

No. 637,829.

Patented Nov. 28, 1899.

E. B. W. REICHEL.

CONTROLLING MECHANISM FOR BRAKES AND SAND DISTRIBUTING APPARATUS FOR STREET CARS.

(Application filed Apr. 12, 1899.)

(No Model.)

2 Sheets—Sheet 1.

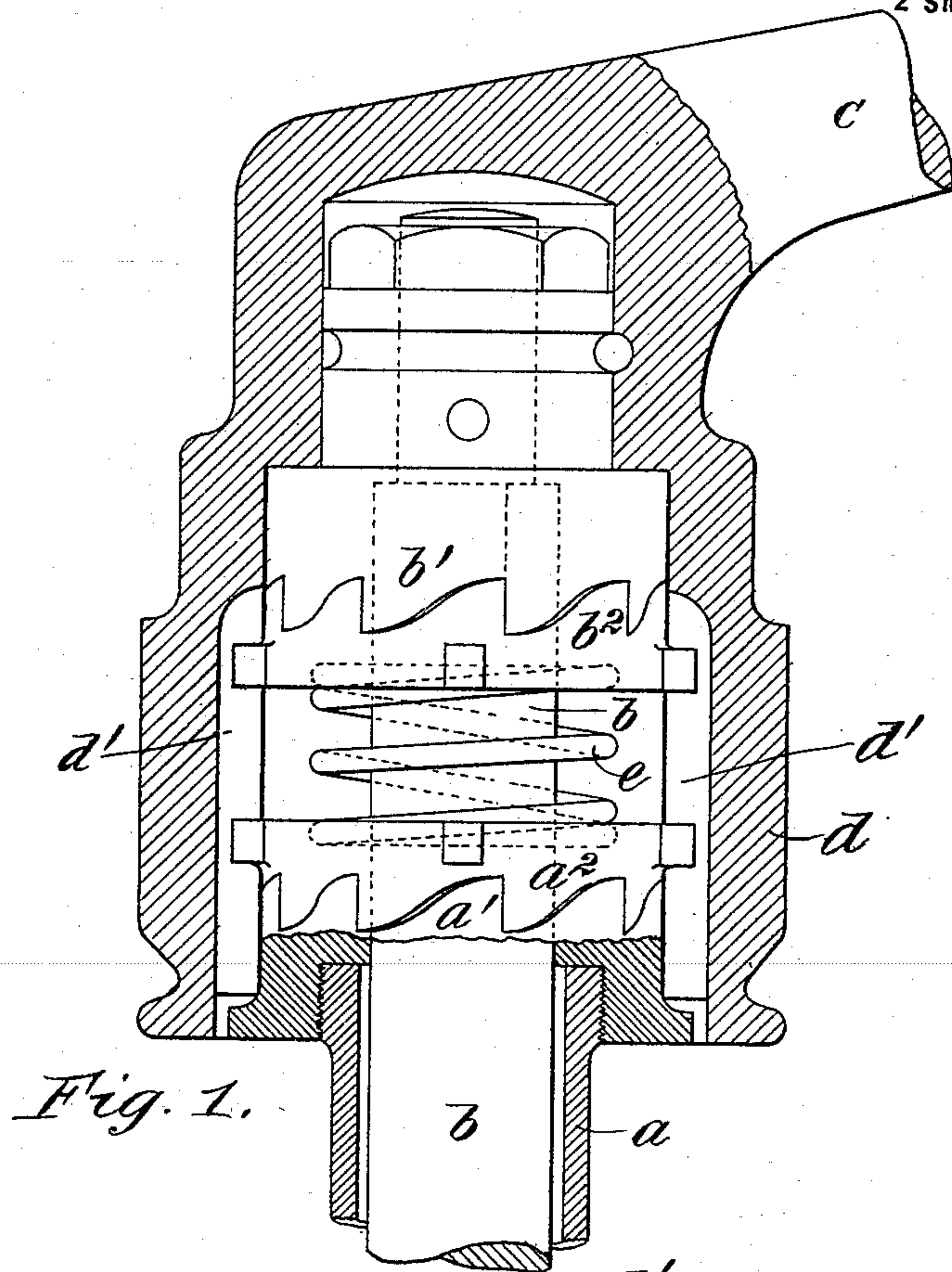


Fig. 1.

