

No. 751,120.

PATENTED FEB. 2, 1904.

W. W. TICE.
ELECTRICAL CONTROLLER AND BRAKE OPERATING DEVICE.

APPLICATION FILED APR. 7, 1903.

NO MODEL.

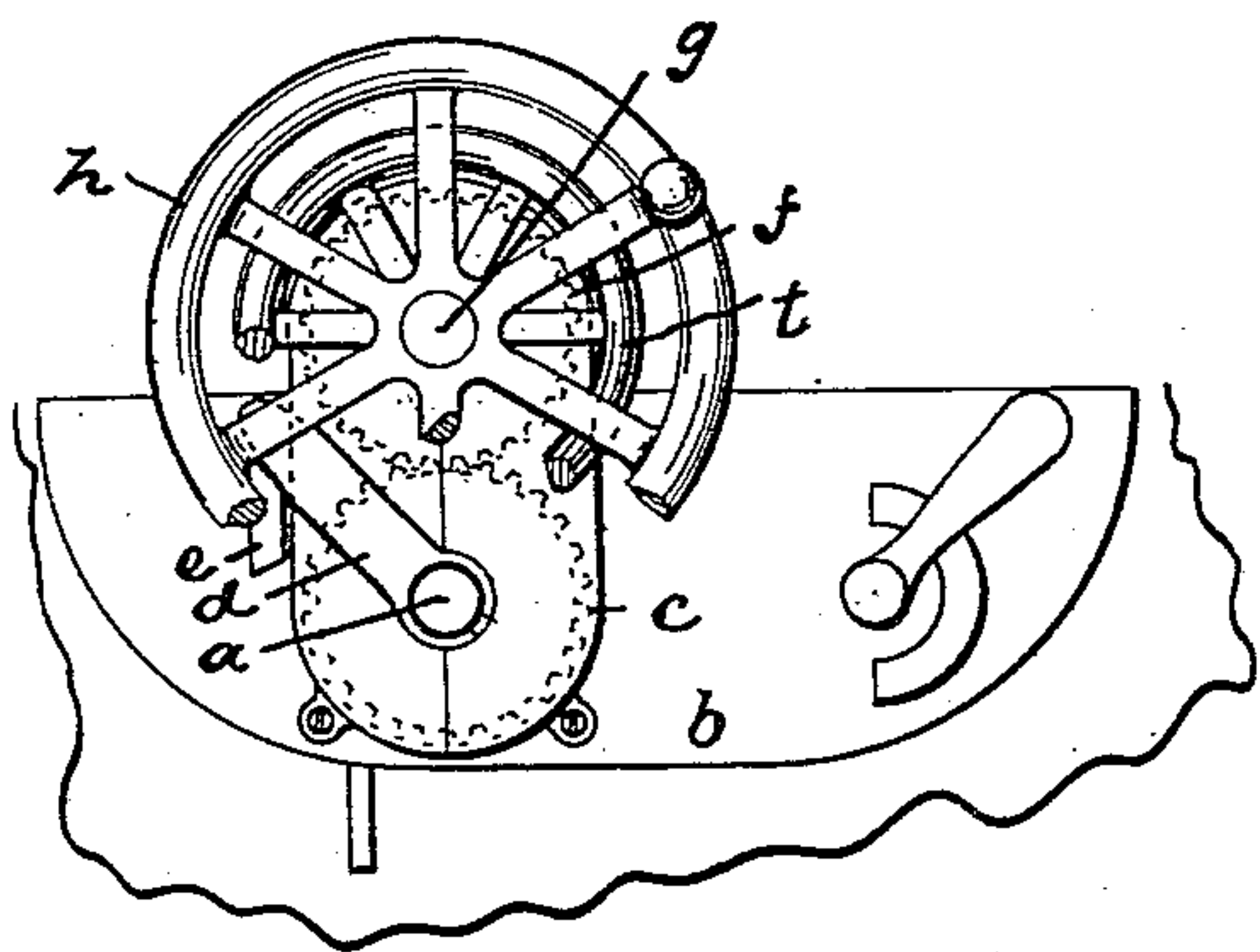


Fig. 1.

