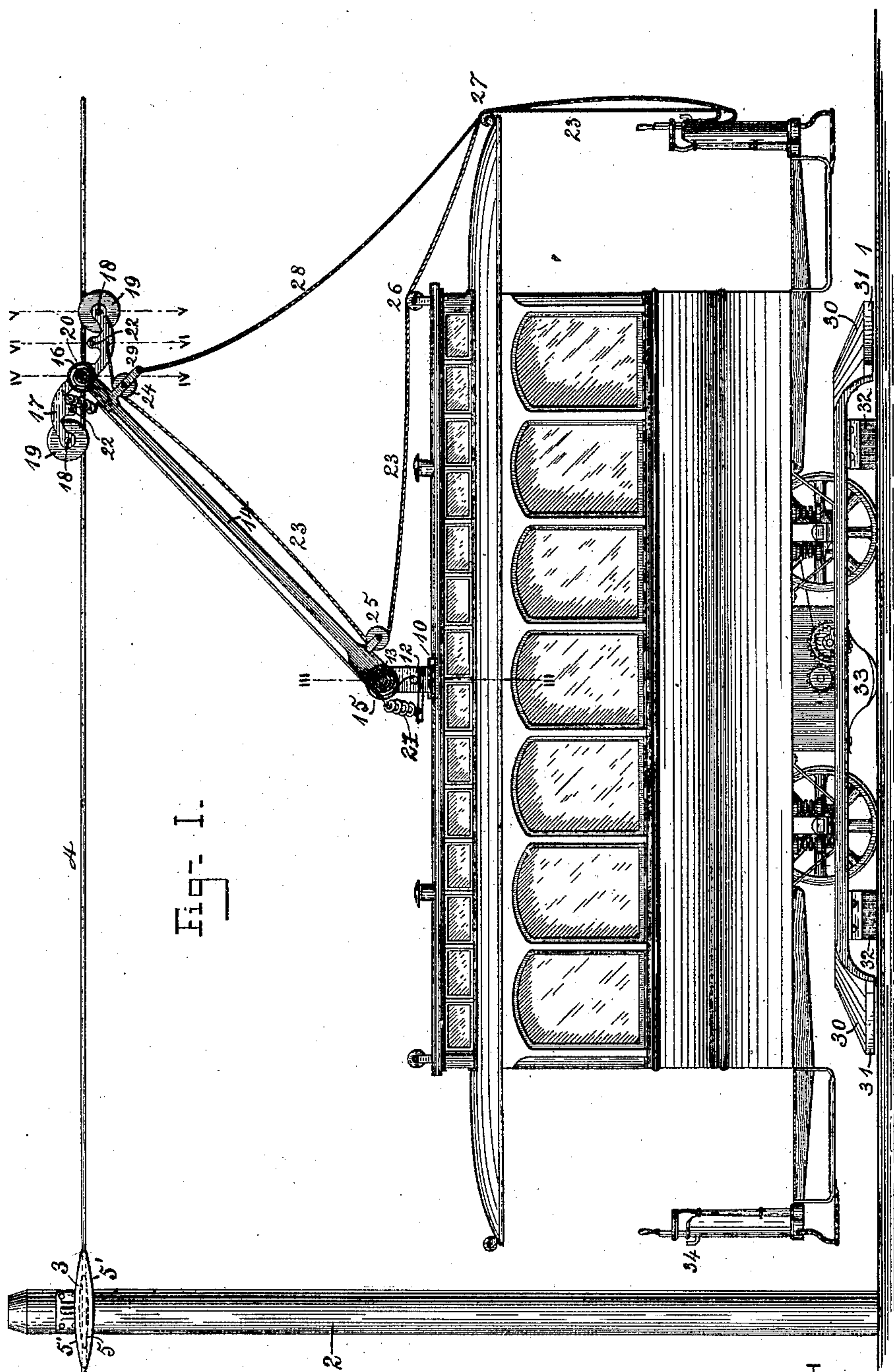


Fig- 1.

