

No. 613,084.

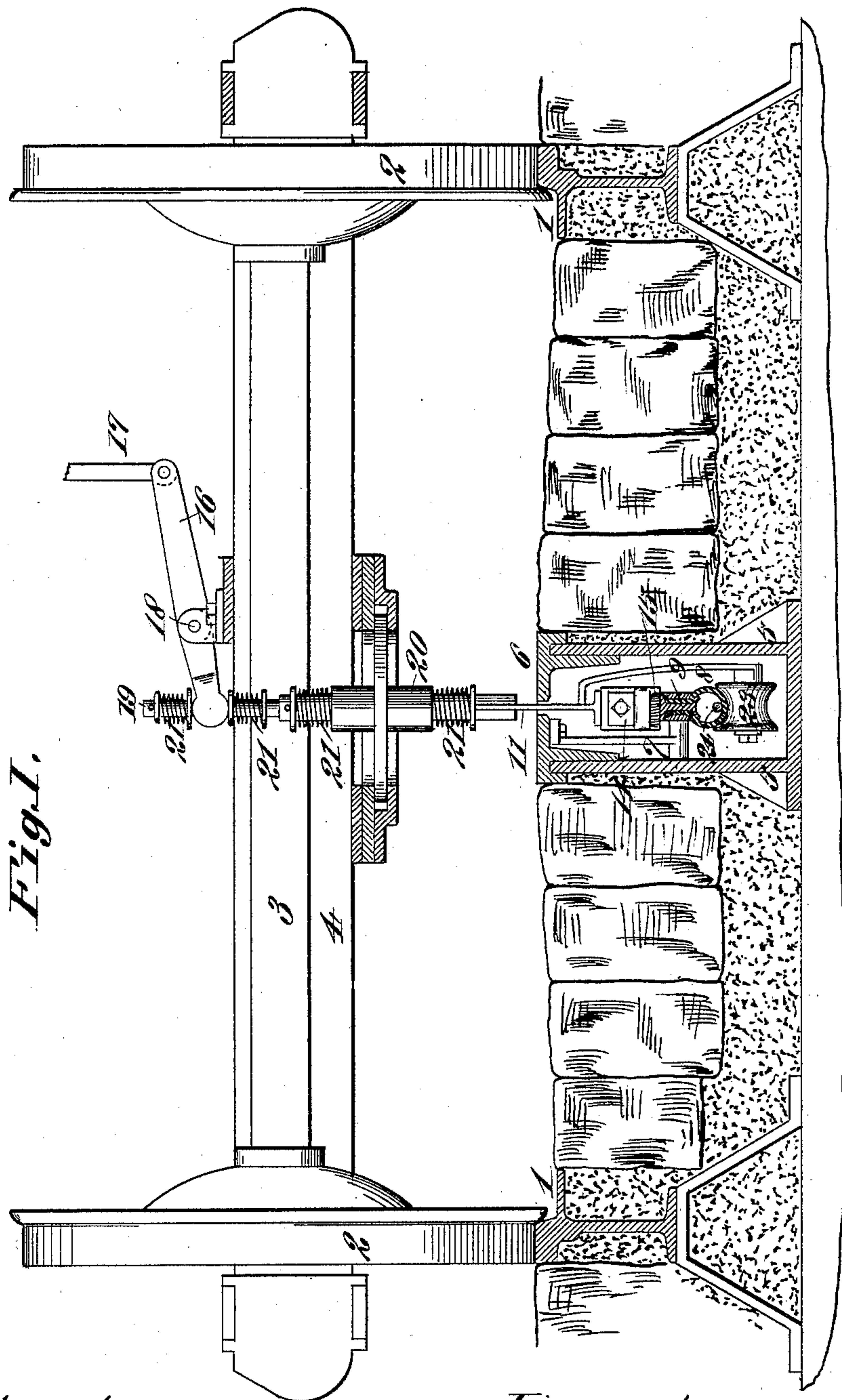
Patented Oct. 25, 1898.

