

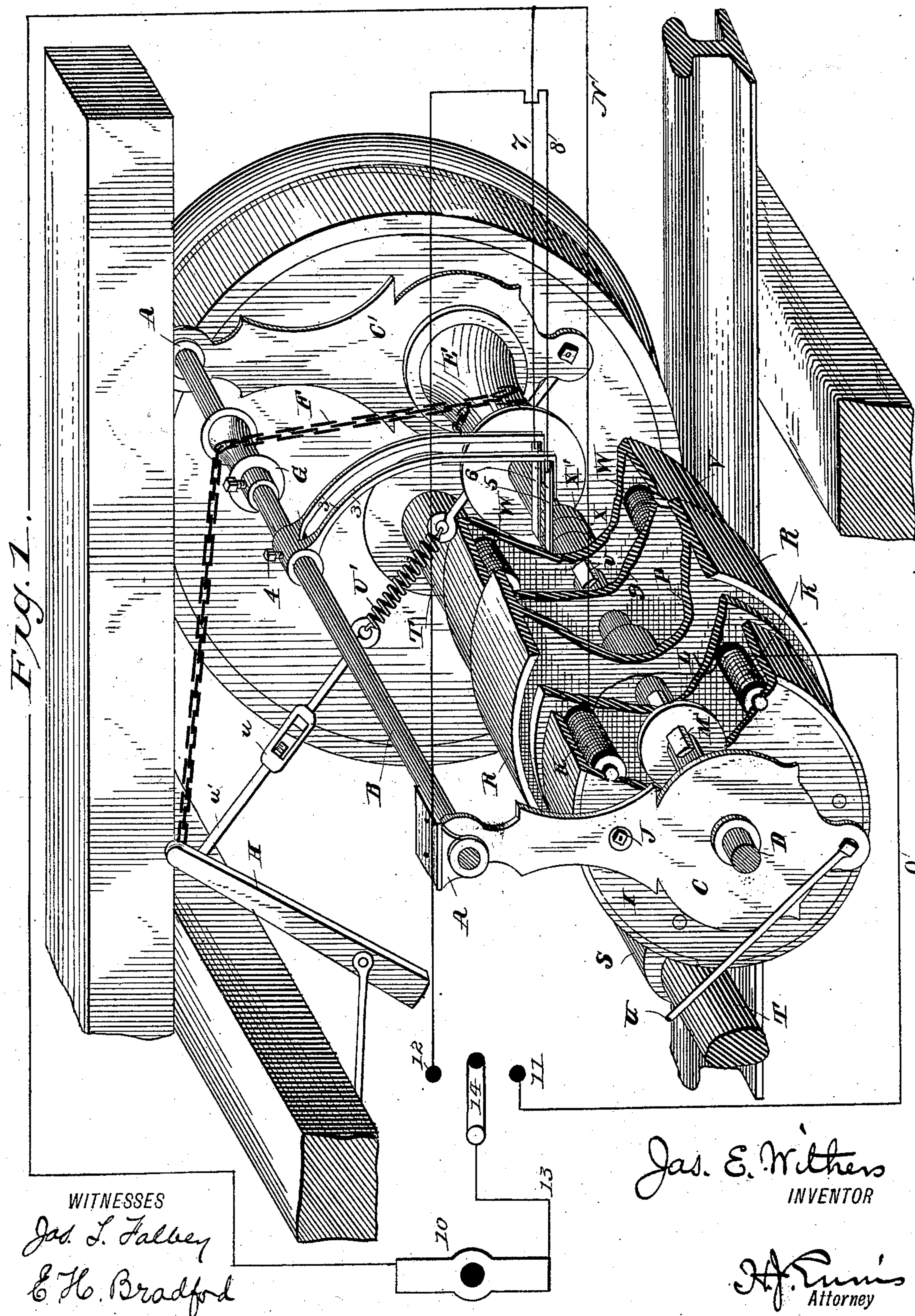
(No Model.)

2 Sheets—Sheet 1.

J. E. WITHERS.
ELECTRO MAGNETIC CAR BRAKE.

No. 293,993.

Patented Feb. 19, 1884.



