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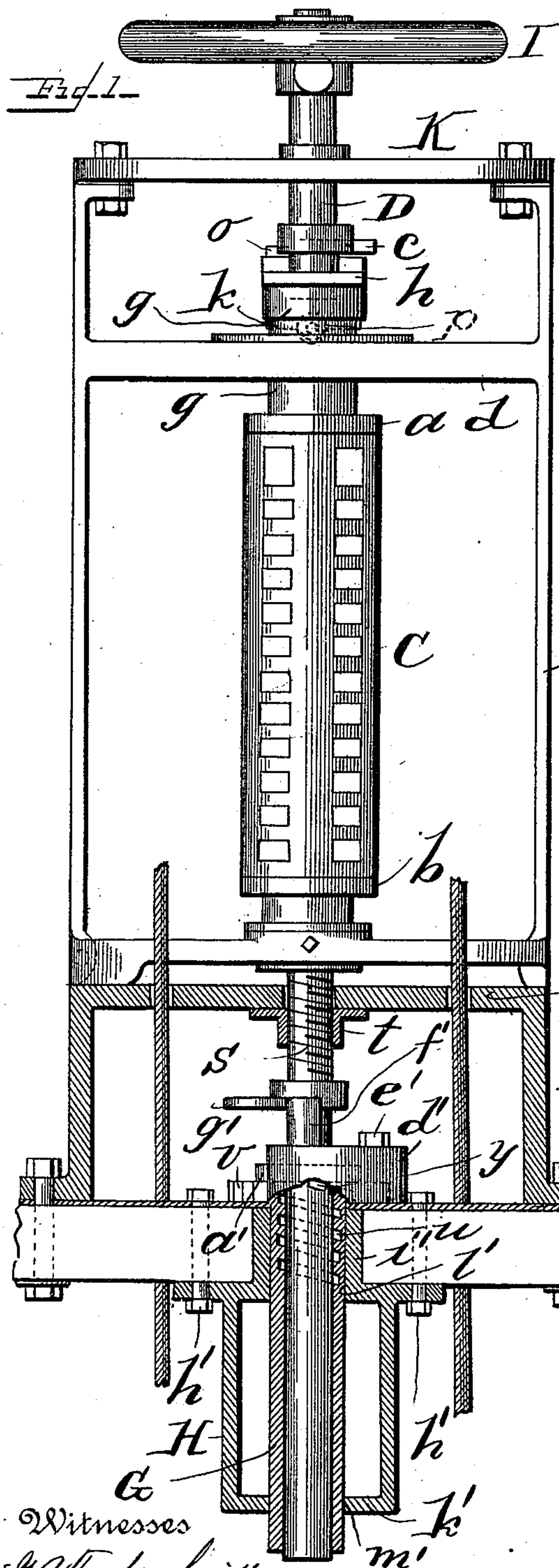
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W. H. CONRAD.

