

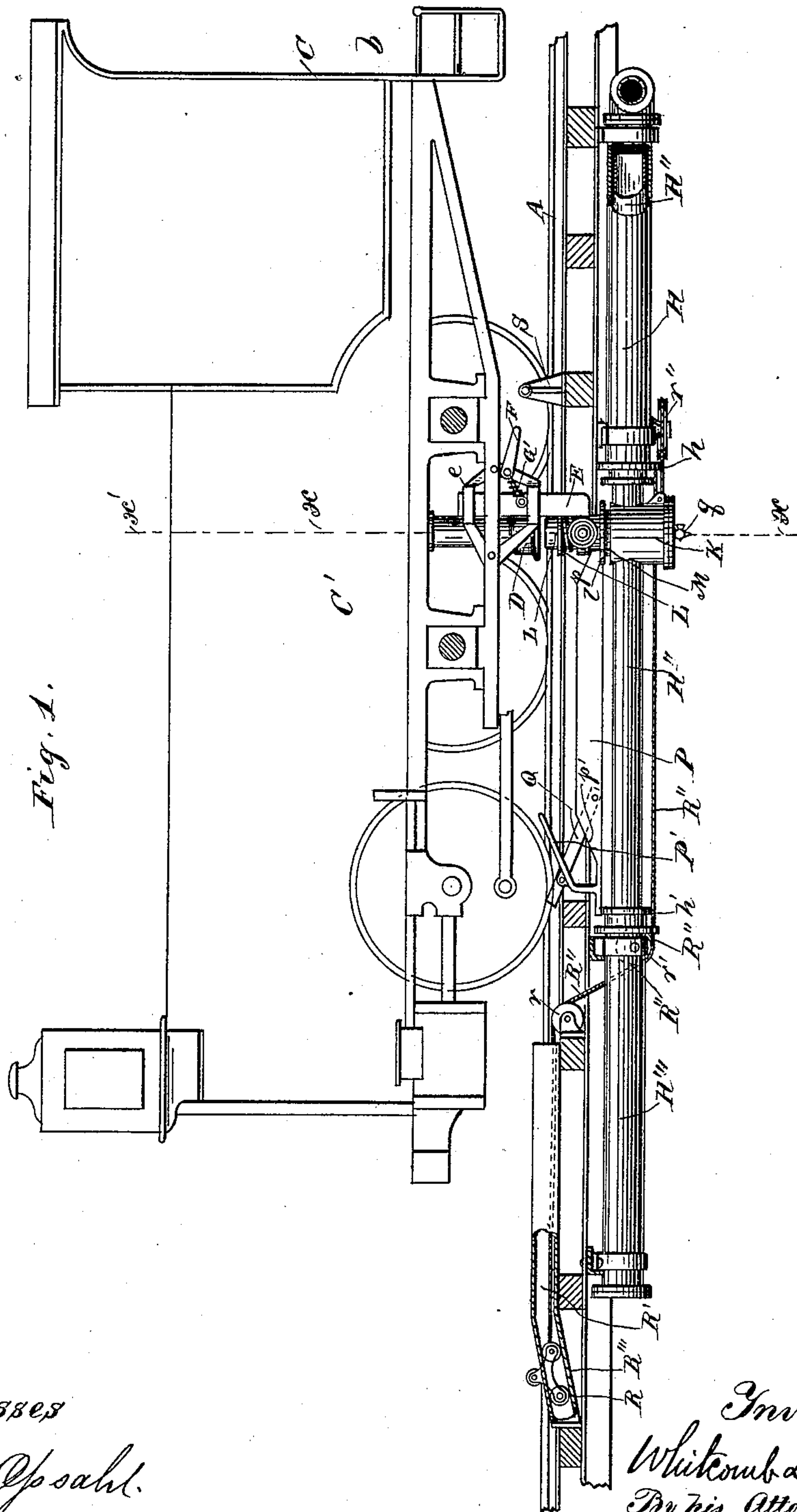
(No Model.)

3 Sheets—Sheet 1.

W. L. JUDSON.
STREET RAILWAY.

No. 464,616.

Patented Dec. 8, 1891.



Witnesses

A. H. Opsahl.

Frank D. Merchant.

Inventor

Whitcomb L. Jackson

By his Attorney

Gas. F. Williamson

(No Model.)