(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

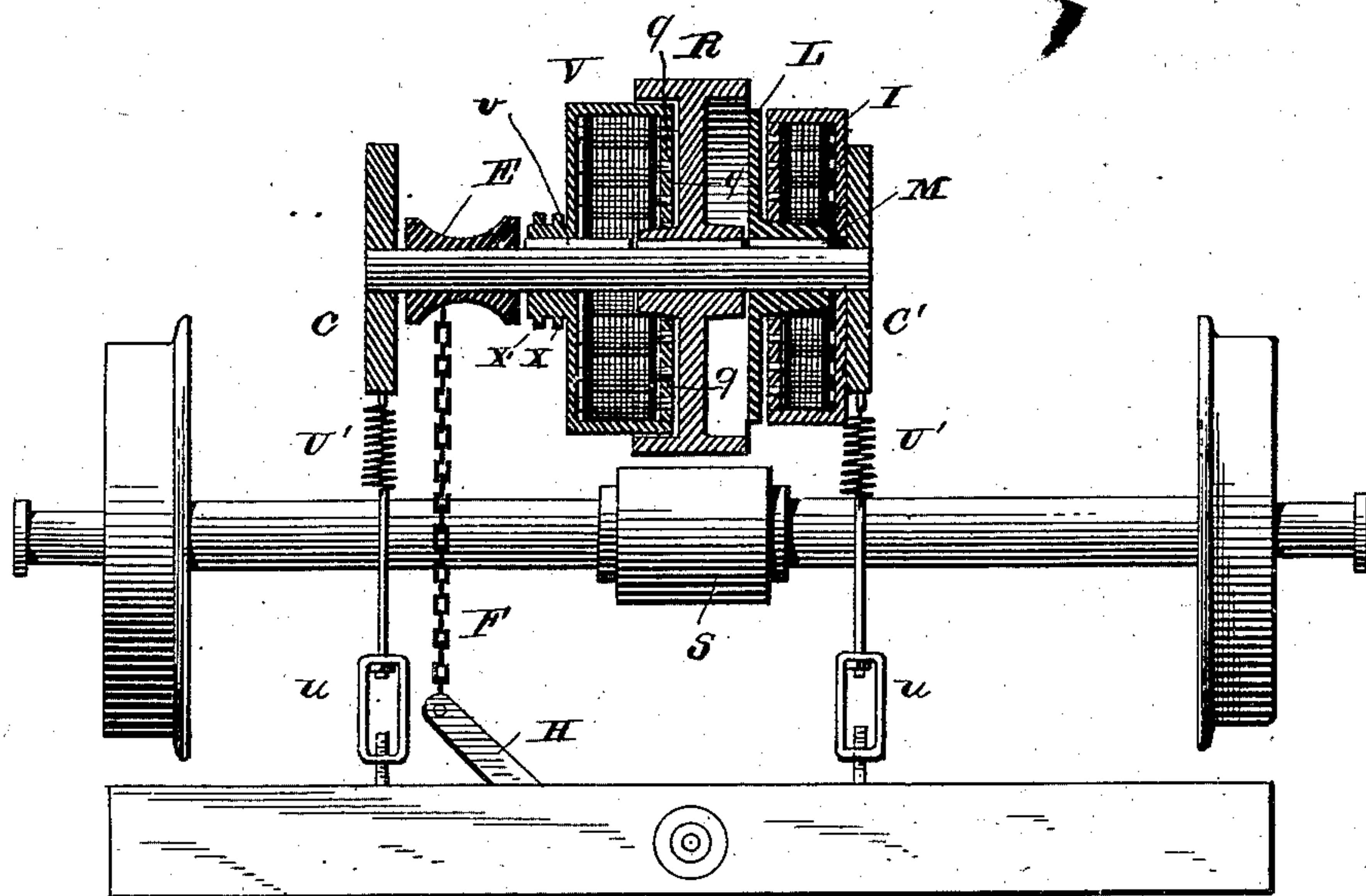


Fig. 4.

