

No. 610,009.

Patented Aug. 30, 1898.

L. E. WALKINS.
ELECTRIC RAILWAY.

(Application filed Feb. 2, 1898.)

(No Model.)

Fig. 1.

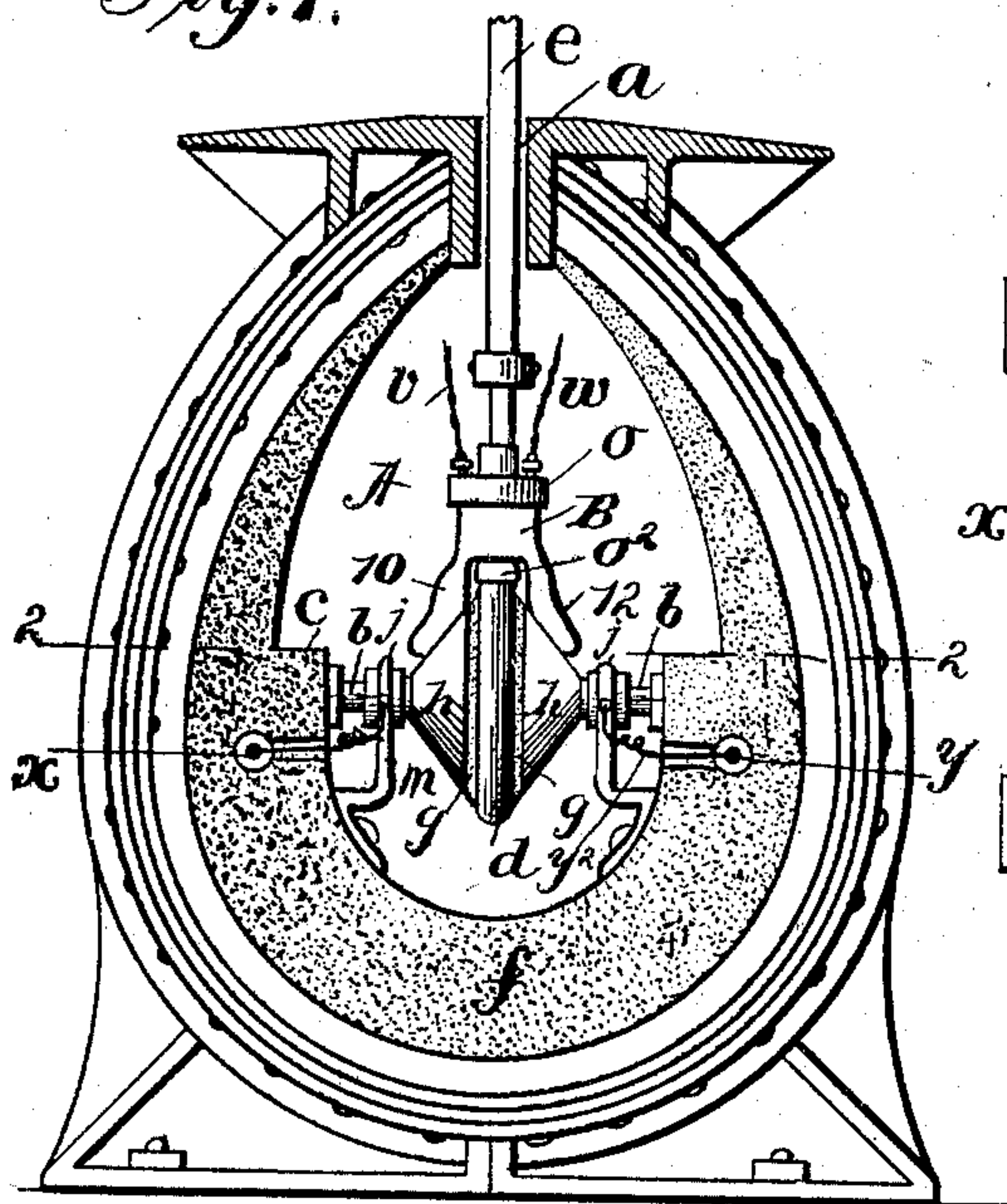


Fig. 2.