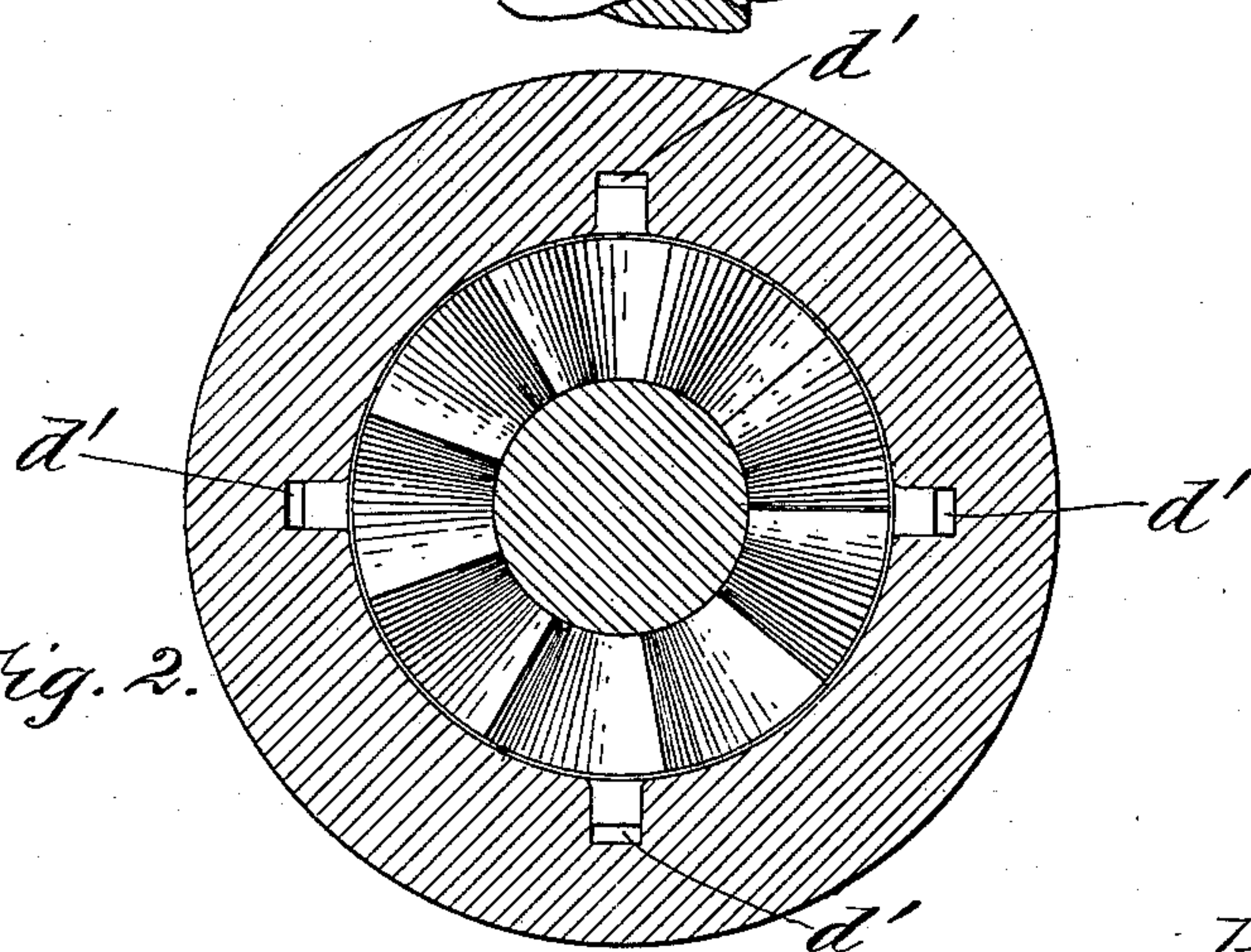


Fig. 2.