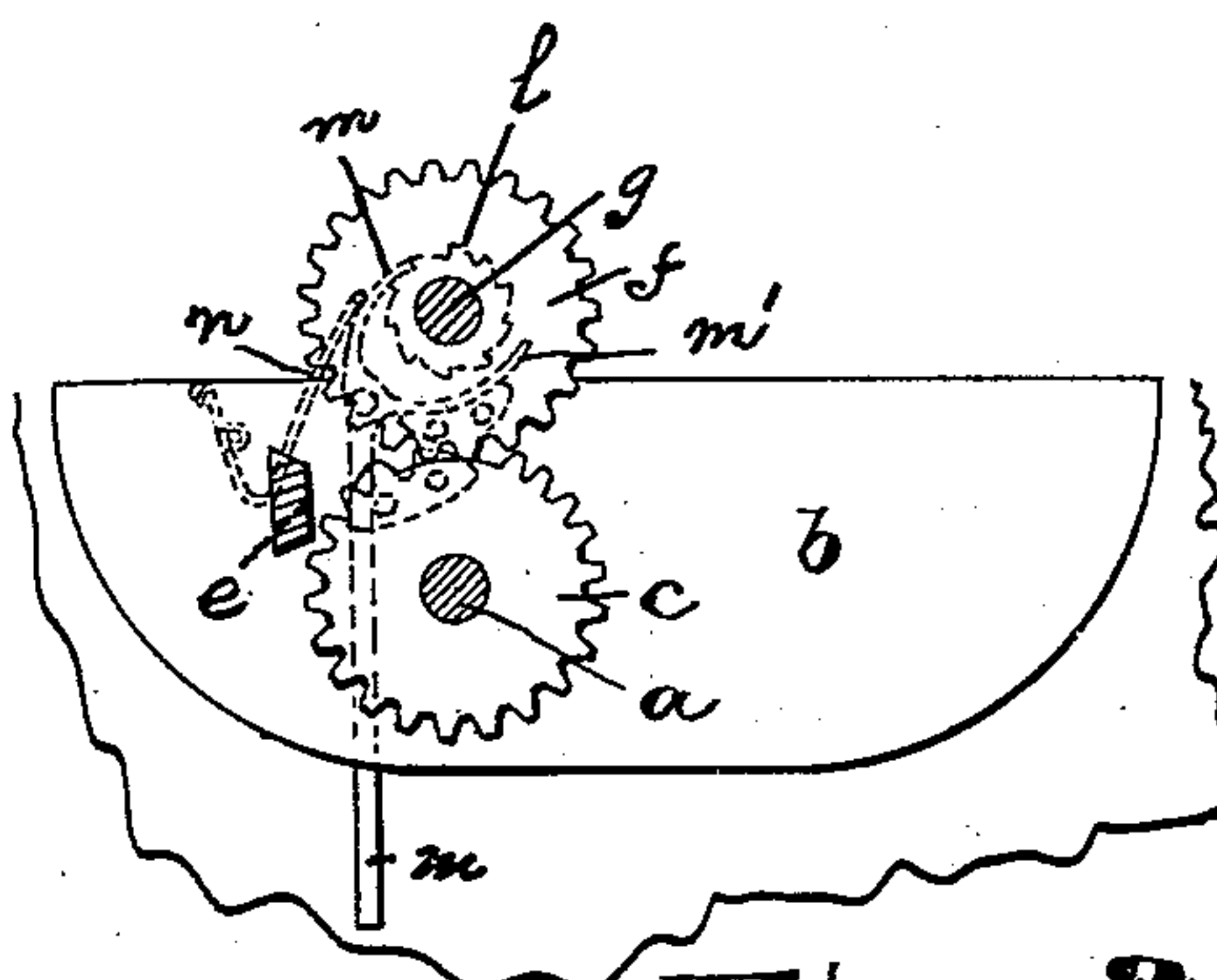


Fig. 2.