Witnesses

John F. Nelson  
Rella Hanna

Inventor

Charles W. Thomas.  
By *Knigh Bros*  
Atty's.

(No Model.)

3 Sheets—Sheet 2.

C. W. THOMAS.  
ELECTRIC RAILWAY.

No. 468,708.

Patented Feb. 9, 1892.

Fig. II.

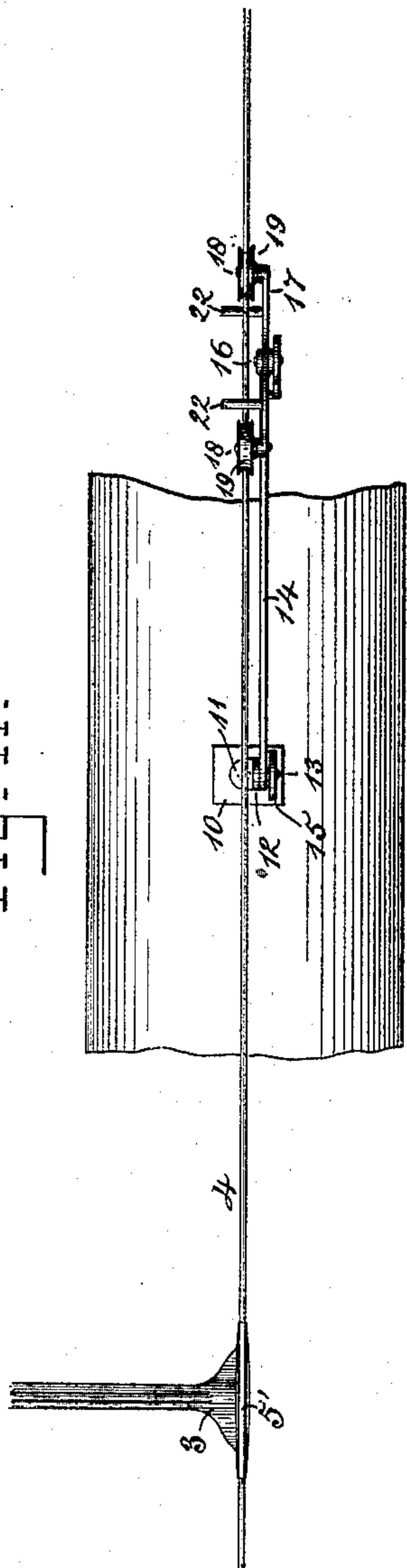


Fig. V.

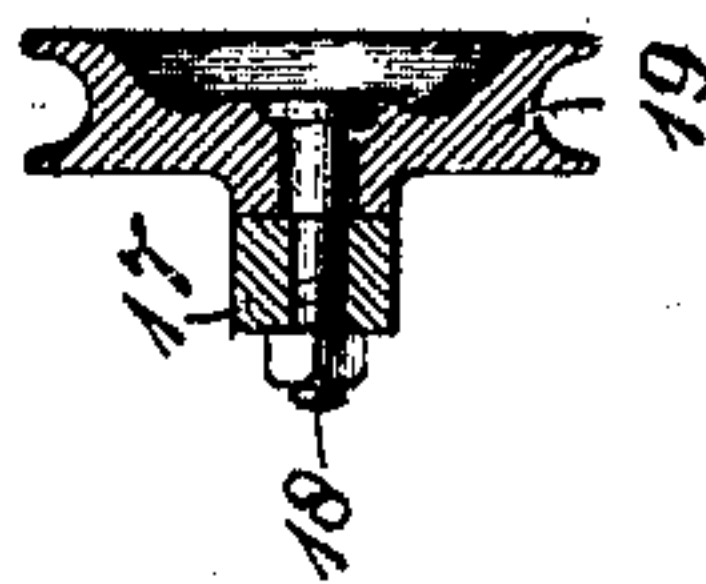


Fig. VI.