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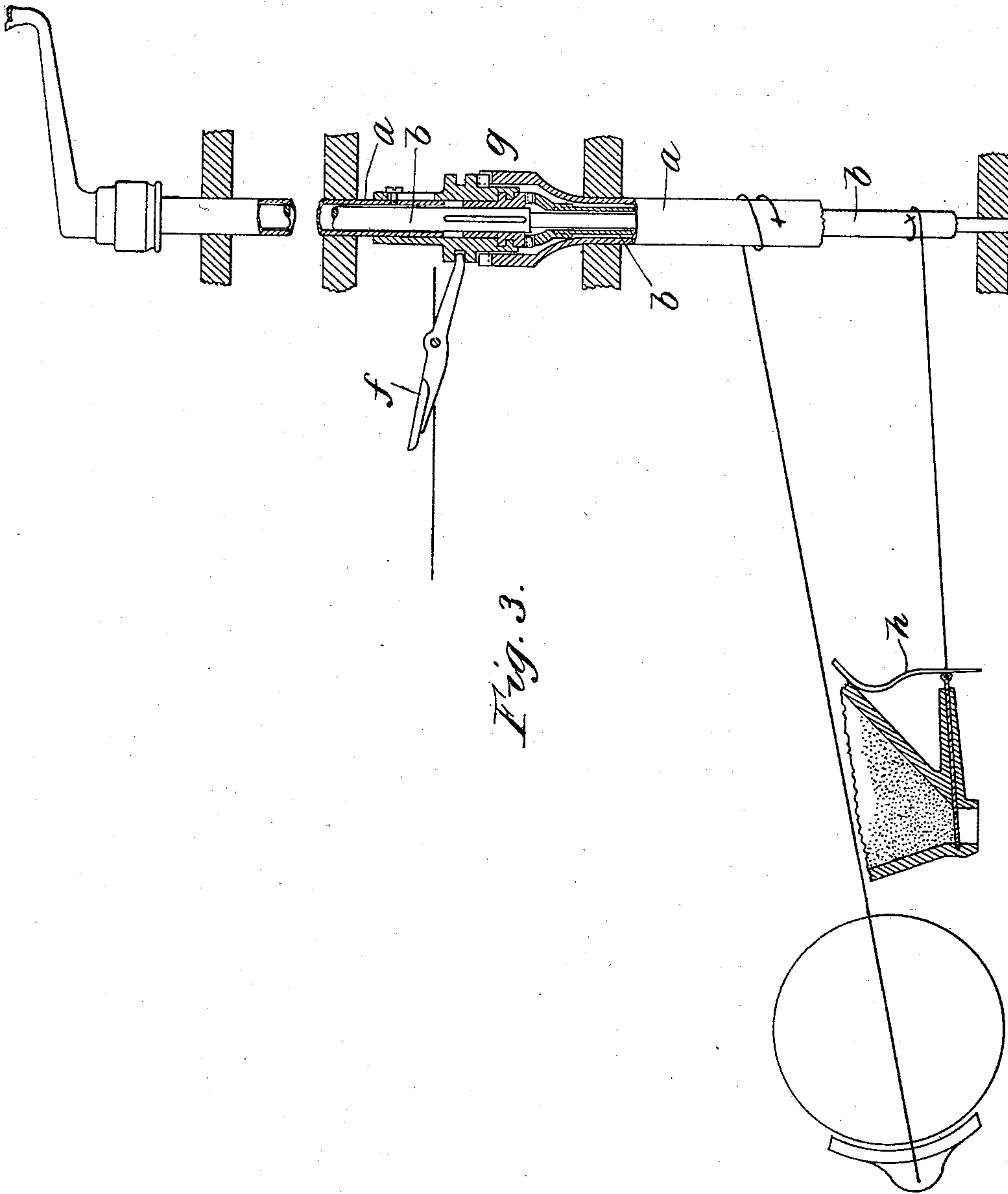
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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CONTROLLING MECHANISM FOR BRAKES AND SAND-DISTRIBUTING APPARATUS FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 637,829, dated November 28, 1899.

Application filed April 12, 1899. Serial No. 712,794. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL BERTHOLD WALTER REICHEL, a subject of the German Emperor, residing at Berlin, Germany, have invented a certain new and useful Improvement in Controlling Mechanism for Brakes and Sand-Distributing Apparatus for Street-Cars, (Case No. 187,) of which the following is a full, clear, concise, and exact description.

My invention relates to improvements in controlling mechanism for brakes and sand-distributing apparatus of street-cars, and has for its object the provision of means for simplifying the labor of controlling the apparatus in question.

It is highly desirable, particularly since the introduction of electrically-propelled cars, that the mechanism external to the electrical control of the car be as simple and require as little attention as possible on the part of the motorman.

The device of the present invention is adapted to secure the necessary control of the braking mechanism and the sand-distributing device by means of a single controlling arm or lever, and consequently reduces the number of operating parts required for use by the motorman and minimizes his work in controlling the motions of the car.

I may briefly describe the device of my invention as consisting of a compound ratchet connected with the ordinary brake-handle of the car, which ratchet is adapted to rotate two actuating parts or spindles alternatively, depending upon the direction in which the brake-handle is rotated.

The device of my invention will be more readily understood by reference to the accompanying drawings, wherein—

Figure 1 is a vertical sectional view of a brake-handle and ratchet equipped with my improvements. Fig. 2 is a cross-sectional view thereof, and Fig. 3 is a view in elevation illustrating the application of my improved device to a car.

Like parts are indicated by the same letter of reference in each of the several figures of the drawings.