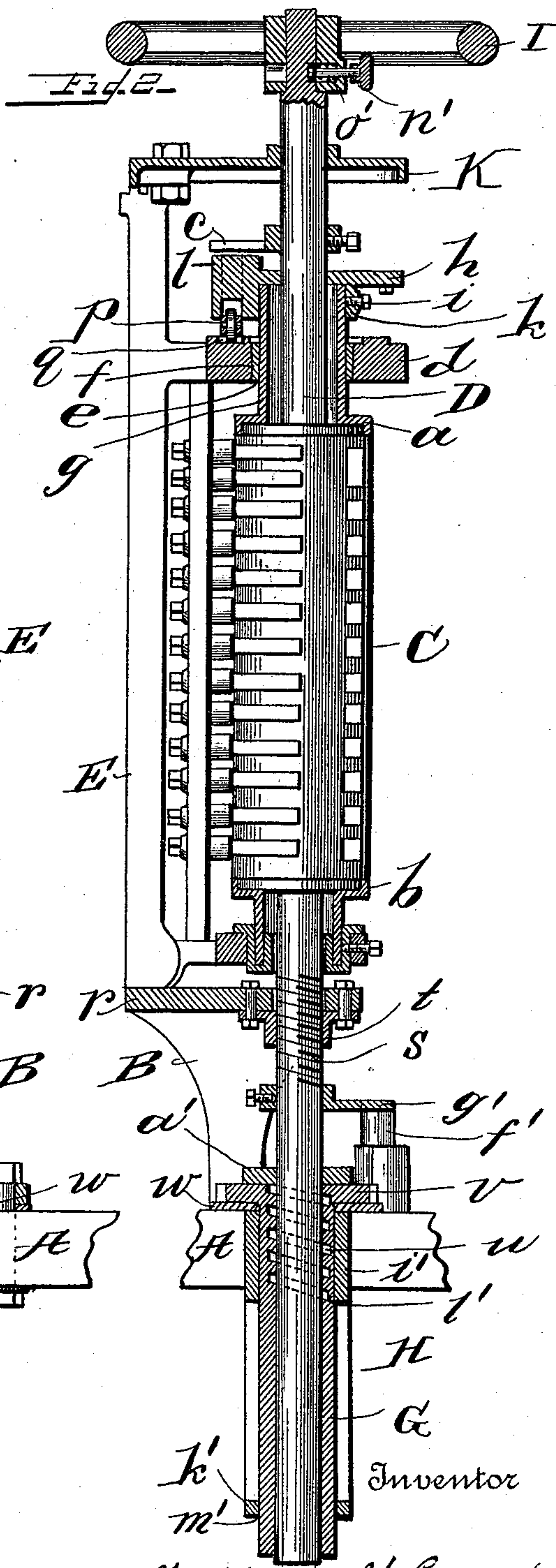
CONTROLLING DEVICE FOR ELECTRIC RAILWAY CARS.

No. 525,336.

Patented Sept. 4, 1894.



Witnesses
D. A. Tauberschmitt
M. A. Reinohl



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(No Model.)