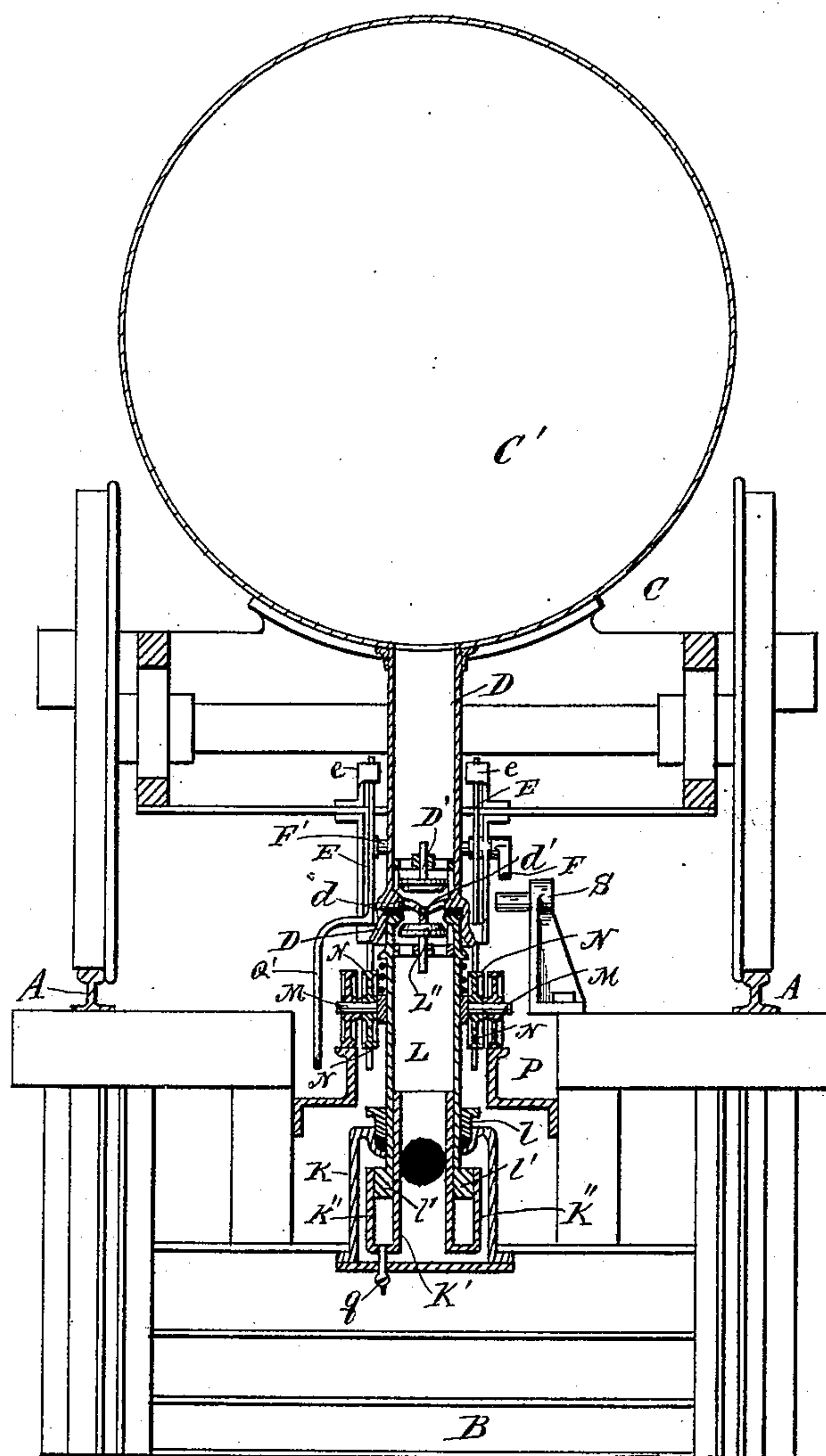
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Fig. 2.



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(No Model.)

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Fig. 3.