Fig. IV.

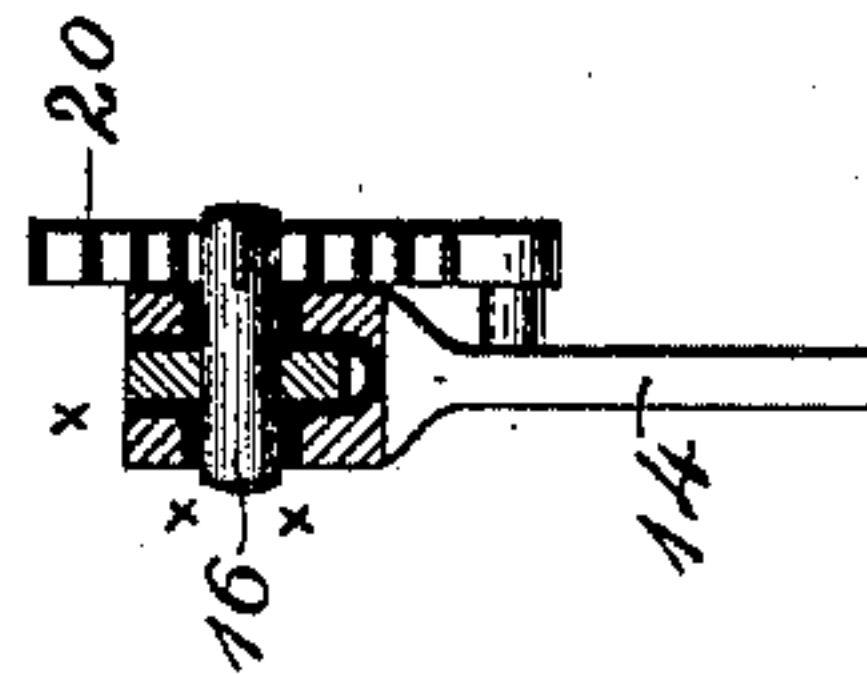
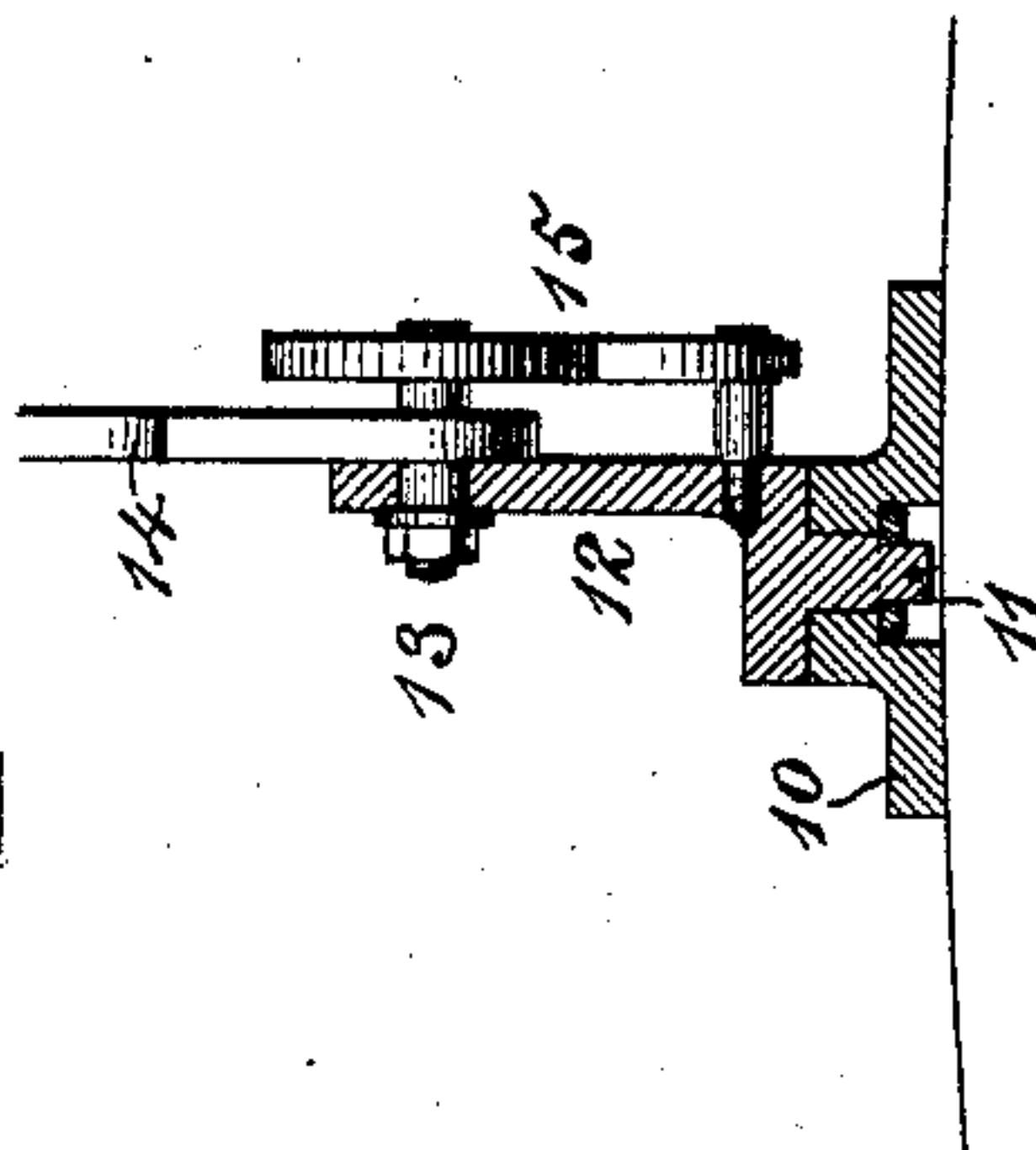