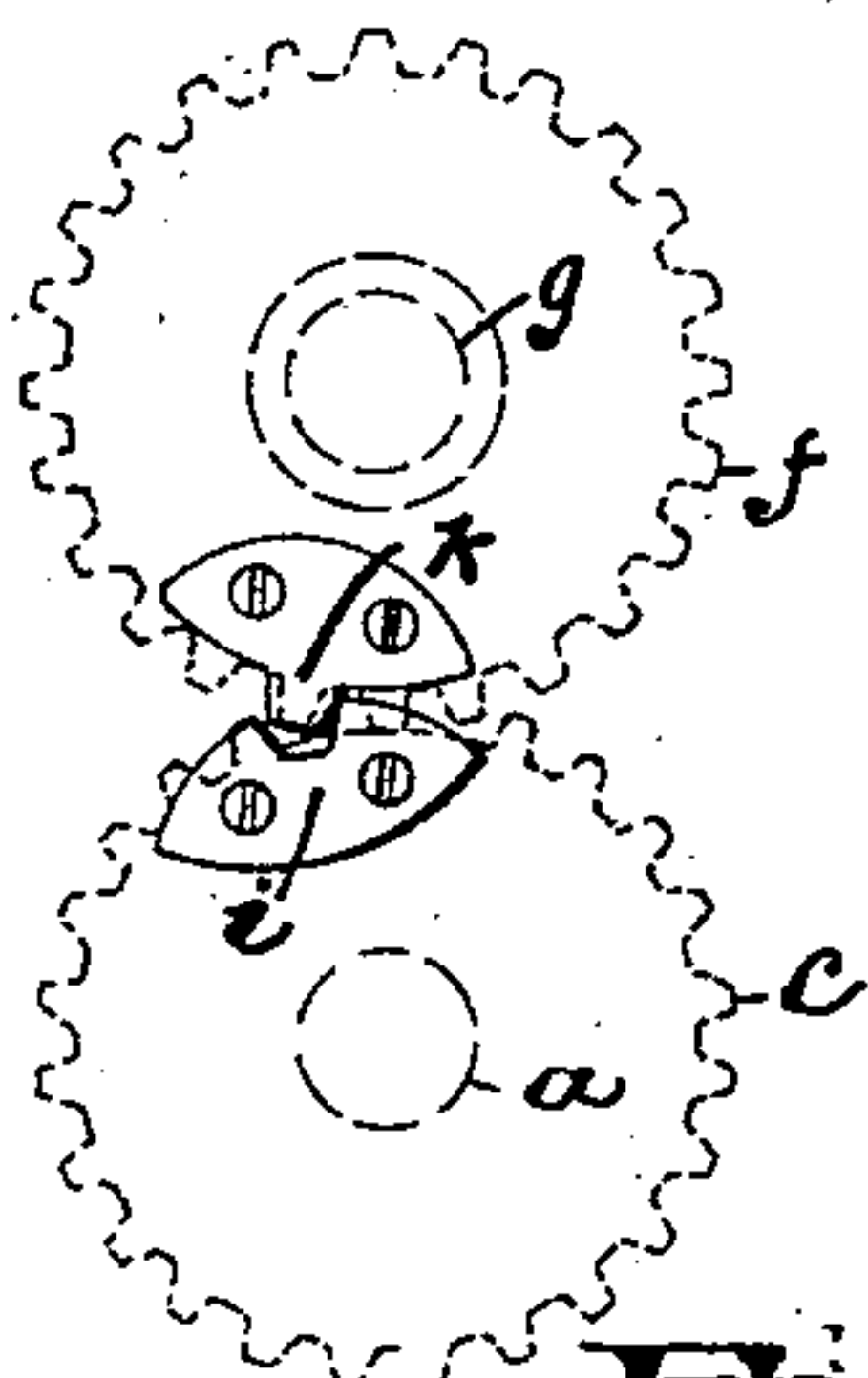


Fig. 3.