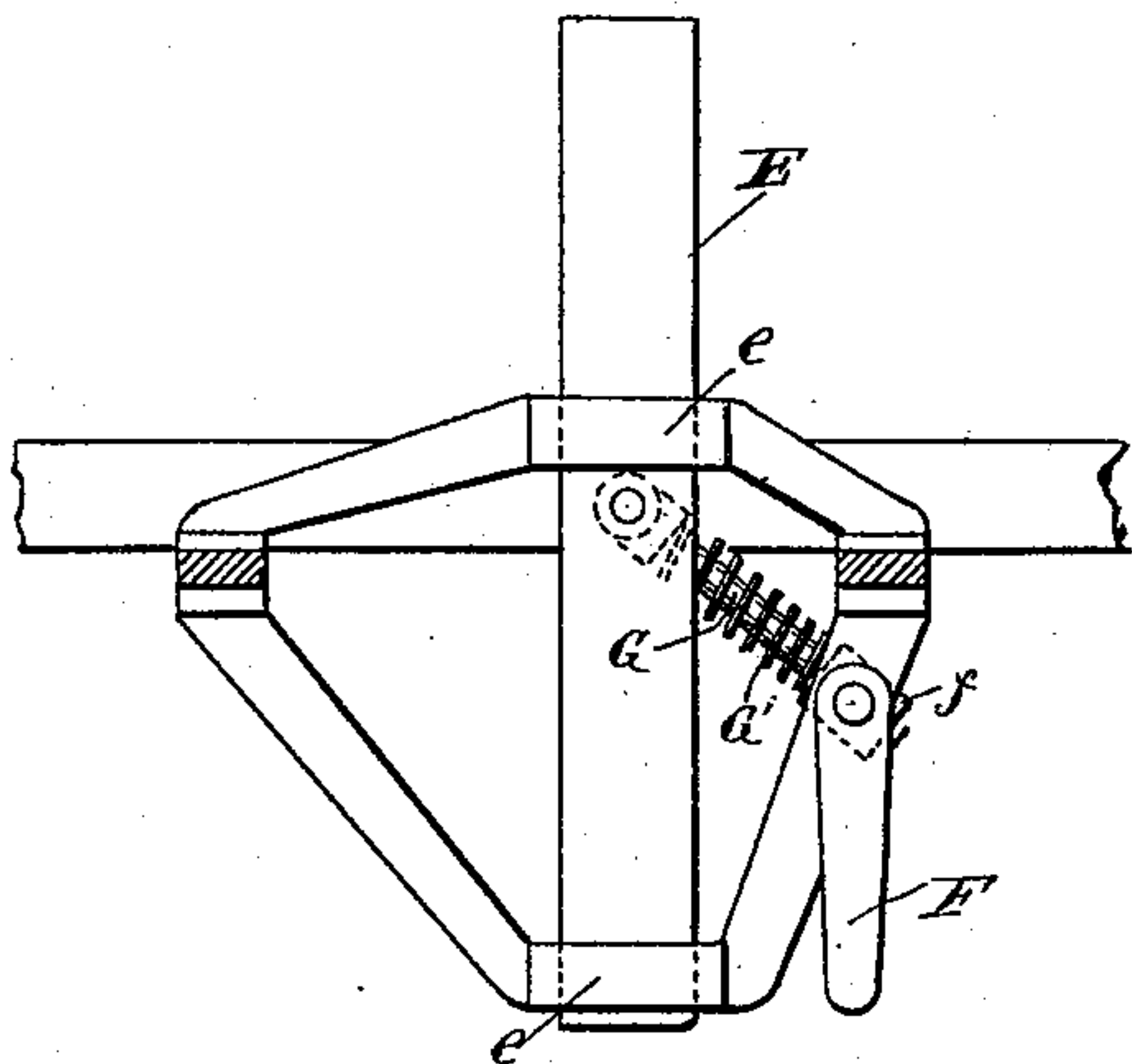