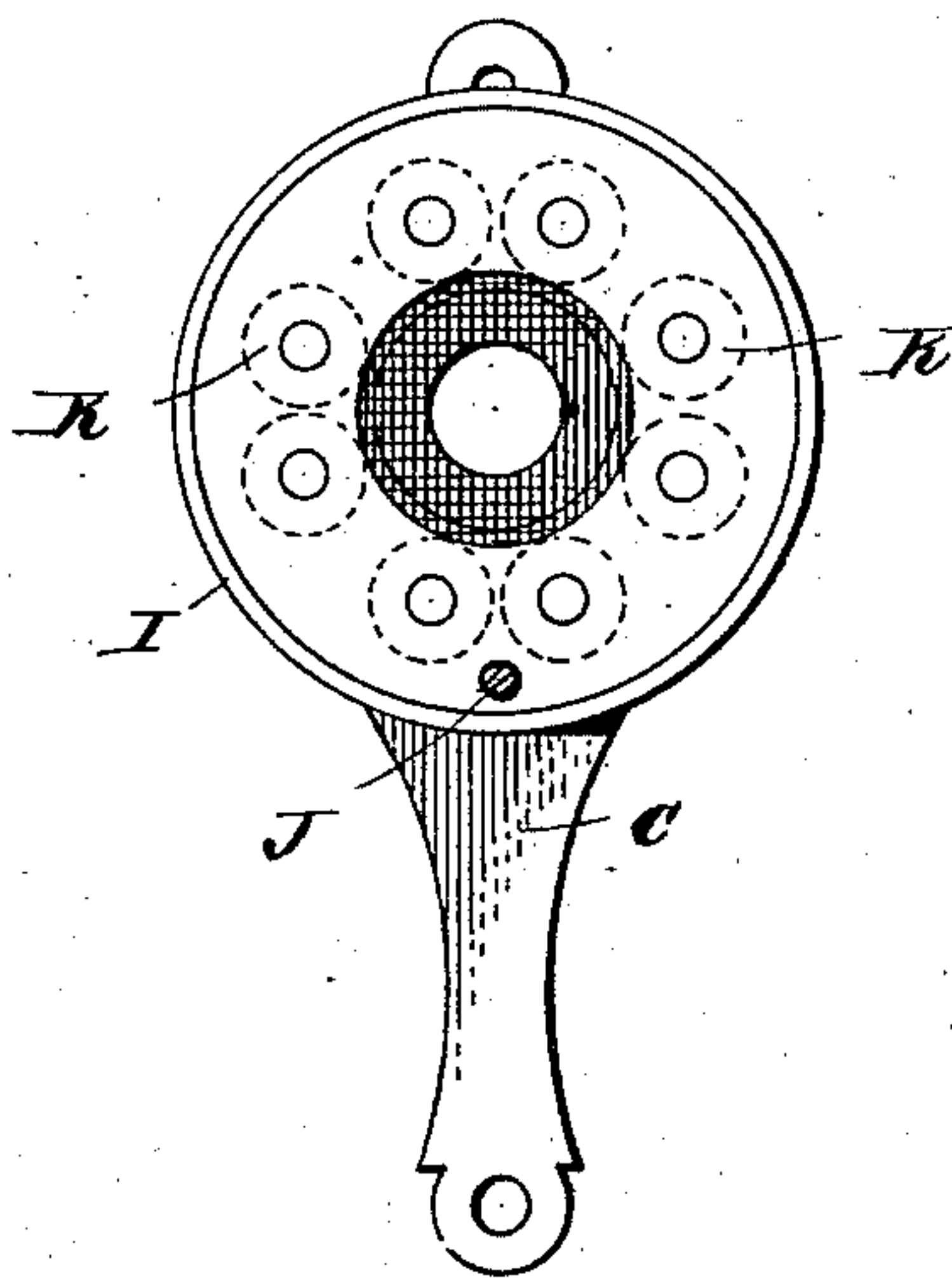
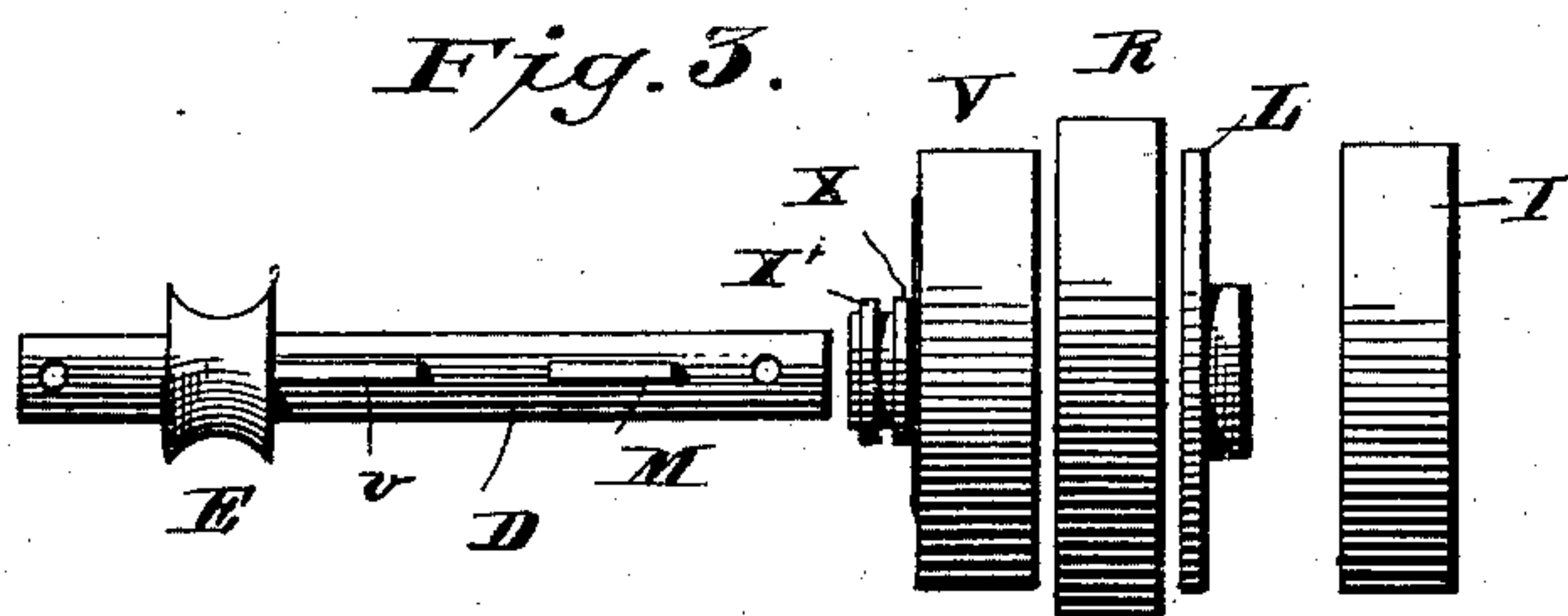