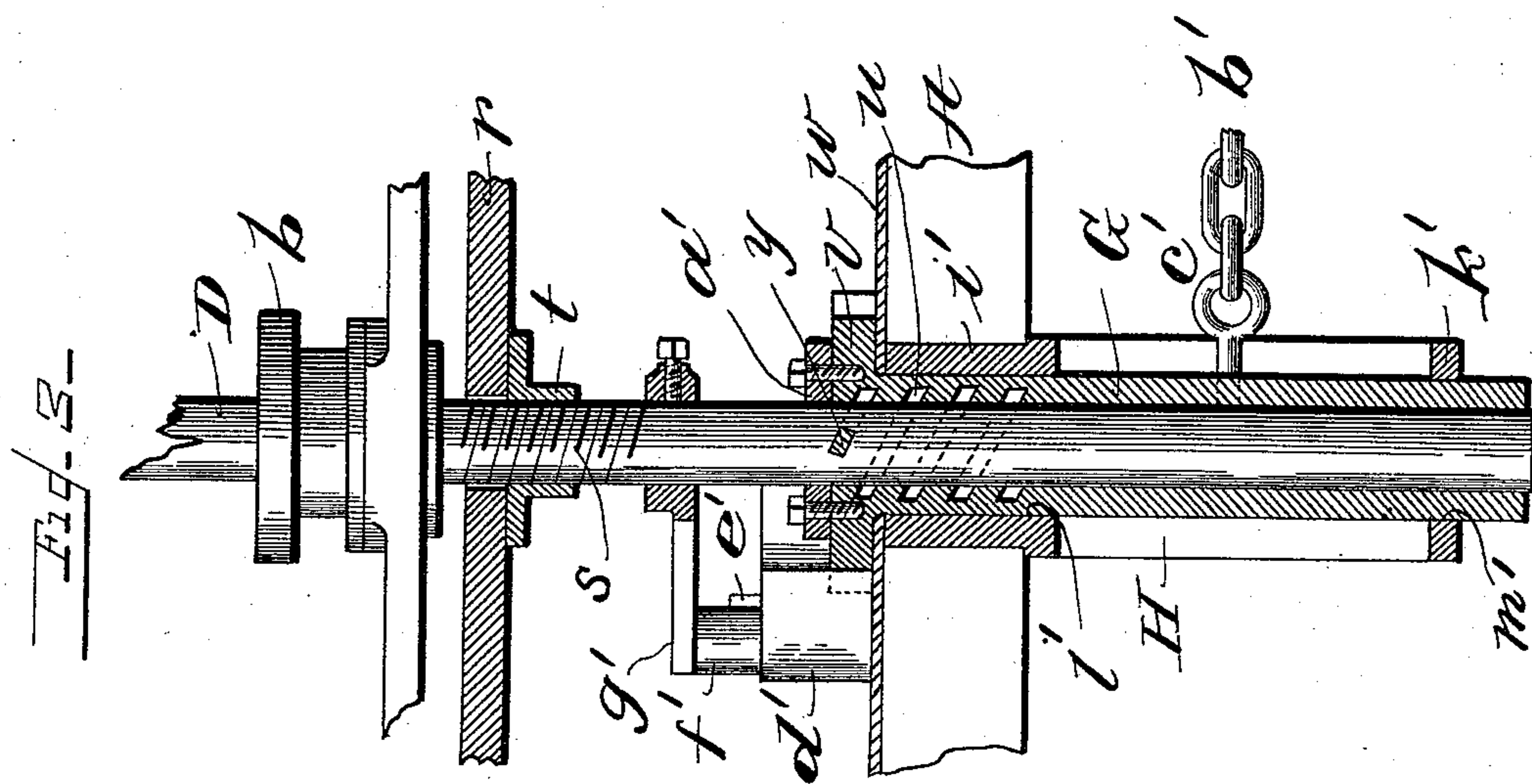
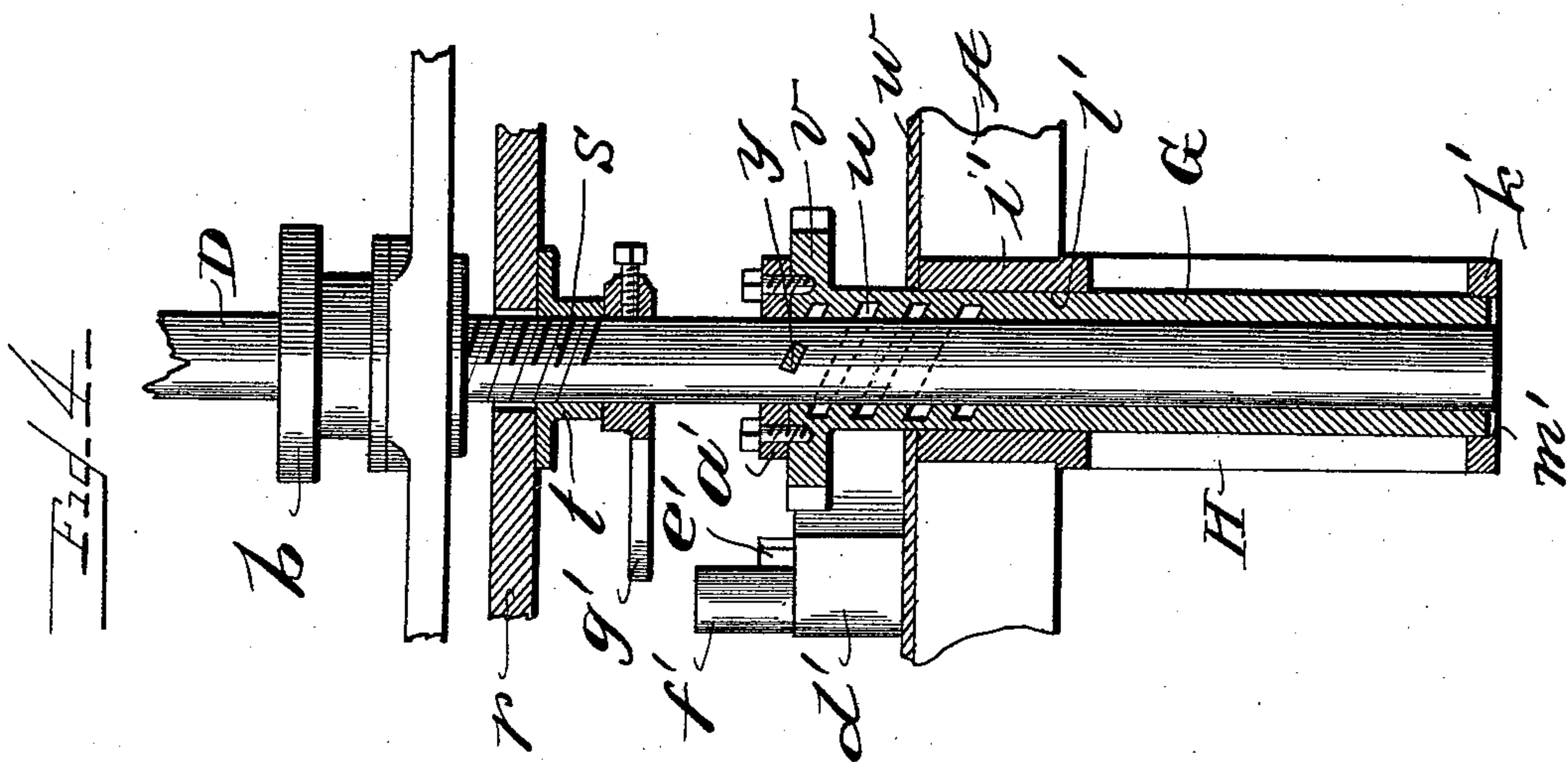
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Fig. 5.