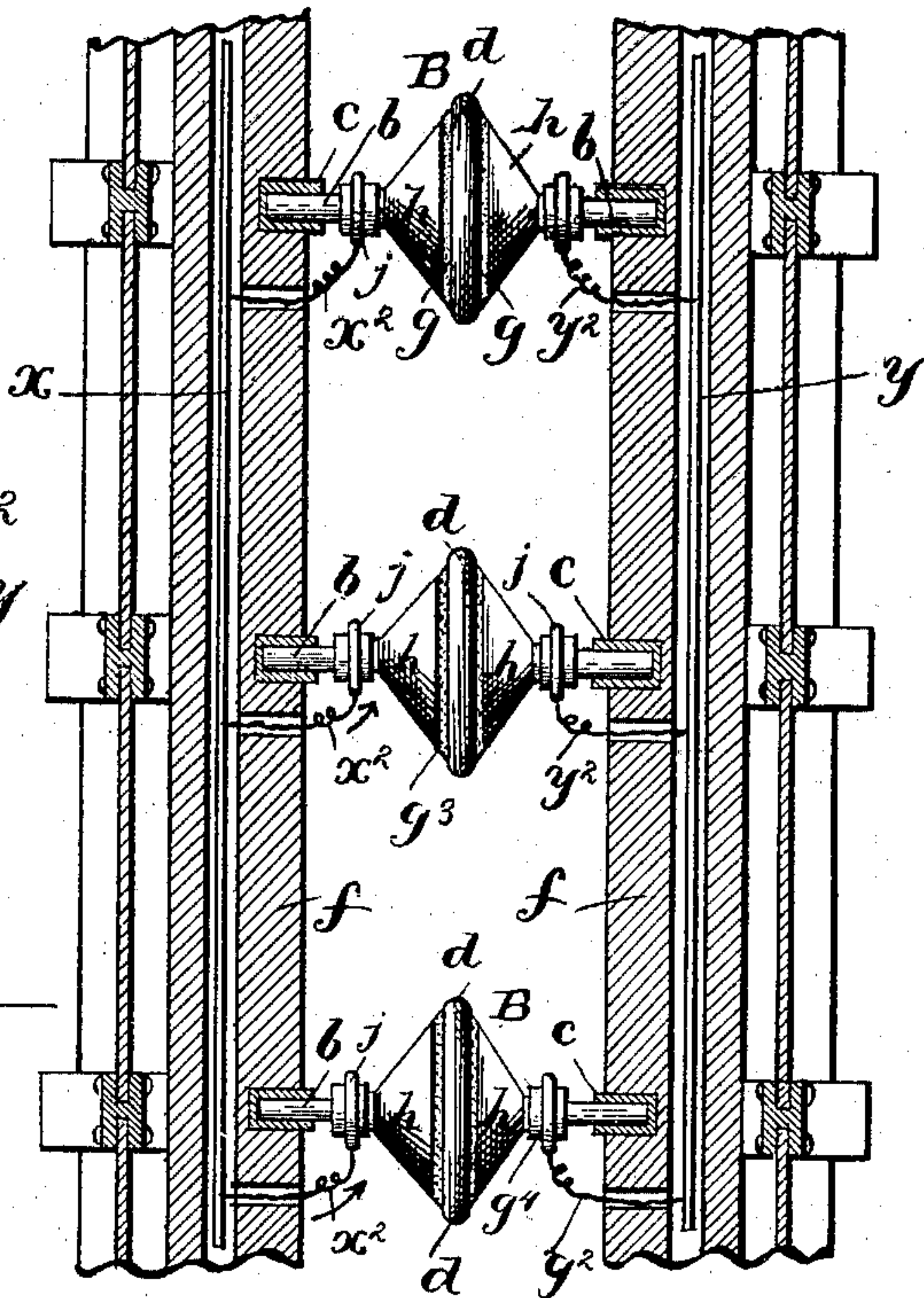
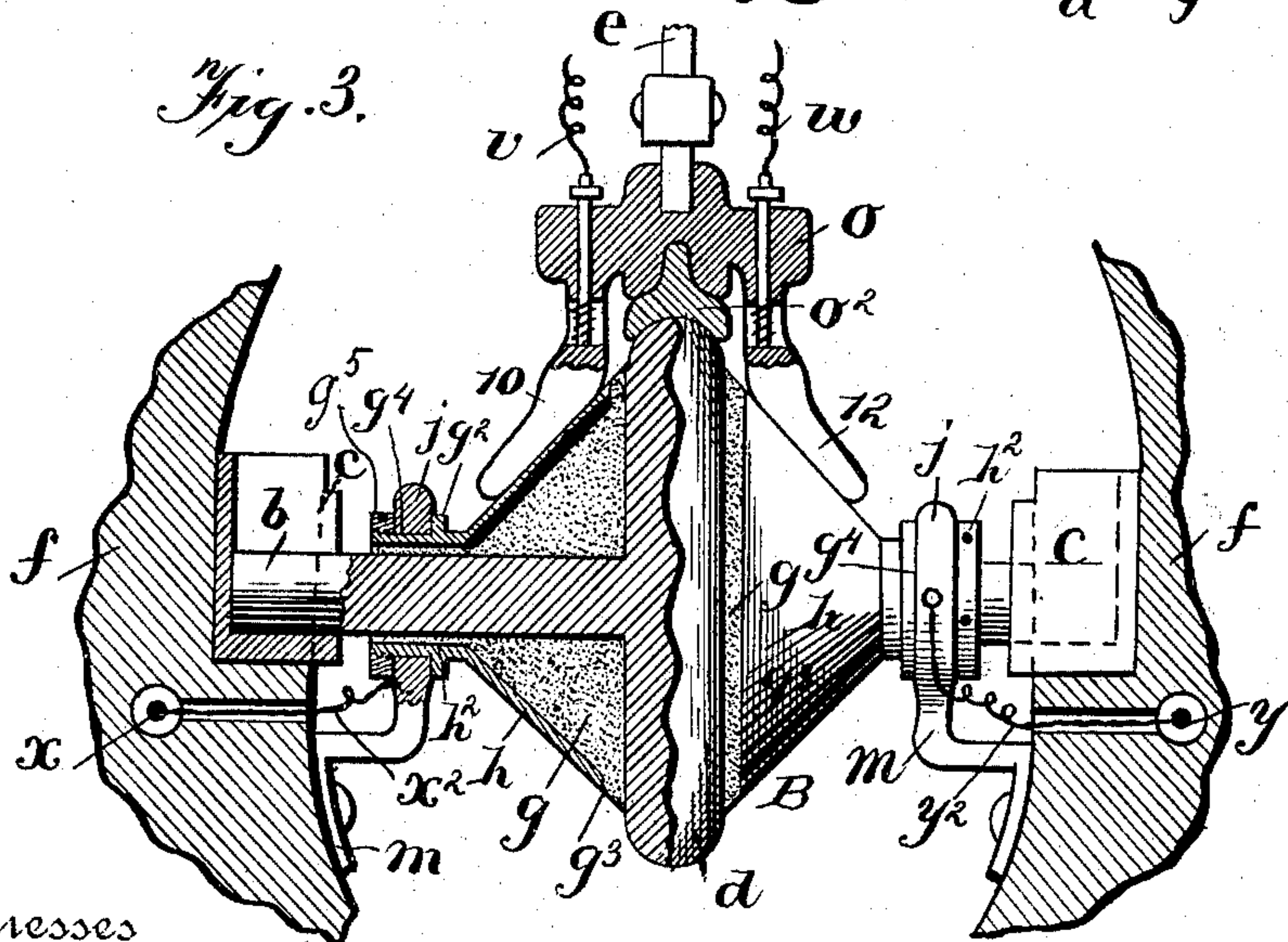