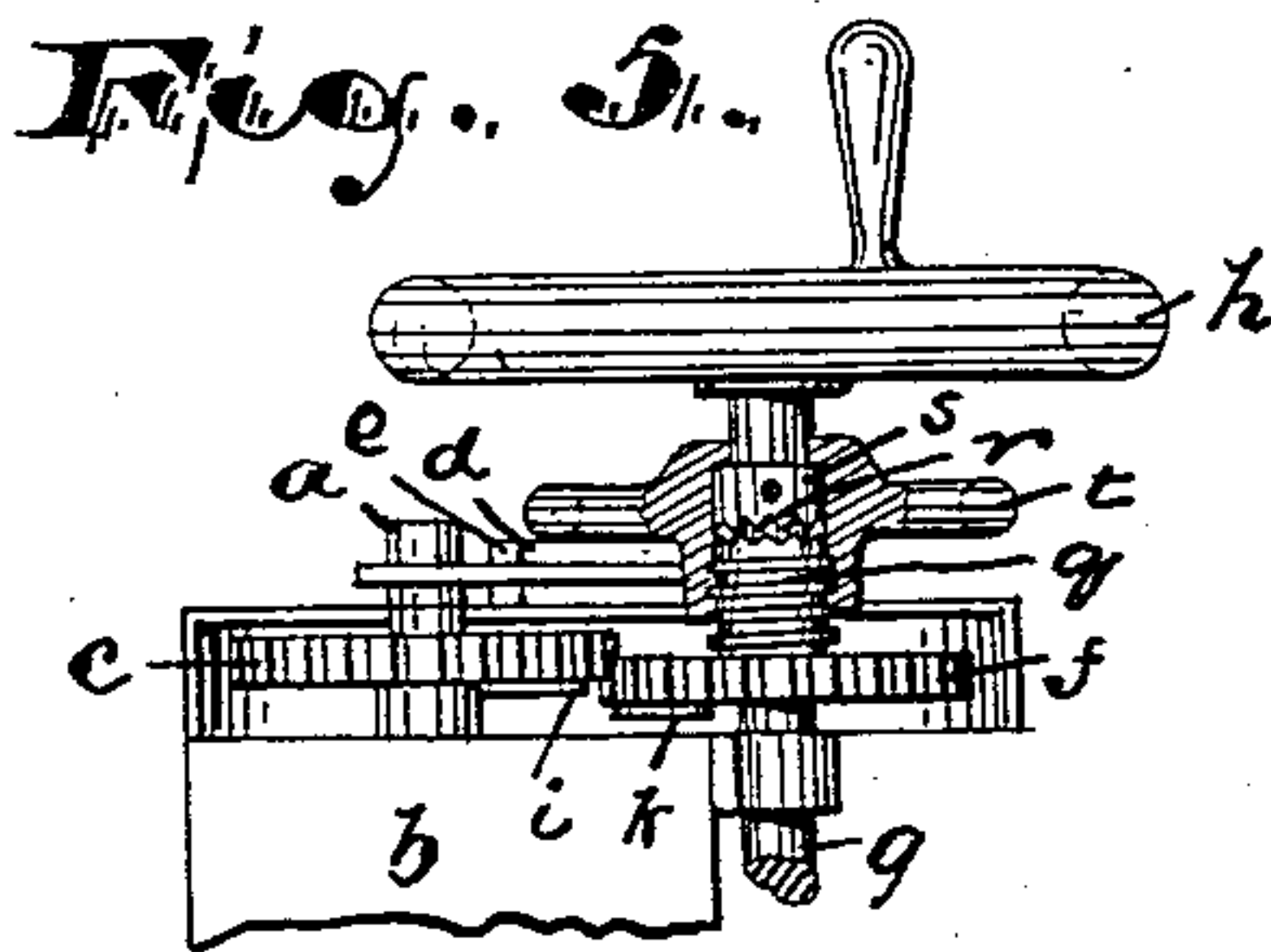