G. W. SMITH.
UNDERGROUND ELECTRIC RAILWAY.

(Application filed May 28, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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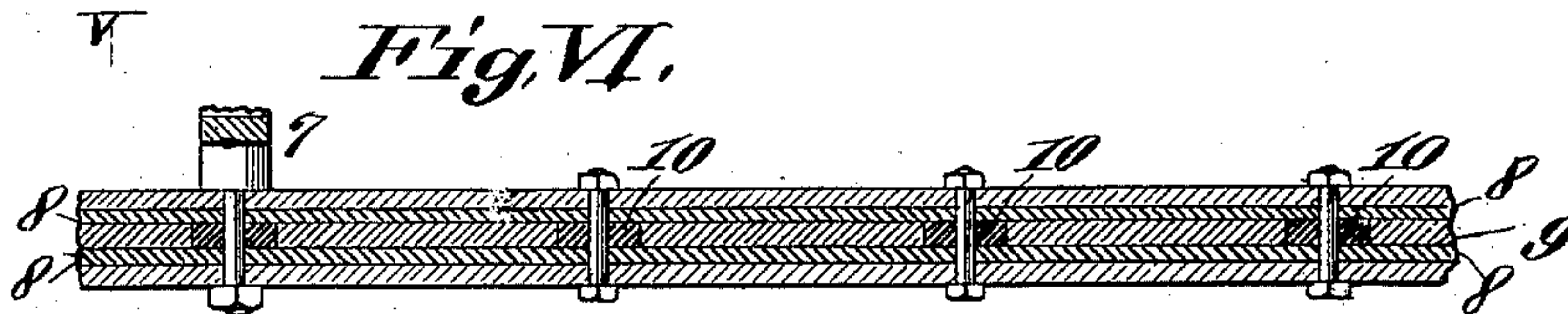
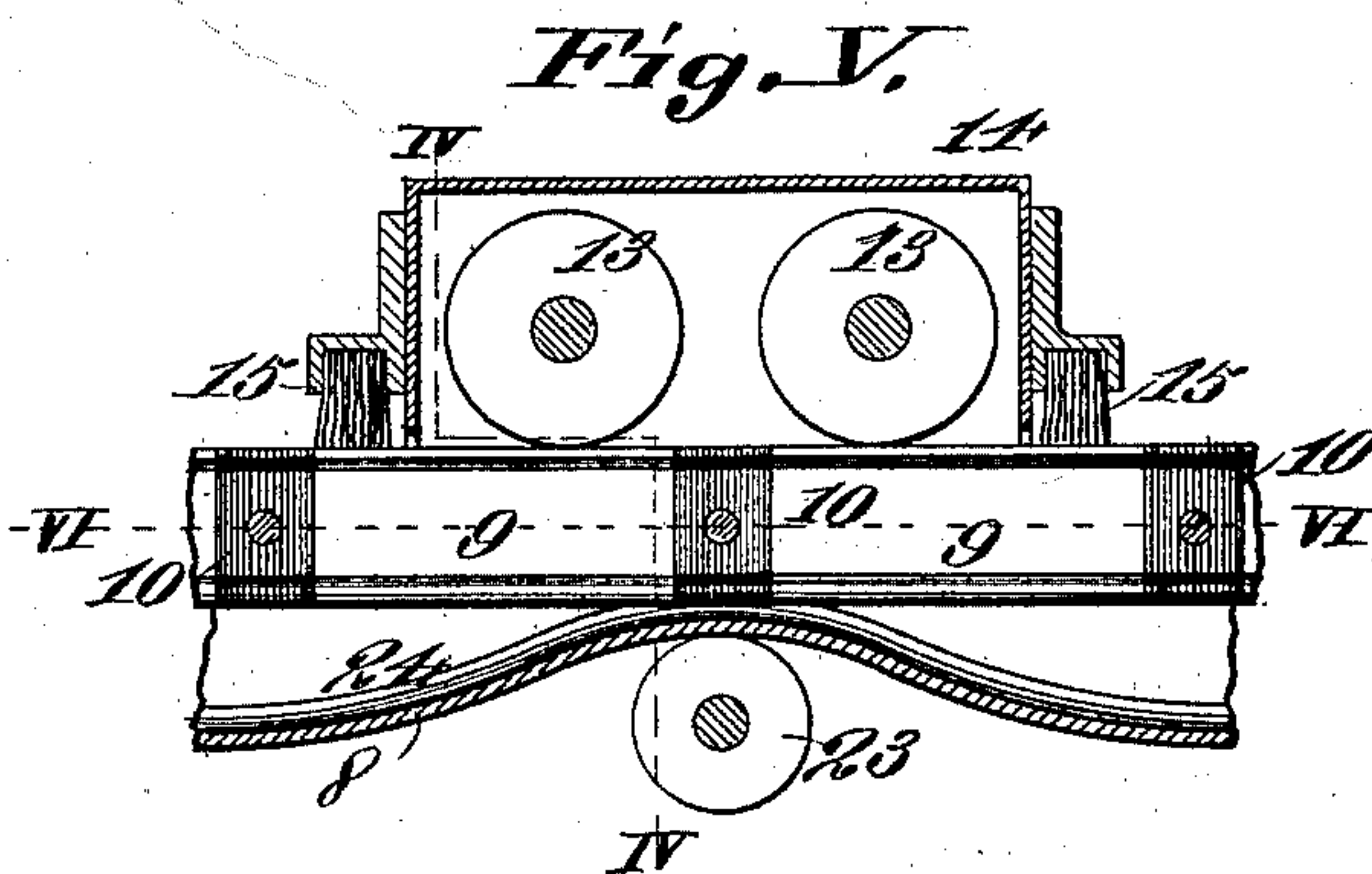