Fig. 3.



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ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 610,009, dated August 30, 1898.

Application filed February 2, 1898. Serial No. 668,907. (No model.)

To all whom it may concern:

Be it known that I, LOUIS E. WALKINS, a citizen of the United States, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

This invention relates to electric-railway systems of the class in which the current is taken to the motor on the car through a depending runner or shoe from current-conducting contact devices located along the railway, either at or above the surface or within a conduit sunk below the level of the road-bed.

The invention more particularly relates to the current-conductor devices for feed and return located along the railway and to the combination therewith of a shoe or under-running trolley having separated and insulated members for coming successively in contact with said current-conductor devices, so as to be at all times in passing contact on at least two thereof, and as will hereinafter be more apparent; and the invention consists in the construction and combinations or arrangements of parts, all substantially as will hereinafter fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a cross-sectional view of a conduit understood as between the usual car-wheel rails of an electric railway, showing in front elevation one of the current-conductor contacts for both the feed and return and also showing the combination therewith of the shoe or under-running trolley. Fig. 2 is a plan and horizontal cross-sectional view of a sufficient length of the conduit portion of the railway to render apparent the relative arrangement of the successive combined contact-conductors and devices on which the shoe has its running support. Fig. 3 is an enlarged half-sectional view axially through one of said contact-conductors and half front elevation, the shoe device also being indicated.