Fig. III.



Witnesses.  
John F. Nelson  
Lillie Hanna

Inventor.  
Charles W. Thomas.  
by *Knights Bros*  
Attys.

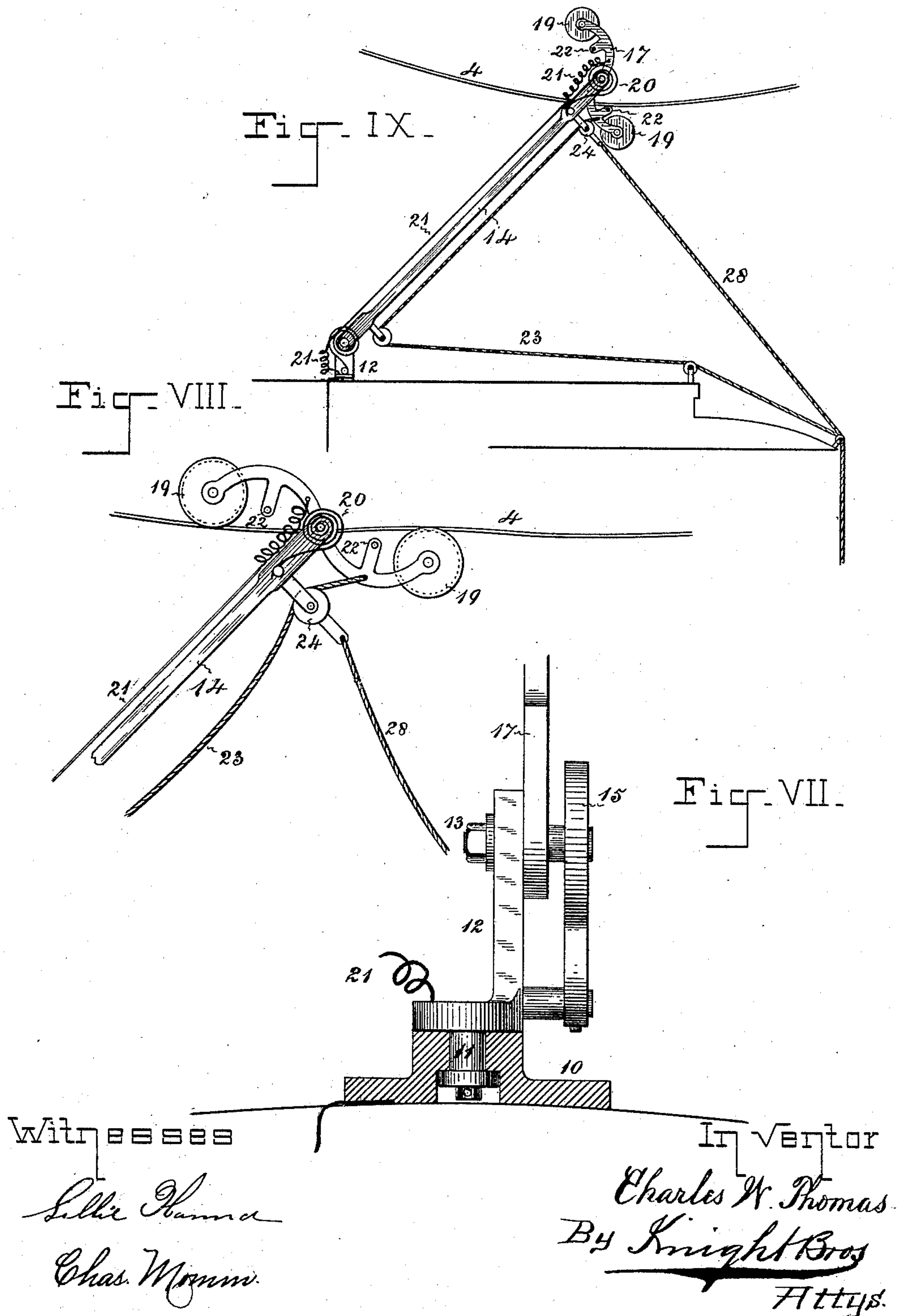
(No Model.)

3 Sheets—Sheet 3.

C. W. THOMAS.  
ELECTRIC RAILWAY.

No. 468,708.

Patented Feb. 9, 1892.





# UNITED STATES PATENT OFFICE.

CHARLES W. THOMAS, OF JERSEY CITY, NEW JERSEY, ASSIGNOR OF PART  
TO PHILIP VAN VOLKENBURGH, OF NEW YORK, AND JOHN H. PENDLETON,  
OF BROOKLYN, NEW YORK.

## ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 468,708, dated February 9, 1892.

Application filed October 21, 1890. Serial No. 368,854. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. THOMAS, a citizen of the United States, residing at Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

A leading feature of my invention relates to means of electrical connection with overhead conductors for electric railways, in which each trolley or trailer has two contact-sheaves journaled in a single rocking frame, which is fulcrumed in the trailer-arm, one sheave pressing from above downward and the other sheave from beneath upward against the conducting wire or line. A spring is employed just balancing the weight of the trailer-arm and its contact devices, and the pressures of said devices against the line-wire operate to balance each other and are only such as are requisite for uninterrupted contact.

Other features of my invention will be found described in the sequel.

Referring to the accompanying drawings, which form a part of this specification, Figure I is a side elevation of a motor-car and portion of the overhead or aerial conductor or line-wire and one of its supporting-posts. Fig. II is a plan of the same. Fig. III is a section on the line III III. Fig. IV is a section on the line IV IV. Fig. V is a section on the line V V. Fig. VI is a section on the line VI VI. Fig. VII represents the lower portion of the trailer-arm and its supporting-pedestal. Fig. VIII represents the trolley in its working position on the line-wire. Fig. IX represents the trolley in the position in which the conducting-sheaves are withdrawn from contact with the line-wire, and one of the guards is brought into contact with said line-wire.