The tubular spindle *a* and the solid spindle *b*, inclosed thereby, which are rotatable inde-

pendently of one another, are connected, respectively, with the braking appliances of the car and the sand-distributing device. Each of these spindles is provided with one member of a ratchet *a' b'*, which is keyed or otherwise secured thereon, and is adapted to transmit the proper motion of the brake-handle *c* when the same is rotated for the purpose of actuating one or the other of the connected appliances. The brake-handle *c* terminates in a hollow cap *d*, which is provided with interior grooves *d'*. Upon the spindle *b* are provided the coacting members *a<sup>2</sup> b<sup>2</sup>* of the ratchets, the teeth of the ratchets, as will be seen, being similarly disposed, which members are maintained in engagement with the corresponding parts *a' b'* by means of a helical spring *e*, also disposed upon the spindle *b*. The ratchet members *a<sup>2</sup> b<sup>2</sup>* are rotatably mounted upon the spindle *b*, said members being provided with projections *a<sup>3</sup> b<sup>3</sup>*, which are adapted to enter the grooves *d'*, provided in the cap *d*. By means of these projections it will be seen that the movable ratchet members *a<sup>2</sup> b<sup>2</sup>* are readily rotated with the brake-handle in either direction, while only one or the other of the corresponding ratchet members *a' b'* is rotated, together with its connected spindle *a* or *b*.

For example, assuming that the rotation of the brake-handle in a clockwise direction is intended to control the braking mechanism through the medium of the hollow spindle *a*, it will at once be seen that this movement of said handle brings the teeth of ratchet member *a<sup>2</sup>* into engagement with those of *a'* and rotates the connected spindle *a* in a clockwise direction, thereby setting the brake of the car in the usual manner. The inclined faces of the ratchet members *b' b<sup>2</sup>*, however, are brought into engagement by this rotation of the handle, and in consequence the member *b<sup>2</sup>* slips past *b'*, thereby preventing its actuation. Should the motorman, on the other hand, desire to apply sand to the rails, he would rotate the handle *c* in a contra-clockwise direction, thus engaging the teeth of ratchet members *b' b<sup>2</sup>*, which serves to rotate the spindle *b*, while the ratchet members *a' a<sup>2</sup>* would not operatively engage each other.



Thus it will be seen that the connected apparatus is alternatively actuated by my improved controlling mechanism according to the direction in which the handle is rotated.

5 In connection with the above device there is preferably employed a foot-releasing mechanism, consisting of a lever *f*, which may be depressed by the motorman, thereby momentarily releasing the connected brake or sand-  
10 distributing mechanism through the medium of four relatively-movable ratchet parts which normally engage each other and operatively connect the upper and lower portions of the spindles *a* and *b*. By pressure of the motor-  
15 man's foot this interposed ratchet mechanism *g* is momentarily released, thus permitting the release of the brakes or securing the backward rotation of spindle *b* through the medium of a connected spring *h*, which opposes  
20 the rotation of said spindle. The spring thus immediately prevents the further flow of sand by closing the opening. By employing the secondary ratchet mechanism *g* it will be seen that the motorman may secure the re-  
25 lease of the brakes or shut off the sand without rotating handle *c* merely by pressing upon the foot-lever *f*. Thus the release of either apparatus is effected without actuating the other in any way. For example, when  
30 the handle *c* has been rotated in a clockwise direction to set the brakes the sand-distributing apparatus will remain unaffected by reason of the novel construction of the upper ratchet mechanism. If, however, the said  
35 handle should then be turned in a reverse direction for releasing the brakes, the sand-distributing apparatus would at once be actuated, and accordingly by interposing the secondary ratchet mechanism *g*, controlled by  
40 foot-lever *f*, the motorman is enabled to release the brakes by a pressure of the foot without disturbing or actuating the sand-distributing apparatus, which is alternatively actuated by the reverse rotation of the handle.  
45 It is apparent that the foot-lever *f* when depressed will restore the brake and the sand-distributing mechanism to their normal idle positions. If the brake has alone been applied, a depression of the foot-lever is of course  
50 only followed by a release of the brake, as the normal condition of the sand-distributing mechanism has not been changed, or if the sand-distributing mechanism has alone been actuated it is obvious that a depression of  
55 the foot-lever will only be followed by the restoration of the sand-distributing mechanism to its normal condition, the brake already being released. In other words, although a depression of the foot-lever causes a separation  
60 of the couplings uniting the sections of spindle *a* and the sections of spindle *b* the only effect at the brake and sand-distributing mechanism will be to restore them to their normal positions, so that if the brake is al-  
65 ready released its condition will not be changed, or if the sand-distributing mechanism is in condition to prevent the flow of the

sand its condition will not be changed, so that the foot-lever serves only to restore the braking appliance and the sand-distributing  
70 mechanism to their normal idle conditions and does not affect either of these instrumentalities when in normal condition of use.