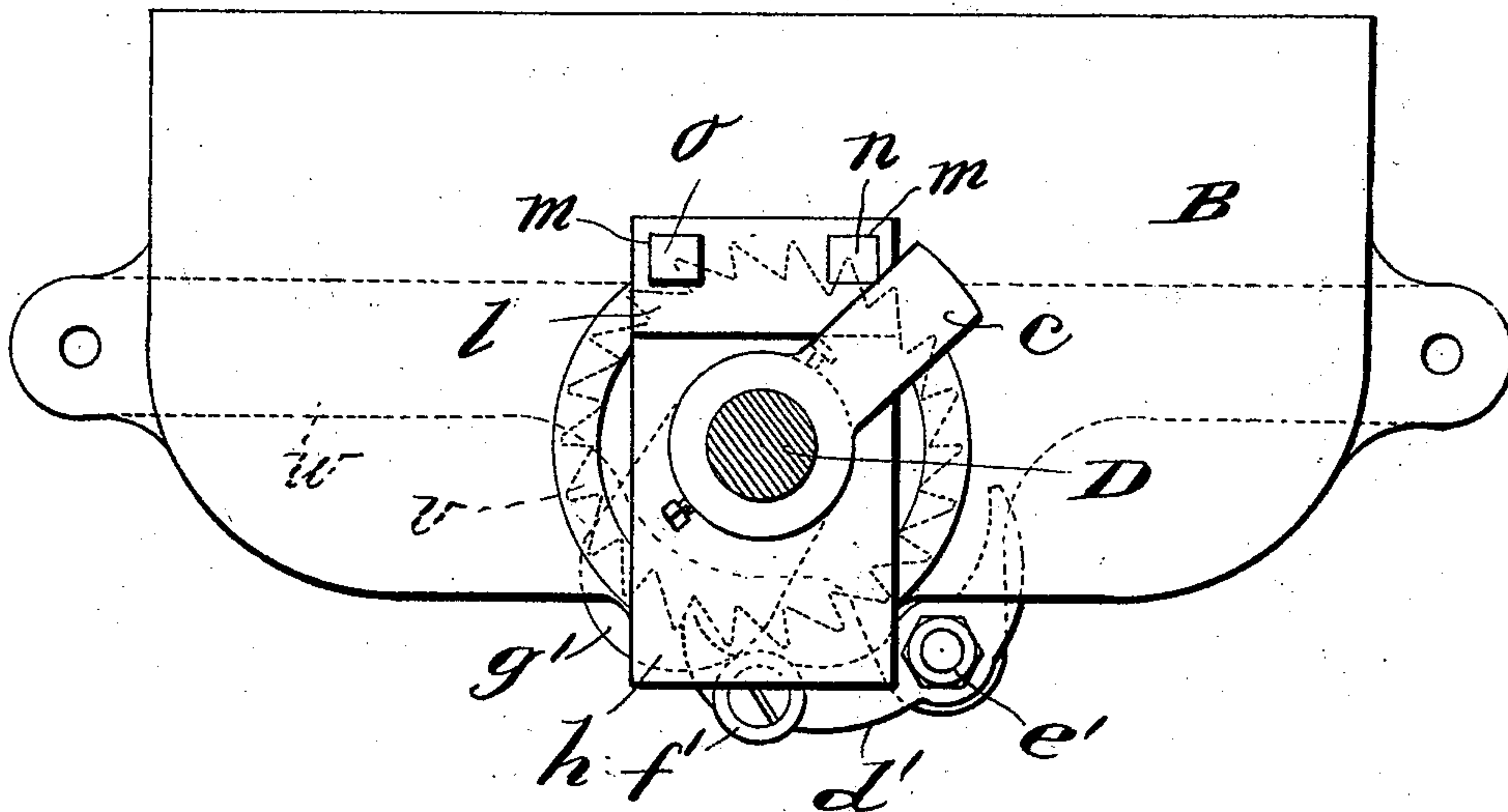


Fig. 6.