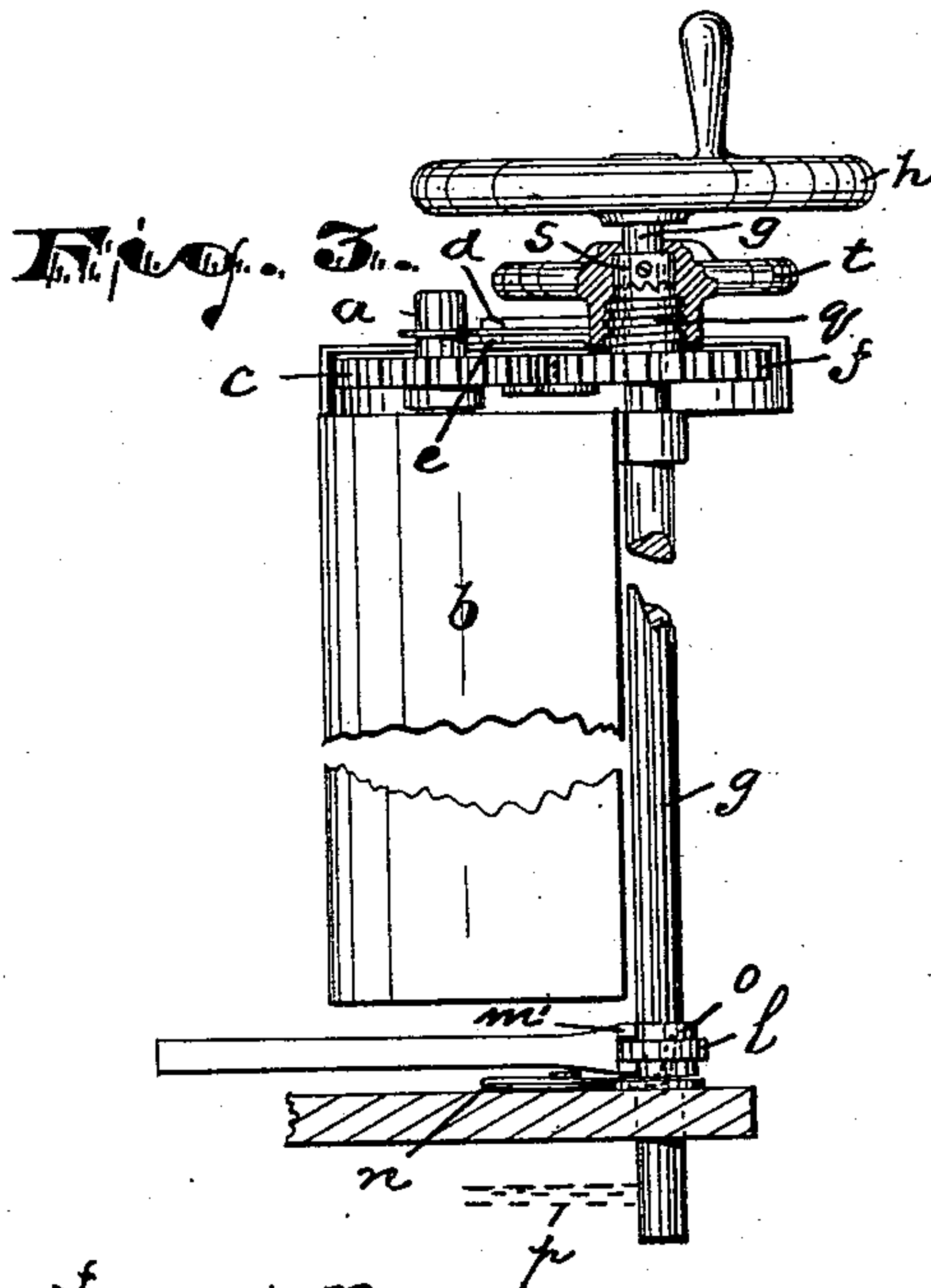