It will be understood that modifications may be made in the structure herein shown  
75 and specifically described as embodying my invention without departing from the spirit thereof, and I do not desire to be understood as limiting myself to the precise construction herein shown and described. 80

Having now set forth apparatus illustrative of my invention, what I claim as new, and desire to secure by these Letters Patent, is—

1. In a device of the class described, the combination with two rotatable members *a b*  
85 adapted alternatively to be independently actuated for securing the control of connected parts, of compound ratchet mechanism respectively associated with the said parts, and a controlling or actuating part *c* associated  
90 with the said ratchet mechanism and adapted alternatively to effect the rotation of the parts *a* or *b* in accordance with the direction of movement of the part *c*, substantially as described.
2. In a device of the class described, the  
95 combination with an actuating part or handle *c*, of rotatably-mounted parts *a* and *b* adapted alternatively to be operatively rotated in opposite directions, and interposed ratchet mechanism *a' a''*, *b' b''*, respectively associated with  
100 the parts *a* and *b* and adapted alternatively to transmit the corresponding motions of the actuating part *c* in accordance with its direction of rotation, substantially as described.
3. The combination with handle *c*, of spin-  
105 dles *a* and *b* adapted alternatively to be operatively rotated in opposite directions, whereby connected parts are brought into actuation, and ratchet mechanism *a' a''* and *b' b''* respectively associated with the parts *a* and *b*, said  
110 ratchet mechanism being interposed between the same and the actuating-handle *c*, whereby spindle *a* or *b* is rotated, in accordance with the direction of rotation of part *c*, substantially as described. 115
4. The combination with handle *c*, of spin-  
120 dles *a* and *b* adapted to be operatively rotated in opposite directions, whereby connected parts are brought into actuation, ratchet mechanism *a' a''* and *b' b''* respectively associated with the parts *a* and *b*, said ratchet mechanism being interposed between the same and the actuating-handle *c*, whereby  
125 spindle *a* or *b* is rotated, in accordance with the direction of rotation of part *c*, a secondary clutch *g*, and a releasing-lever *f* adapted temporarily to disconnect operative portions of the spindles *a* and *b*, substantially as described.
5. In a device of the class described, the  
130 combination with a rotatably-mounted handle *c* having a grooved cap *d*, of ratchet mechanism *a' a''* and *b' b''*, one member of each appliance having parts adapted to engage the



grooves in part *d*, whereby the same are rotated, and spindles *a b* respectively connected with opposing members of the ratchet mechanism, whereby said spindles are alternatively rotated, according to the direction of rotation of the handle *c*, substantially as described.

6. In a device of the class described, the combination with a rotatably-mounted handle *c*, having a grooved cap *d*, of ratchet mechanism *a' a''* and *b' b''*, one member of each appliance having parts adapted to engage the grooves in part *d*, whereby the same are rotated, spindles *a b* respectively connected with opposing members of the ratchet mechanism, whereby said spindles are alternatively rotated, according to the direction of rotation of the handle *c*, a secondary clutch *g*, and a releasing-lever *f* adapted temporarily to disconnect operative portions of the spindles *a* and *b*, substantially as described.

7. In a device of the class described, the combination with a grooved cap *d* connected with the actuating-handle *c*, of compound ratchet mechanism *a' a''*, *b' b''*, the members *a' b'* of which are adapted to engage the grooves in part *d* and be rotated thereby. spindles *a b* respectively connected with ratchet members *a'*

and *b'* and adapted to be alternatively actuated thereby, the teeth of said ratchet mechanism being similarly arranged to secure such rotation, and a spring *e* adapted to maintain the ratchet members in engagement, substantially as described.

8. In a device of the class described, the combination with a grooved cap *d* connected with the actuating-handle *c*, of compound ratchet mechanism *a' a''*, *b' b''*, the members *a' b'* of which are adapted to engage the grooves in part *d* and be rotated thereby, spindles *a b* respectively connected with ratchet members *a'* and *b'* and adapted to be alternatively actuated thereby, the teeth of said ratchet mechanism being similarly arranged to secure such rotation, a spring *e* adapted to maintain the ratchet members in engagement, a secondary clutch *g*, and a releasing-lever *f* adapted temporarily to disconnect operative portions of the spindles *a* and *b*, substantially as described.

In witness whereof I hereunto subscribe my name this 18th day of March, A. D. 1899.

EMIL BERTHOLD WALTER REICHEL.

Witnesses:

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