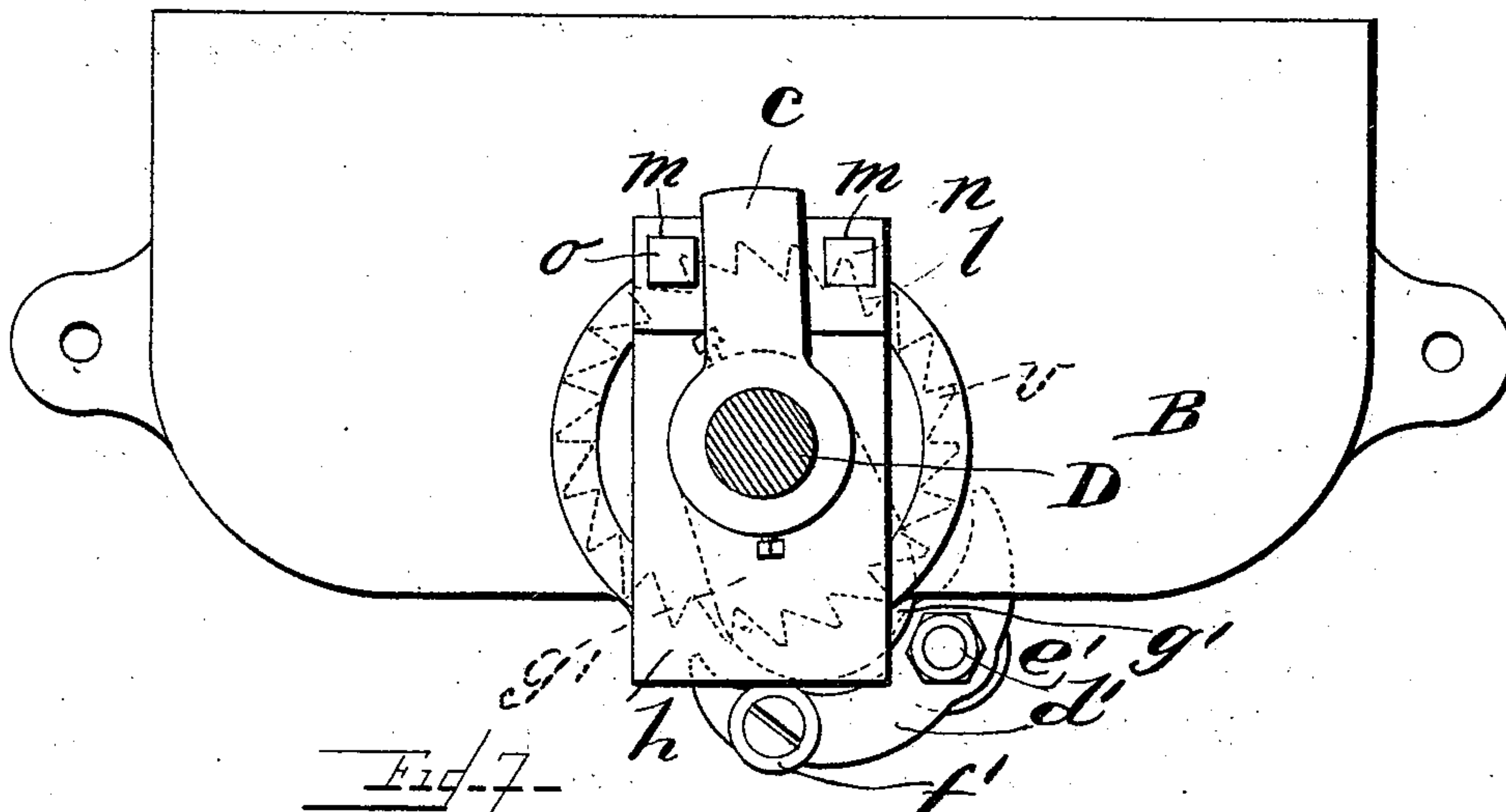
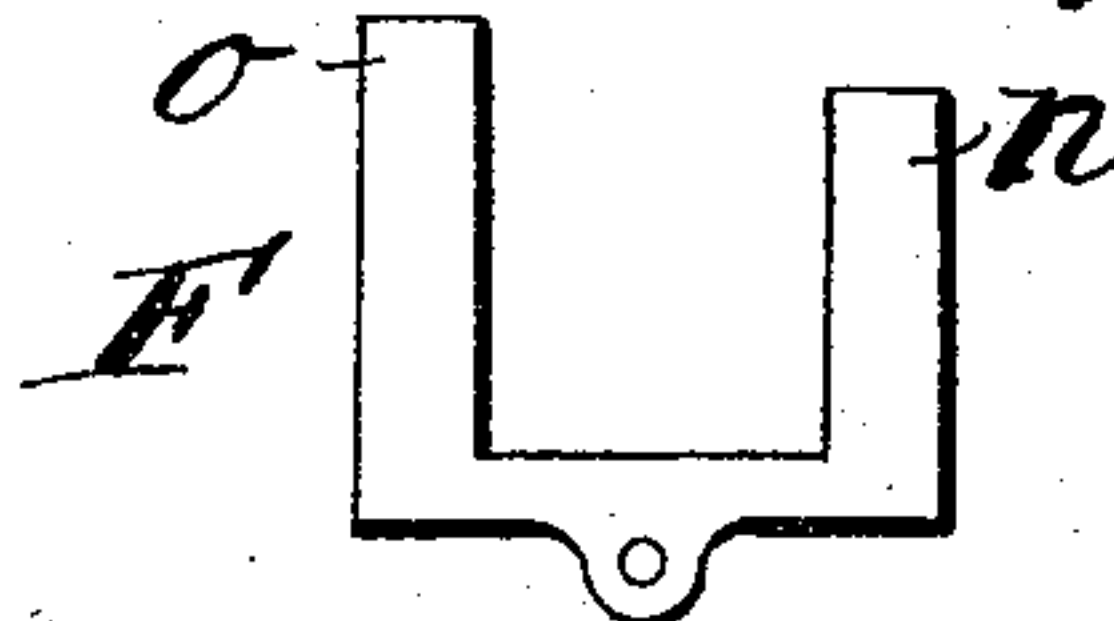


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PLACE.