Similar characters of reference indicate corresponding parts in all the views.

In the drawings, A represents a conduit un-

derstood as located and extending centrally along and under the road-bed between the usual car-track rails, said conduit having, as usual, the central upwardly-opening slot *a*, down through which is extended the bar or carrier *e* for the under-running trolley or contact device B, which has insulated portions at opposite sides 10 and 12 to serve to receive through the one the feed-current and to convey through the other the return-current to and from the motor. Within the conduit at suitable intervals apart less than the longitudinal extent of the shoe are series of current-conducting devices and combined rollers on which the shoe as it runs along in the conduit has bearing and partial support. Each one of these combined rollers and contact-conductors is constructed as shown in Fig. 3 in the drawings, and consists of a shaft *b*, journaled in suitable U-shaped or otherwise designed journal-bearings *c*, set within the insulating material *f* of which the inner portion or wall of the conduit is composed, said shaft having centrally and preferably integral therewith the flange *d*, which constitutes the roller-wheel, and at opposite sides of this roller-wheel, molded or otherwise affixed thereon, and also about the central shaft or axle, is a conical-shaped body *g*, outwardly convergent and having the extended hub-like hollow cylindrical portion *g*² as a continuation axially at its apex end. The said insulating body or section at each side of the roller-wheel has the sheath or covering *h*, of copper or other good conducting material, this being of funnel shape with an annular integral cylindrical extension *h*², which latter portion closely adheres to and surrounds the aforementioned hub-like portion *g*² of the insulating-section *g*. The said sheath or cover does not meet the side of the roller-wheel, but is separated therefrom by the shoulder *g*³ of the insulating material, and the said cylindrical continuation *h*² is peripherally grooved or rabbeted, as seen at *g*⁴, receiving in each of these grooves, at opposite sides of the roller-wheel and considerably distant therefrom, the metallic collar *j*, of good conducting character, the same being non-rotatable relative to the roller-wheel and the two insulating-sec-

tions and the metallic sheath, suitable means for preventing the rotation of each of these contact-conductors being provided, the same as shown consisting of the brackets m , which are formed as one with or united to the collars j , they being for their removable support immovably upon the insulating-wall of the conduit below the roller-journals. The roller-wheel with its axle and the insulating-sections g and copper sheath h are therefore free to rotate independently of the immovable collars j , the collars, however, being always in electrical connection with its adjacent sheath h , but completely insulated from the roller-wheel.

x represents the feed or line wire for the railway system, the same running longitudinally along one side of the conduit, preferably embedded therein, and from the line-wire to each of the collars j at the side toward such wire a connecting-wire x^2 is extended, so that each and every collar at the one side is in electrical connection with the feed-wire.

y represents the return-wire for the railway system, the same being disposed longitudinally along the other side of the conduit, and from this return-wire connection-wires y^2 are extended to establish electrical connection with the series of collars j at the side toward the return-wire. Of course it amounts to the same if connection is had between the line and return wires and the brackets or anchoring-bars m for the respective collars.

The underrunning trolley or shoe is understood as having a length somewhat greater than the distance between two of the lower contacts, and it has the central body or portion o , which is adapted to run along on the periphery of the roller-wheels d and to receive therefrom a substantial degree of support, such body being at its bottom provided with the metallic wear-block o^2 ; and said body has at either side, supported thereon and insulated from the portion which has running bearing on the roller-wheels, the separate members 10 and 12 before referred to, which respectively bear on the copper sheaths or coverings h at the opposite side of the roller-wheel, and as one of these shoe members 10 is by a suitable wire v in electrical connection to the car-motor and the other one by a suitable return-wire w joined thereto from the motor it is apparent that the current in the line-wire may pass therefrom by way of the connection-wire x^2 to the collar and sheath at one side of the roller device and through the shoe at that side to the motor, returning from the motor to the shoe at the opposite side and through the sheath, collar, and connection-wire y^2 back to the main return-wire.

The principal motive for this invention is to secure an electric-railway equipment which shall be of simple construction and one which is cheaply manufactured, having little liability to derangement or becoming inoperative, and susceptible, in case of re-

quiring repair or the replacement of any of its contact-conductors, of having them easily removed and substituted.