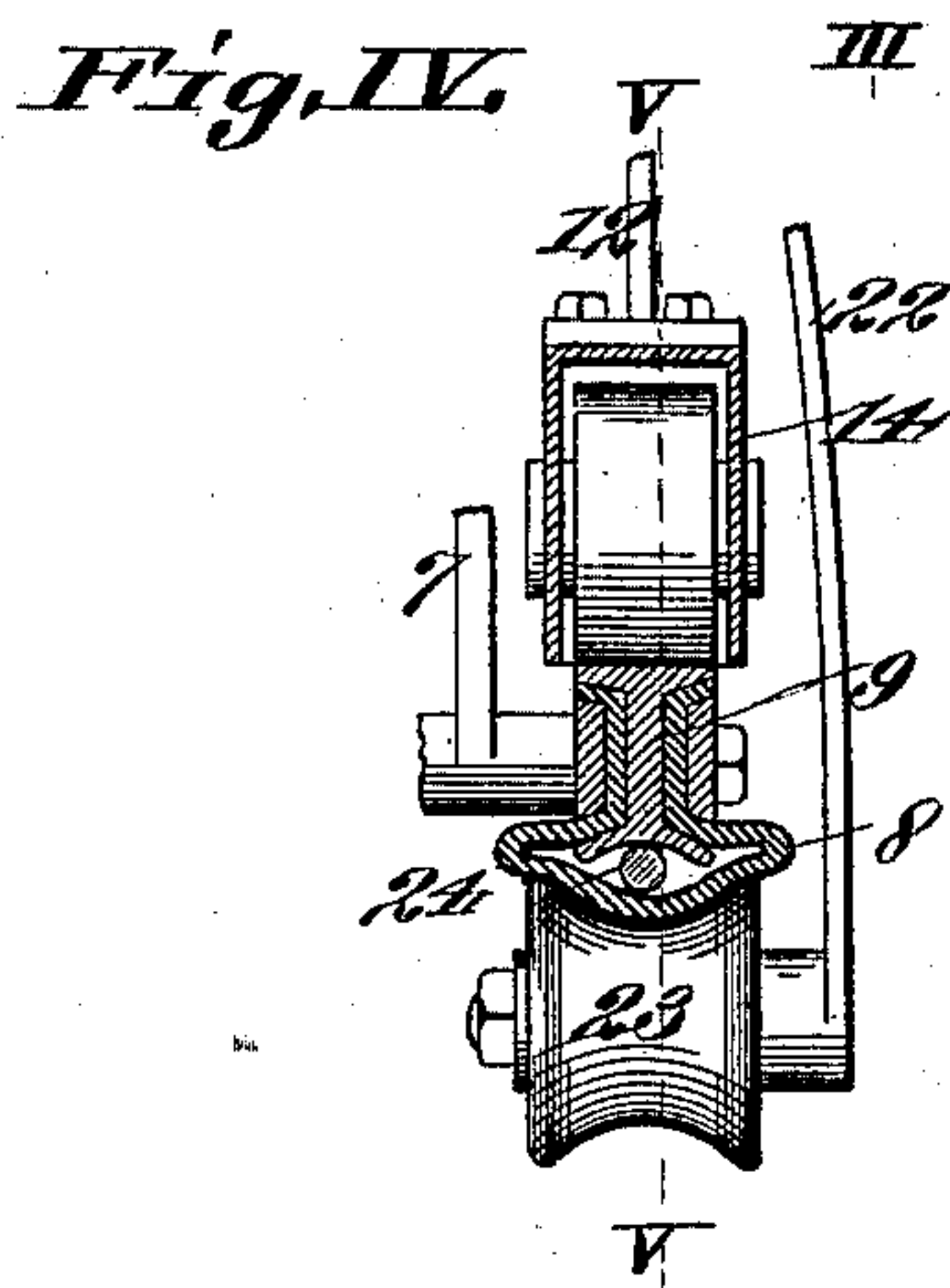
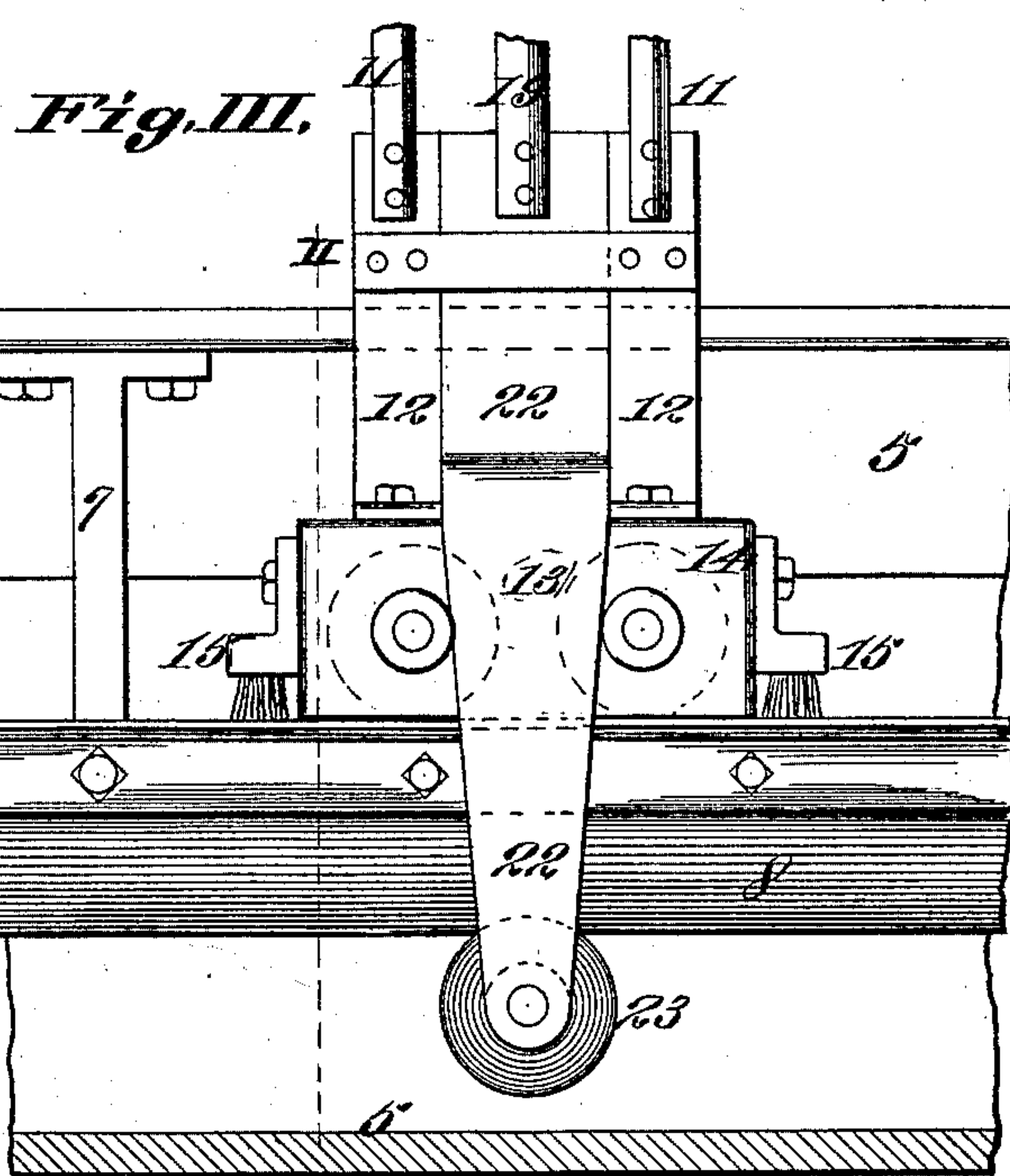
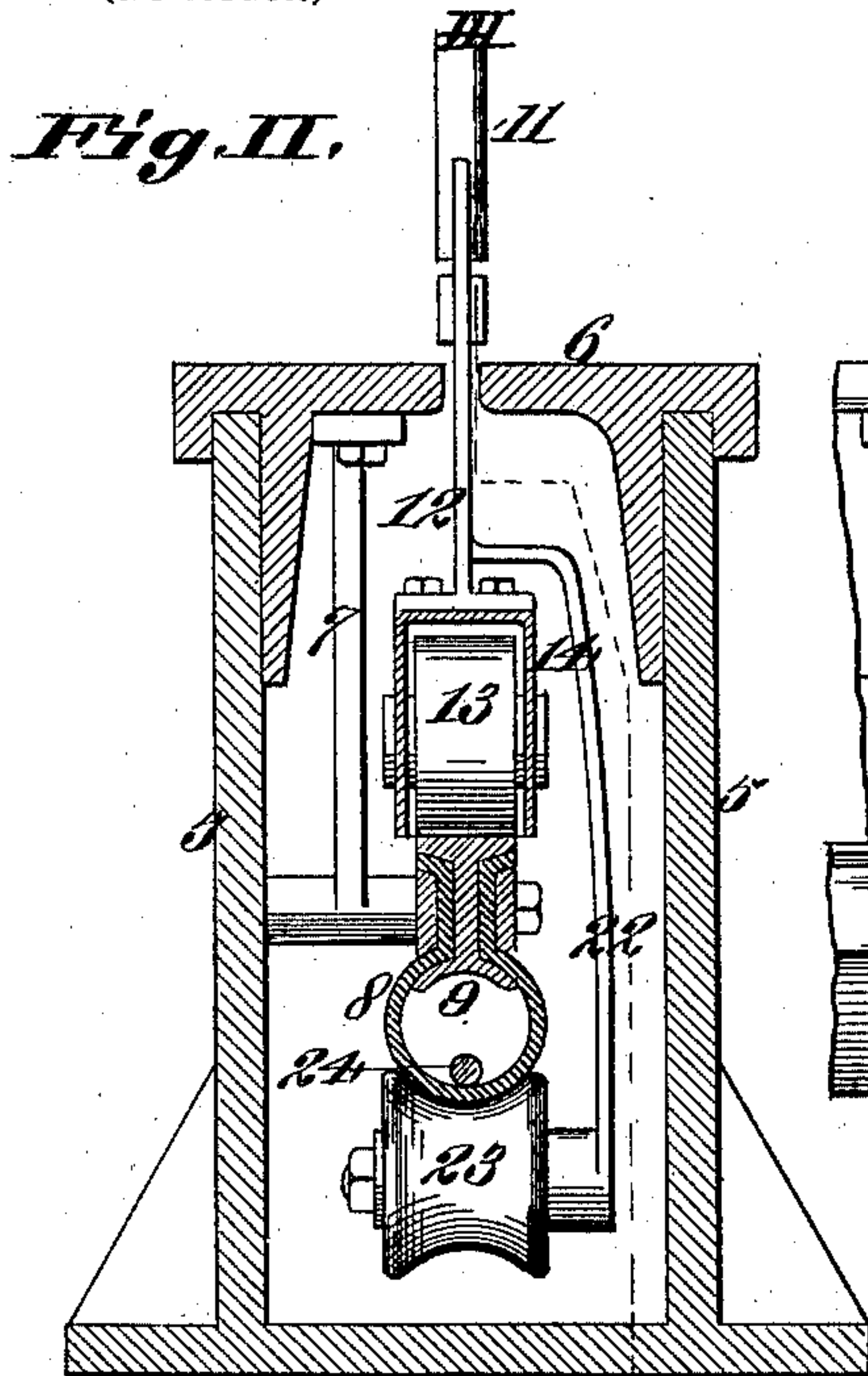
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UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON SMITH, OF ST. LOUIS, MISSOURI.