CONTROLLING DEVICE FOR ELECTRIC-RAILWAY CARS.

SPECIFICATION forming part of Letters Patent No. 525,336, dated September 4, 1894.

Application filed January 8, 1894. Serial No. 496,122. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY CONRAD, a citizen of the United States, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Controlling Devices for Electric-Railway Cars; 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.

My present invention relates to electric railway cars, and has for its object improvements on the device shown in Patent No. 506,001, granted October 3, 1893, to William P. Coldren, for controlling device for electric railway cars, whereby the current of electricity is controlled and the power brake applied and released by the use of a single lever. The device employed affords ready and effective means for releasing the brake and turning on the current, or turning off the current and applying the brakes. In either event the current of electricity and the brakes cannot be on at the same time, while the current and the brake are in full control of the motor-man so that he can with one hand operate both.

The special feature of improvement in this invention lies in the means employed for preventing the car when on an inclined part of the road way starting back during the time which elapses between the releasing of the brake and the application of the current of electricity to start the car, which occurs in all other single lever controlling devices of which I have knowledge, and results in a sudden jar or jerk to the car and its occupants.

The invention will be fully disclosed in the following specification and claims.

In the accompanying drawings which form part of this specification, Figure 1 represents a rear elevation of my invention partly in section; Fig. 2 a vertical section showing the switch in elevation; Fig. 3 a vertical section on an enlarged scale of the brake controlling mechanism, showing the brake-chain sleeve down or in its normal position when the brake is off or released; Fig. 4 a like view showing the brake-chain sleeve raised or elevated, or

in the position which it occupies when the brake is on; Fig. 5 a top plan view showing the position of the parts when the current is off and the brake on; Fig. 6 a like view showing the position of the same parts when the brake has been released and the current is about to be turned on, and Fig. 7 a side view of the yoke detached.

Reference being had to the drawings and the letters thereon, A indicates the platform of a car, B a base, and C a controller or switch such as is used on electrical cars, and may be of any approved construction, as it forms no part of my present invention. The switch shown is supported between an upper head *a* and a lower head *b*, surrounds the shaft D which in the present construction passes through the switch-cylinder without coming in contact therewith, and is operated to turn the current of electricity on or off by means of an arm *c* secured to the shaft D, as will hereinafter more fully appear.

E indicates a frame which rests upon the base B, and through the upper end *d* of which is a cylindrical opening *e* provided with a bushing *f*, and through the bushing extends the sleeve *g* of the head *a*, and on the upper end of the sleeve *g* rests a plate *h* and is secured thereto to revolve therewith by a set-screw *i*. The plate *h* is provided with a socket *k* on its lower side into which the sleeve *g* extends, and on one end is thickened at *l*, through which thickened portion are openings *m, m*, into which the arms *n, o*, of the yoke F extend and move vertically therein. To the lower end of the yoke is secured a wheel *p* upon which the yoke rests and travels on the upper surface of the upper end of the frame E as the plate *h* is turned to, the right or left to turn the current of electricity on or off. In turning the plate *h* to the left to turn on the current, the arm *c* engages the long arm *o* of the yoke F and transmits motion to the heads *a* and *b* and turns the switch C on its axis; and in turning off the current the arm *c* is turned to the right, engages the short arm *n* of the yoke and turns the switch on its axis in the opposite direction until the wheel *p* drops into the recess *q* in the upper surface of the

end *d* of the frame E, at which point the current is cut off. The device as thus far constructed does not differ substantially from that shown in the patent to which reference
5 has been made.