It will be noted that for the easy removal of the collars from the grooved portion of the roller device, which they surround, the other marginal portion of the groove g^4 may be constituted by a removable ring g^5 , united to the sheath-hub by a screw-thread engagement, as indicated in the sectional portion of Fig. 3.

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

1. In an electric-railway system, the combination with a longitudinally-ranging series of transversely-axial roller-wheels horizontally arranged, each having a central rim, and at either side thereof an annular section of metal insulated from the central rim, and each of said annular sections having a surrounding collar in contact therewith, of means for preventing the rotation of the collar, line and return wires and electrical connections respectively between said wires and said collars, substantially as and for the purpose set forth.

2. In an electric-railway system, the combination with a series of horizontal longitudinally-arranged roller-wheels having at opposite sides of the central rim thereof and surrounding its axle, annular sections of insulating material united thereto, annular sections of metal supported on the insulating-section and separated from the roller-wheel, each provided with a groove or annular seat, and having a metallic collar in said seat, of the feed and return wires, electrical connections uniting them respectively to the opposite side collars on the roller device, and means for preventing rotation of the collars, substantially as described.

3. In an electric-railway system, a longitudinally-ranging series of roller-wheels horizontally arranged, each having a central rim and at either side thereof, an annular section of metal insulated from the central rim, and each of said annular sections having a surrounding collar in contact therewith, means for preventing the rotation of the collars, line and return wires and electrical conductors respectively connecting said wires and said collars, combined with a trolley or current-collector for the motor-car having a central body or portion adapted to have a running bearing along the rims of said rollers, and having at opposite sides thereof, the separate conducting members or shoes adapted to have running bearings along on said side-wise-arranged annular metallic sections, each said shoe member being insulated from the other, substantially as described.

4. In an electric-railway system, a longitudinally-ranging series of roller-wheels horizontally arranged, each having a central rim and at either side thereof, an annular section of metal insulated from the central rim, and each of said annular sections having a sur-

rounding collar in contact therewith, brackets immovably mounted and supporting said collars against rotation, line and return wires, and electrical conductors respectively connecting said wires and said collars, combined with a trolley or current-collector for the motor-car having a central body or portion adapted to have a running bearing along the rims of said rollers, and having, at opposite sides thereof, the separate conducting members or shoes adapted to have running bearings along on said sidewise-arranged annular metallic sections, each said shoe member being insulated from the other, substantially as described.

5. In an electric-railway system in combination, the longitudinally-arranged series of horizontally-journaled transverse axles having each a median flange or extended rim, a section of insulating material at either side of the rim less extended than the margin of said rim, each said section of insulating material being of an outwardly-tapering form, and provided at its apex end with a hub-like or cylindrical portion, the metallic sheath *h* of combined funnel and annular cylindrical form surrounding said insulating-sections except at the portions of the latter adjoining said extended rim, the said cylindrical portions of the sheaths being grooved and receiving therein the collars *j*, brackets, fixed adjacent said collars, and united thereto, line and feed wires ranging along the railway, and conductors connecting them and said respective collars, substantially as described.

6. In an electric-railway system in combination, the longitudinally-arranged series of horizontally-journaled transverse axles having each a median flange or extended rim, a section of insulating material at either side of the rim within its margin of conical out-

wardly-tapering form, and provided at its apex end with a hub-like or cylindrical portion, the metallic sheath *h* of combined funnel and annular cylindrical form surrounding said insulating-sections except at the portions of the latter adjoining said extended rim, the said cylindrical portions of the sheaths being grooved and receiving therein the collars *j*, the endwise boundary of said groove being constituted by a screw-engaged collar, brackets fixed adjacent said collars and united thereto, line and feed wires ranging along the railway and conductors connecting them and said collars, substantially as described.

7. In an electric-railway system, a series of horizontally-arranged separated roller-wheels each having at its one side a body of insulating material, a sheath or covering of metal surrounding said insulated body, but by said body insulated from the rim portion of the roller-wheel, a collar surrounding an annular portion of said sheath in electrical contact therewith, but non-rotatable relative thereto, means for holding the collar against rotation, a continuous electric wire, and respective conductors connecting same to said collars and a shoe or trolley having a portion thereof adapted for rolling bearing on the rims of said rollers and having a portion thereof arranged for a running contact along said sheaths of the successive rollers, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 22d day of December, 1897.

LOUIS E. WALKINS.

Witnesses:

WM. S. BELLOWS,
M. A. CAMPBELL.