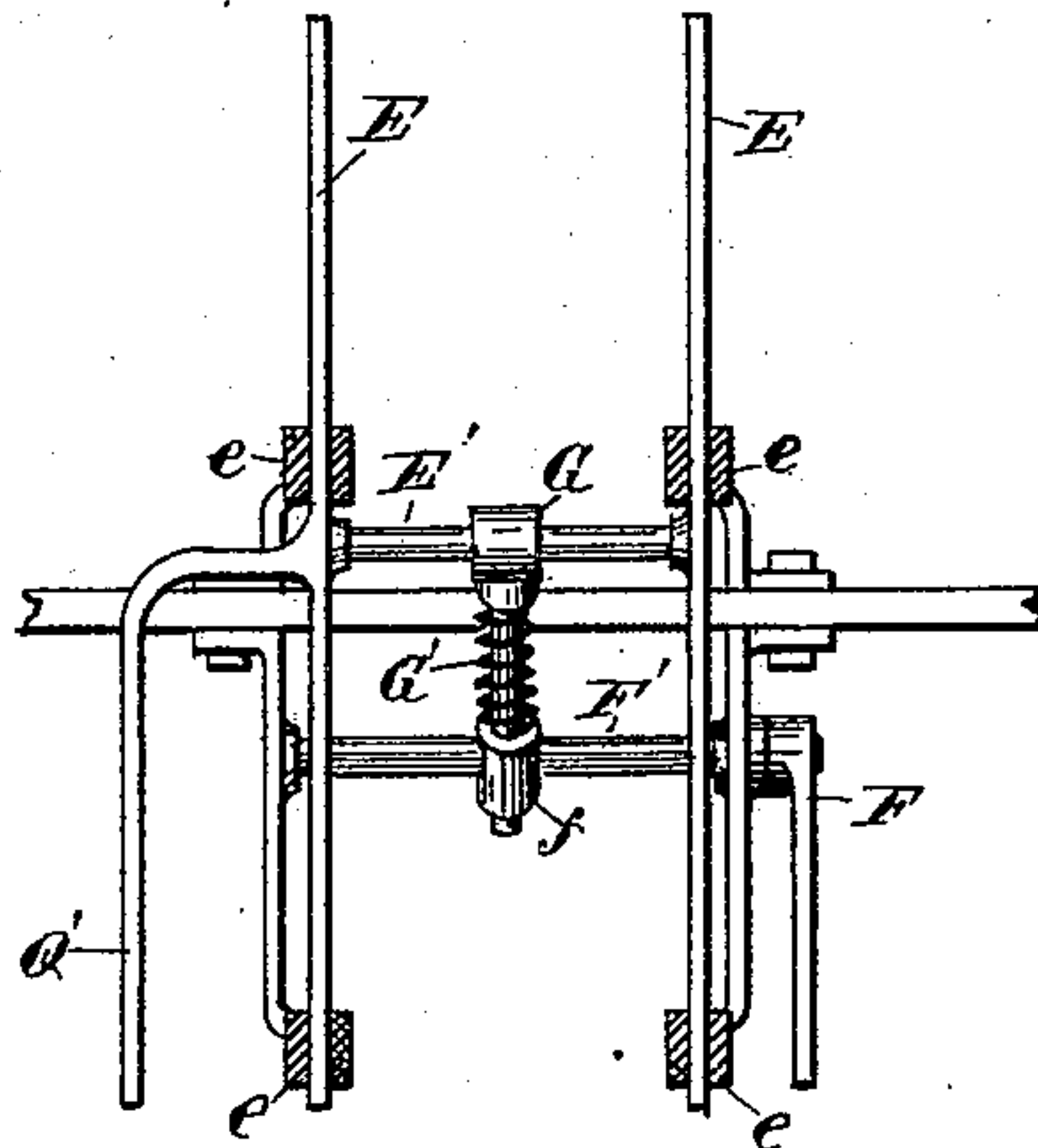