UNDERGROUND ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 613,084, dated October 25, 1898.

Application filed May 28, 1898. Serial No. 681,990. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON SMITH, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Underground Electric Railways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The object of my invention is to provide an underground conduit in which is placed a wire suitably supported and protected, capable of conducting a current of electricity, and from which wire is taken by suitable mechanism the power necessary to supply the motor carried upon the car-body.

My invention possesses features of novelty which are hereinafter fully described and set forth.

Referring to the drawings, which form part of this specification, Figure I is an end view of a section of a railway-track, showing also a vertical section of the conduit used for carrying the feed-wires, and in which a pair of wheels and the mechanism for raising and lowering the contacts are also shown in elevation. Fig. II is a vertical section taken along the line II II, Fig. III, showing in detail the conduit and the mechanism therein contained. Fig. III is a side view taken along the line III III, Fig. II. Fig. IV is a detail view taken along the line IV IV, Fig. V, in which are shown the feed-wires, contacts, and the mechanism for raising and lowering said feed-wires. Fig. V is a side view taken on line V V, Fig. IV. Fig. VI is a horizontal section taken on line VI VI, Fig. V.

1 1 are the track-rails, on which ride the wheels 2 2, all of which are of ordinary construction.

3 is the axle, and 4 is a sill, on which is supported mechanism, hereinafter to be described, for operating the parts which carry the current of electricity to the motor.

5 is a conduit laid midway between the rails 1 1, the top 6 of which is upon a level with the roadway. In this conduit and supported on a bracket 7 is a continuous flexible tube 8, open at the top to permit the shoes 9 being placed in said opening. These shoes 9 are of short length, approximately from twelve to

fifteen inches, and between each pair is an insulation 10.