The shaft D passes through the plate *r* of the base B, is screw-threaded at *s* and engages a nut *t* secured to the plate *r*, which screw-thread *s* and nut *t* cause the shaft to
10 rise and fall as it is revolved. Surrounding the shaft D at the lower end is a sleeve G which is internally screw-threaded at *u* and is provided with a ratchet wheel *v* which normally rests upon the platform A with a piece
15 of metal *w* interposed to reduce friction and wear, and the shaft is provided with a stud *y* which engages the thread *u* in the sleeve G and causes the sleeve to revolve on the shaft. The sleeve is secured in position on the shaft
20 by a plate *a'* secured to the upper surface of the ratchet wheel *v*, and to the sleeve is secured the brake chain *b'* by an eye-bolt *c'*, and the ratchet wheel and the sleeve are held in position after the brake has been applied
25 by a pawl *d'*, secured to the platform by a bolt *e'* and is provided with a friction roller *f'* which is engaged by an arm *g'* secured to the shaft D to disengage the pawl from the ratchet-wheel when it is desired to release
30 the brake. The sleeve G operates in a stirrup H secured to the under side of the platform by bolts *h' h'*, and is provided with an upward cylindrical extension *i'* and a bar *k'* at the lower end, which extension and bar are
35 provided with openings *l' m'* through which the sleeve moves vertically.

The arm *c* which turns on and off the current, and the arm *g'* which trips the pawl *d'*, project from opposite sides of the shaft D and
40 are so set that when the arm *g'* has disengaged the pawl, the arm *c* is in position to engage the arm *o* of the yoke F and instantly turn on the current, as shown in Fig. 6; and in Fig. 5, the position of said arms is shown
45 as the arm *g'* engages the friction roller *f'* of the pawl *d'*.

In putting on the brake the shaft D is revolved to the right and the sleeve G rises with the shaft as the chain is wound around the
50 sleeve, this vertical movement of the shaft being effected by the screw-thread *s* and nut *t*; and when the brake is released and the shaft D revolved in the opposite direction the sleeve is also revolved and the brake-chain
55 unwound by the spring of the brake mechanism, and the sleeve resumes its normal position shown in Figs. 1, 2, and 3. The pawl is thrown into engagement with the ratchet-

wheel by the foot of the motor-man. The current having been turned on, the shaft D
60 is in its lowest position, and the arm *c* will engage the short arm *n* of the yoke F to turn off the current as the shaft is revolved toward the right through the medium of the
65 hand-wheel I, which wheel is secured on the shaft D by means of a pin *n'* and spring *o'*.

To the upper end of the frame E is secured a cover K for the sheet metal casing (not shown) which usually surrounds the switch
70 and rests upon the platform of the car.

The controlling device thus constructed enables the motor-man to release the brakes and apply the current in such close succession, that a car standing on a declining grade cannot recede, and thereby prevents the jar attending this class of structures.
75

Having thus fully described my invention, what I claim is—

1. The combination of an electrical switch or controller, a shaft provided with means for
80 turning on and off the current, a revoluble sleeve secured to said shaft, a ratchet wheel secured to the sleeve, a pawl, and an arm on the shaft to release the pawl and a brake-chain attached to said sleeve.
85

2. The combination of an electrical switch or controller, a shaft provided with means for turning on and off the current, a revoluble and vertically movable sleeve secured to said
90 shaft, a ratchet wheel secured to the sleeve, a pawl, and an arm on the shaft to release the pawl and a brake-chain attached to said sleeve.

3. The combination of an electrical switch or controller, a shaft provided with means for
95 turning on and off the current, a revoluble sleeve having an internal screw-thread, a stud on the shaft engaging the screw-thread, a ratchet wheel secured to the sleeve, a pawl, and an arm on the shaft to release the pawl
100 and a brake-chain attached to said sleeve.

4. The combination of an electrical switch or controller, a shaft and means for turning on and off the current, a revoluble sleeve secured to said shaft, a ratchet wheel secured
105 to the sleeve, a pawl, and an arm on the shaft to release the pawl a stirrup through which said shaft and sleeve pass and a brake-chain attached to said sleeve.

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

WILLIAM HENRY CONRAD.

Witnesses:

L. B. STAGER,
JOHN B. GROH.