Fig. 5.

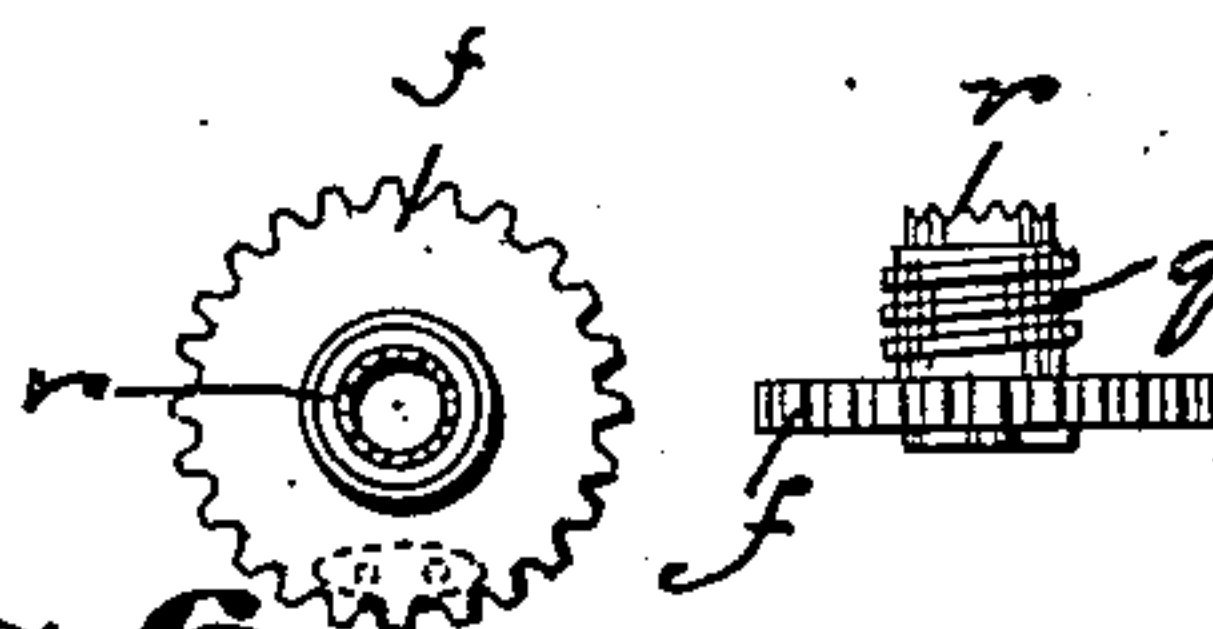


Fig. 6.

WITNESSES.

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WALTER W. TICE, OF RAHWAY, NEW JERSEY.

ELECTRICAL CONTROLLER AND BRAKE-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 751,120, dated February 2, 1904.

Application filed April 7, 1903. Serial No. 151,432. (No model.)

To all whom it may concern:

Be it known that I, WALTER W. TICE, a citizen of the United States, residing at Rahway, in the county of Union and State of New Jersey, have invented and produced new and original Improvements in Electrical Controller and Brake-Operating Devices; 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 which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of electrical controller and brake-operating devices represented by the one shown in my prior patent, No. 675,027, dated May 28, 1901, the objects of the present improvements being to simplify the construction, to enable the hand-wheel thereof to be operated by the motor-man from right to left after the manner of a brake wheel or handle heretofore commonly employed, and thereby to avoid the confusion due to a change from ordinary methods of operations, to secure a more positive and quick application of braking-power, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the combined electrical controller and brake-operating devices and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a plan of my improved device, partly broken away. Fig. 2 is a horizontal section showing more clearly the construction of certain cog-wheels. Fig. 3 is a front elevation of the device, partly broken away. Fig. 4 shows the means employed for bringing certain cog-wheels into meshing relation. Fig. 5 is a detail view showing the controller out of operative relation to the brake. Fig. 6 is a detail plan, and Fig. 7 a side elevation,

of a cog-wheel employed in connection with other power-transmitting means of my device.

In said drawings, *a* indicates an ordinary controller-shaft adapted to extend into the controller-case *b* of a trolley or other electric car or vehicle and operate the electrical mechanism therein in any ordinary manner. At or near the top of said controller-shaft *a* is arranged a gear-wheel *c*, from which several of the cogs or teeth are missing, as shown more clearly in Fig. 2. Said shaft *a* is also provided with a stop-arm *d*, adapted to engage a cooperating stop *e* (rigidly formed or fastened upon the top of the case *b*) when the said shaft has been turned completely to its "off" position or fully to its "on" position. The gear-wheel *c* upon the said shaft *a* is disposed so that the said wheel *c* will lie at its off position when the missing teeth thereof are brought to the point nearest the cooperating cog-wheel *f*, whereby the said cog-wheel *f* after the power has been cut off may be turned to effect a movement irrespective of the cog-wheels *c*; but when the teeth of the wheels *c* and *f* are in intermeshing relation the wheels turn together, as will be evident. The cog-wheel *f* is arranged upon a brake-shaft *g* in connection with a hand-wheel *h*, and thus when it is desired to brake the movement of the car it is only necessary to turn the hand-wheel and shaft *g* and with it the cog-wheels *c* and *f* and shaft *a*. When the electrical power is fully on, the movement of the shaft *g*, hand-wheel *h*, and cog-wheel *f* may be continued independent of the electric controller until the brakes are applied hard to the wheels to prevent their further rotation.

In connection with the wheels *c* and *f* I have provided an apertured plate *i*, which may be secured or be integrally formed thereon, and in connection with the cog-wheel *f*, either integrally therewith or otherwise, I provide a finger or tooth *k*. These are so disposed in relation to one another as that when it is desired to turn on the electrical power the said finger *k* will after the brake is released enter the recess of the plate *i*, and thus start the movement of the cog-wheel *c* and bring the cogs of the two wheels *c* and *f* into intermesh-

ing engagement. The finger *h* upon the cog-wheel *f*, however, is so disposed that there will be no engagement with the coöperating apertured part until the vehicle-wheel is fully released from the braking power of the brake-shoe, as will be understood.