Suitable insulation  $x$  is provided where necessary.

1 may represent part of a tramway-track. 2 may represent one of a series of posts, and 3 a bracket thereon, which supports and insulates the elevated conductor 4.

In order, while securing sufficient strength of the supporting member, to enable the respectively upper and under sheaves of the

trolley to traverse such point of support without impairment or interruption of electrical contact, I give such support the form of a shuttle-shaped sheath 5 of any suitable metal, preferably copper. The top and bottom of said sheath are given the form of narrower ridges 5', which constitute a continuation of the tracks or ways which at the stretches between each two consecutive supports are supplied by the upper and under sides of the wire.

10 represents a step or socket, which, being firmly secured to the car-roof, receives and journals the cylindrical foot 11 of pedestal 12, to which is secured by hinge 13 the lower end of the trailer-arm 14, having a customary or any suitable erecting-spring 15. The strength of the spring 15 is made just sufficient to balance the weight of the trailer-arm and its attached contact devices now to be described.

To the upper end of the arm 14 is fulcrumed in the same vertical plane, by means of a pivot 16, a rocking hanger 17. Stud 18 extends horizontally from said hanger and constitute the axles of two circumferentially-grooved sheaves or rollers 19, of which one rests upon the upper side and the other is pressed upward against the under side of the line. Such upward stress of the under sheave may be secured by a slight excess of weight being given to that end of the hanger which supports the upper sheave. Instead of, or supplementing, such overbalance a spring 20 may be provided, whose attachments and position are such as to secure a steady pressure of both sheaves against the line. A consequence of this arrangement is that the line preserves its natural sag and is pressed neither upward nor downward by the contact devices. Suitable insulation  $x$  prevents electrical communication from the hanger 16 to the trailer-arm. A protected wire 21 connects the hanger 17 to one of the motor-terminals. (Not here shown.) Guards or fenders 22, secured horizontally to the hanger, being nearer the fulcrum, operate to ease the line-wire out of the sheave-grooves when the cord 23 is brought into action.

To enable the sheaves to be temporarily



5 moved away from the line, I make fast to the lower arm of the hanger a cord 23, which, being carried over sheaves 24 25 on the arm 14 and over long rollers 26 27 on the car-roof, terminates at a hook or belaying-pin 34, conveniently located upon the platform-railing or dash-board. Another cord 28, made fast to a projection 29 of the said arm, enables the entire arm, with its described appendages, (after  
10 disengagement of said appendages by means of the cord 23,) to be swung around in its socket 10 to the reverse position, so as to fit the car for traveling in the opposite direction.

The above arrangement may be modified in  
15 various ways. For example, the form and arrangement of the hanger may be such as to place the leading sheave below and the following sheave above the line, or shoes may be substituted for the sheaves.

20 30 represents an iron frame, which forms a part of the ground-conductor from the motor and which also does duty as a guard for clearing the track of any obstruction and preventing it being caught under the track-

wheels. This guard has at each end a down- 25 turned lip or scraper 31. Each scraper is accompanied by a scrubber or besom 32 for removing mud and snow and like obstructions from the track.

A spring 33, in form of a festoon, being at- 30 tached by its upper ends to the guard 30 and pressing at its middle part upon the track-rail, insures constant contact and completes electrical connection, notwithstanding any jumping of the rolling-gear upon the track, thus 35 avoiding sparking and inequalities of action.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

The combination, with the respectively 40 down and up pressed sheaves 19 and the hanger 17, of the guards or fenders 22, for the object designated.

CHAS. W. THOMAS.

Witnesses:

HERBERT KING, Jr.,  
M. V. BIDGOOD.