Fig. 4.



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UNITED STATES PATENT OFFICE.

WHITCOMB L. JUDSON, OF NEW YORK, N. Y.

STREET-RAILWAY.

SPECIFICATION forming part of Letters Patent No. 464,616, dated December 8, 1891.

Application filed September 25, 1890. Serial No. 366,165. (No model.)

To all whom it may concern:

Be it known that I, WHITCOMB L. JUDSON, a citizen of the United States, residing at New York, in the county of New York and State
5 of New York, have invented certain new and useful Improvements in Street-Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to
10 which it appertains to make and use the same.

My invention relates to that class of street and other railways wherein the propelling mechanism is carried on a motor-car and is actuated by air, gas, or liquid under pressure
15 contained in a receiver on the car, which is recharged at suitable intervals along the line of travel.

My invention is especially designed for what may be called the "air-storage" system, where-
20 in compressed air is used as a motive power, the receivers being of comparatively small size and adapted to receive charges at frequent intervals from an air-main extending along the line of travel.

My invention is more particularly directed
25 to the charging mechanism, and is applicable to either surface or elevated roads; and it has for its object to provide a simple construction for automatically effecting the charge while
30 the car is in motion. To this end the air-main is placed adjacent to the track and at charging-points is provided with a telescoping section. In the telescoping section and telescoping therewith is mounted a valve-
35 charging nozzle. The projecting end of this nozzle is supported by a trolley movable on a track adjacent to the main, which is provided with an inclined surface at its head for raising the nozzle outward into its charging posi-
40 tion and an inclined surface at its foot extended into a pocket to permit the nozzle to return to its normal position after the passage of the car. On the motor-car is placed a movable guide bar or projection, which, when
45 set in its lowermost position, is adapted to engage the trolley and by the forward motion of the car raise the same onto its track and guide the charging-nozzle into registration with the receiving-nozzle carried by the car.
50 To set this movable guide-bar in its lower-

most position, a pivoted lever is placed on the car, which is adapted to be engaged with a projection extended from the road-bed. To return the guide to its normal position after the charge is completed, an inclined cam-sur-
55 face is located in the line of its travel on the road-bed and engages the projection from the movable guide. The connection between the pivoted trip-lever and the guide is made by
60 a connecting-rod pivoted to the guide at one end and having its free end working through a hole in the shaft of the trip-lever. A resistance-spring is placed between the shaft and the guide. In virtue of this construction the spring's line of resistance will be shifted
65 above or below the trip-lever shaft and will hold the guide in either position in which it may be set. To return the trolley and the telescoping section to their normal position, a traveler is placed upon a track at the foot of
70 the charging-section, which is connected by a cable passing over suitable sheaves to the trolley. The projection on the movable guide-bar engages with this traveler after passing
75 the charging-section and carries it forward until the traveler drops down an incline at the foot of its track into a pocket, which permits it to clear the car. The forward move-
80 ment of the traveler returns the trolley, and the forward movement of the trolley, when engaged with the next car, returns the traveler into its normal position at the head of its track. The movable guide, the trip-lever on the car, and the traveler with its connection
85 to the trolley are similar to the constructions shown in another application for a similar purpose filed by me of even date herewith under Serial No. 366,164. The radical differences in this application lie in the telescoping section of the air-main and in the telescoping
90 charging-nozzle. Other minor differences will be particularly pointed out in the claims.

I have shown the invention as applied to an elevated road.

In the drawings like letters refer to like
95 parts throughout.

Figure 1 is a view, partly in side elevation and partly in section, showing a motor-car in position on a charging-station. Fig. 2 is a vertical cross-section on the line X X' of Fig. 100

1. Figs. 3 and 4 are detail views, in side and front elevation, respectively, showing the movable guide-bar and trip-lever.

A are elevated rails, and B their supporting structure.

C is a motor-car, shown as of locomotive-like form, provided with a receiver C' in the position occupied by the ordinary boiler.

D is the receiving-nozzle, having an enlarged or bell-shaped mouth provided with a valve D' and a downwardly-projecting bridge *d*.

E E is the movable guide-bar or nozzle-guide, mounted in straps *e*, fixed to the cars.

F is the trip-lever, and F' its pivoted shaft, mounted in bearings on the truck.

E' is a cross-bar or rod rigidly connecting the two bars E, which make up the movable guide.

G is the connecting-rod, pivoted at one end to the cross-rod E' and having its other or free end working through a transverse hole or guide *f* in the trip-lever shaft F'.

G' is the resistance-spring on the connecting-rod G between the cross-rod E' and the shaft F'.

H H'' H''' are adjacent sections of the air-main, of which H and H''' are fixed sections and H'' is a movable section telescoping with the fixed sections, working through suitable stuffing-boxes *h* and *h'*. The telescoping section H'' is open at both ends. It is therefore balanced and easily moved.

K is a central enlargement on the telescoping section, constituting the nozzle-seat.

L is the charging-nozzle, having its lower end located in said seat and working through a stuffing-box *l* in the seat K, and spaced apart therefrom is located a short pipe K', telescoping into the lower end of the nozzle-section and provided with an upturned annular flange K'' at its lower end, in which moves the enlarged lower end *l'* of the nozzle-section. The space inclosed by the flange K'' constitutes a vacuum-chamber, into which the nozzle-section is forced by the air-pressure on the enlarged head *l'*.

M is the trolley supporting the head of the charging-nozzle, provided with anti-friction rollers N N, located on the same axles with its bearing-wheels for co-operation with the nozzle-guide E, located on the car.

P is the trolley-track, inclined at its head and foot, as shown at *p p'*.

P' is a guide-rail fixed to the foot of the trolley-track and overhanging the inclined part *p'* to insure the trolley passing into its pocket.

Q is the inclined cam-surface at the foot of the trolley-track for engaging with the projection Q', attached to the movable guide on the car.

R is the traveler, and R' its track.