Near the platform of the car or vehicle, convenient to be operated by the motorman's foot, the shaft *g* is provided with ratchet-teeth *l*, adapted to be engaged by a pawl-lever *m*, operable by the motorman's foot, by means of which parts the said shaft *g* may be maintained in its braking position after the releasing of the hands from the wheel *h*. Said pawl-lever *m* is normally held in contact with the ratchet by a spring *n*, suitably attached to the platform or other fixture.

In connection with the foot-lever *m* I prefer to employ frictional fingers *m'*, adapted to contact with the collar *o*, upon which the ratchet-teeth *l* are formed, the said friction-fingers entering into frictional contact with said collar by force of the foot when the pawl is released. By means of the frictional contact of said fingers with the said collar the movement of the shaft *g* is retarded and will not rotate with too great force under the power of the brake-chain *p*.

It is sometimes desirable to operate the brake of the vehicle without at the same time operating the controller, and for this reason I prefer to provide the cog-wheel *f* with a threaded hub *q*, having clutch-teeth *r*, and to arrange said cog-wheel loose upon the shaft *g*. The said shaft is then provided with a fixed collar *s*, having coöperating clutch-teeth. Said fixed collar supports a loose hand-wheel *t*, interiorly threaded to engage the threads of the cog-wheel *f*. By turning said hand-wheel *t* on the shaft *g* the cog-wheel *f* may be lowered out of engagement with the wheel *c*, and power and movement will thus not be transmitted to the controller, but the brake may be operated at will.

Having thus described the invention, what I claim as new is—

1. The combination with the electric controller-shaft and brake-shaft, of cog-wheels *c*, *f*, arranged respectively on said shafts and directly engaging one another, one of said cog-wheels having teeth omitted, and a hand-wheel arranged on the brake-shaft, substantially as set forth.

2. The combination with the electric controller-shaft and brake-shaft, of cog-wheels *c* and *f*, arranged respectively on said shafts, and directly engaging one another, one of said

cog-wheels having teeth omitted and permitting an independent movement of the cog-wheel of the brake-shaft with reference to the cog-wheel of the controller-shaft and a finger and apertured arm or plate arranged on said cog-wheels to bring said cog-wheels into intermeshing relation and means for turning the brake-shaft, substantially as set forth.

3. The combination with the controller-shaft, of a cog-wheel *c*, having at one side teeth omitted and an aperture, a cog-wheel having a finger to enter said aperture, a brake-shaft carrying the last-named cog-wheel and a hand-wheel *h*, substantially as set forth.

4. The combination with the controller-shaft, of two engaging cog-wheels, one cog-wheel being fastened upon said controller-shaft and having teeth omitted, and the other cog-wheel being fastened upon a brake-shaft and being provided with a threaded part, said brake-shaft having a handle whereby it may be rotated by the motorman and having a clutch member fixed thereon and a threaded handle arranged on said brake-shaft and engaging the threaded part of the said other cog-wheel whereby said cog-wheel may be raised or lowered to or from engagement with its coöperating cog-wheel, substantially as set forth.

5. The combination with the controller and its shaft *a*, of a cog-wheel *c*, arranged on said shaft, a second cog-wheel immediately engaging said cog-wheel *c*, and having movements both with and independent of the first said cog-wheel, the said second cog-wheel being arranged on a brake-shaft with a handle *h*, and having a threaded hub and clutch member said brake-shaft having said handle *h*, and a clutch member fixed to said shaft and means for effecting an engagement and release of the said clutch members, substantially as set forth.

6. The combination with the controller and its shaft *a*, of a cog-wheel *c*, on said shaft having teeth omitted and having an apertured plate, a second cog-wheel immediately engaging said cog-wheel *c*, and having a finger *h*, threaded hub and clutch member, a brake-shaft carrying said cog-wheel *c*, and having a handle *h*, fixed clutch member and a threaded handle engaging the said threaded hub, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of March, 1903.

WALTER W. TICE.

Witnesses:

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C. B. PITNEY.