11 are the wires which are adapted to convey the current of electricity to the car-motor (not shown) and which are in electrical connection with the conductors 12, that carry the rolling brushes 13. These are supported in a box 14, which protects them and the accompanying parts from dirt, rain, &c. The said rolling brushes are in continuous contact with the shoes 9, as the distance between their respective points of contact is greater than the width of the insulation 10, so that one or both are always in electrical contact with one or more of said shoes.

15 are ordinary brushes carried outside of the case or box 14, and which by the movement of the car precede the electrical contacts, so as to clear the shoes 9 of any dirt or other foreign matter. It will thus be observed that any current of electricity which by suitable means has been conducted into the shoes 9 will be conducted through the rolling brushes 13, plates 12, and wires 11 back to the motor which propels the car.

16 is a bell-crank, to which is attached a lever-arm 17, projecting up through the platform of the car, so as to be operated by the motorman, said bell-crank being fulcrumed at 18 to the sill 4 and having its outer end adapted to raise or lower the rod 19. This rod 19 fits in the sleeve 20 and is provided in the usual manner with cushion-springs 21 and carries upon its lower end a hanger 22, operating between the plates 12. This hanger 22 is bent to one side and carries upon its lower end a roller 23, which hangs directly under the flexible tube 8. It will be readily seen that when the motorman operates the lever 17 the said roller 23 is raised or lowered, as desired.

24 is a trolley-wire which is suspended in the flexible tube 8 and which when in its normal position rests as shown in Figs. I and II. It is adapted to carry a current of electricity furnished from a suitable source of supply and which may be fed at any convenient point or points along the car-line. When in the position shown in Figs. I and II, the said trolley-wire 24 is not in contact with the shoes 9, the car-motor remaining inactive; but when the motorman operating the roller

23, as described, raises the same this trolley-wire 24 is raised up against the shoes 9, as shown in Figs. IV and V.

The material of which the flexible tube 8 is made must necessarily be yielding and a non-conductor of electricity. Upon the trolley-wire 24 being brought, in the manner already described, into contact with the shoes 9 the current of electricity therein carried is conveyed through the shoes 9, rolling brushes 13, and connecting parts into the car-motor. As the car passes onward in its course the roller 23 advances, so that each next preceding shoe is in turn brought into electrical contact therewith, and a continuous current of electricity is thus carried into the car-motor. At no time are more than two of the shoes 9 in electrical connection with the said motor, so that there is no waste of electricity. It is manifest that the weight of the trolley-wire 24 will, by force of gravitation, keep the same out of contact with the shoes 9, the said wire resting in the bottom of the flexible tube 8. This tube 8, moreover, furnishes ample protection for both trolley-wire and shoes against water, dirt, and other matter which may collect in the conduit 5.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. The combination of a trolley-wire, a flexible tube in which said trolley-wire is incased, contact-shoes placed in and at the top of said tube, electrical connection between

said shoes and the car-motor, and a means of raising said trolley-wire into contact with said shoes consisting of a car-platform carrying a lever fulcrumed thereon, and a hanger operated by said lever, and adapted to raise the said flexible tube, substantially as described.

2. The combination of a car-platform, a lever fulcrumed thereon, a conduit, a hanger operated by said lever and suspended in said conduit, a trolley-wire, a flexible tube in said conduit and in which said trolley-wire is located, a series of contact-shoes placed in and at the top of said tube, and brushes carried by the car and in electrical connection with said contact-shoes, substantially as described.

3. The combination of a car-platform, a lever fulcrumed thereon, a conduit, a hanger operated by said lever and suspended in said conduit, a trolley-wire, a flexible tube in said conduit and in which said trolley-wire is located, a series of contact-shoes placed in and at the top of said tube, brushes carried by the car and in electrical connection with said contact-shoes, the casing and the ordinary brushes carried outside of the casing, for the purpose of clearing the shoes of dirt; substantially as described.

GEORGE WASHINGTON SMITH.

In presence of—

E. S. KNIGHT,
STANLEY STONER.