R'' is the cable connecting the traveler and the trolley over guide-sheaves *r r' r''*.

R''' is the inclined section or pocket at the foot of the traveler's track. The valve L'' in

the mouth of the charging-nozzle is provided with an outwardly-extended stem *d'* for co-operation with the bridge *d* in the mouth of the receiving-nozzle to open the valve L'' by the weight of the car upon the registration of the nozzles.

S is a stationary projection fixed in the roadway at the head of the charging-station for co-operation with the trip-lever F on the car to set the nozzle-guide.

The operation is as follows: When the trip-lever F strikes the projection S, the nozzle-guide E E is thrown down to its lowermost position and held there by the spring G' on the connecting-rod G. On the further motion of the car the nozzle-guide engages the anti-friction rollers N N on the trolley and carries the trolley forward on the trolley-track. On passing up the incline *p* at the head of the track the charging-nozzle L is drawn upward out of the seat K and guided by the bars E into registration with the receiving-nozzle, the weight of the car opening its valve. The charge is then made either while the car is in motion, if the trolley-track and telescoping section be of sufficient length, or while the car is stopped for the purpose. On passing to the foot of the trolley-track the trolley falls into its pocket, clearing the car, and the projection Q' engages the inclined cam Q, restoring the movable guide E to its uppermost or normal position, where it is held by the spring G' on the rod G. Upon the further motion of the car the projection Q' engages with the traveler R until the same drops into its pocket, and this forward motion of the traveler restores the trolley and the charging-nozzle to their normal position in contact with the fixed section H of the air-main. As the charging-nozzle was drawn outward from its seat K by the upward movement of the trolley it produced a vacuum in the chamber inclosed by the flanges K'' and *l'*. When the trolley is released from the car and passes into its pocket, the air-pressure on the top of the flange L' immediately restores the nozzle to its normal position. The vacuum-chamber in the seat K' may be provided with a vent fitted with a check-valve, as shown at *q*.

What I claim, and desire to secure by Letters Patent, is as follows:

1. The combination, with an air-conduit having a movable section telescoping with the adjacent fixed sections, of an air-nozzle connected to said movable section.

2. The combination, with an air-conduit having a movable section telescoping with adjacent fixed sections, of a nozzle-section seated on said movable section at right angles to its axis and telescoping therewith.

3. The combination, with an air-pipe, of a nozzle telescopically seated thereon and a vacuum-chamber in said nozzle-seat extended by the outward movement of the nozzle, whereby the nozzle may be returned by the air-pressure.

4. The combination, with the movable car

having a receiving-nozzle, of an air-main along the line of travel and a charging-nozzle telescopically seated on said main at right angles to its axis, whereby the nozzles may be registered to charge the car.

5 5. The combination, with the car having a receiving-nozzle, of the air-main having the movable section telescoping with adjacent fixed sections and the charging-nozzle telescopically seated on said movable section at right angles to its axis, whereby the nozzles may be registered and the charge taken while the car is in motion.

15 6. The combination, with the car having a receiving-nozzle and a guide for the charging-nozzle, of the air-main adjacent to the car's travel, having a movable section telescoping with the adjacent fixed sections, the charging-nozzle telescopically seated on said movable section, the trolley supporting the head of said nozzle and adapted to be engaged by said guide, and a trolley-track for uniting the nozzles under the action of the car.

25 7. The combination, with the movable car having a receiving-nozzle, of the air-main adjacent to the line of travel, having a movable section telescoping with adjacent fixed sections and carrying a charging - nozzle, and

means for returning the movable section to its normal position after the charge is made. 30

8. The combination, with the car having the receiving-nozzle, of the air-main adjacent to the car's travel, having the movable section telescoping with the adjacent fixed sections, the charging-nozzle mounted on said movable section, the trolley supporting the head of the nozzle, the trolley-track, the traveler and its track, the cable connecting the traveler and trolley over guide-sheaves, and projection on the car for engaging the trolley and the traveler, substantially as and for the purpose set forth. 35 40

9. The combination, with a movable car and an air-main extending along the line of travel, of a receiving-nozzle on the car, a charging-nozzle connected with the main, and a telescoping section of pipe supporting one of said nozzles to permit the charge to be made while the car is in motion. 45

In testimony whereof I affix my signature in presence of two witnesses. 50

WHITCOMB L. JUDSON.

Witnesses:

H. L. EARLE,
OSWALD G. BOYLE.