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES E. WITHERS, OF HENDERSON, KENTUCKY, ASSIGNOR TO ROBERT A. HOLLOWAY, OF SAME PLACE.

ELECTRO-MAGNETIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 293,993, dated February 19, 1884.

Application filed November 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. WITHERS, a citizen of the United States, residing at Henderson, in the county of Henderson and State of Kentucky, have invented certain new and useful Improvements in Electro-Magnetic Car-Brakes, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has relation to certain new and useful improvements in electro-magnetic railway-car brakes, and more particularly to that class in which the brake-shoes are operated by the motion or momentum of the train, the connection and disconnection of the brakes being effected and controlled by and through the medium of electro-magnetic apparatus, under the control of the engineer or conductor.

The object of my invention is to provide a car-brake of this class that will be simple and effective in construction and reliable in operation; and to these ends the novelty consists in the construction, combination, and arrangement of the same as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same letters of reference indicate the same parts of the invention.

Figure 1 is a perspective view, partly in section, of my improved car-brake as it appears in use. Fig. 2 is a cross-section of the same, and Figs. 3 and 4 are details.

A A are brackets secured to the timbers underneath the car, and B is a shaft mounted in said brackets.

C C' are swinging hangers depending from the shaft B, and in said hangers is journaled a shaft, D, so as to rotate freely.

E is a drum, rigidly secured to the shaft D on its end near the hanger C'; and F is a chain, having one end secured to said drum E, and thence passing over a guide or friction pulley, G, on the shaft B, and having its other end secured to the brake-lever H.

I is a cylinder, preferably of cast-iron, centrally mounted on the shaft D, and rigidly secured to the hanger C by the bolt J, so as to form no impediment to the rotation of the

shaft D, and inside the cylinder is mounted a series of electro-magnets, K, having their ends flush with the rim of the open end of the cylinder. These magnets are all wound and connected together, so as to form in connection with the cylinder a single magnet, the rim of the cylinder forming one pole, and the free ends of the magnets K forming the other compound pole.

L is an iron disk mounted upon the shaft D, having a slight lateral motion, but forced to revolve with said shaft by means of the key M. The face of this disk is turned smooth, so as to form an armature to the compound cylinder-magnet I K.

N O are the terminal wires of said magnet, and extend to the cab of the engine, within control of the engineer.

P is a pulley loosely mounted upon the shaft D, so as to revolve independently, and its face R comes in contact with a friction-pulley, S, rigidly secured to the car-axle T.

U U' are spring brace-rods secured to the lower ends of the hangers C C, which serve to keep the loose pulley P firmly pressed against the friction-pulley S on the car-axle; and this pressure may be adjusted or compensated for wear by means of the screw-links u, which adjustably connect said brace-rods with the screw-rods u' u', secured to the timbers of the truck or cars; and it will thus be seen that should the car-axle be out of true from any cause, so as to revolve eccentrically, the spring-rods would still cause the pulleys to keep up their contact.

V is an iron cylinder, similar in construction to the cylinder I, but rigidly secured to the shaft D by means of the key v, so as to rotate with it. Said cylinder V is provided with a series of electro-magnets, W, all wound with a single wire, the ends of which terminate, respectively, in the metallic rings x x', secured to the shaft D, but insulated from it in any suitable and approved manner.

3 is a bifurcated arm secured to the shaft B by means of the set-screw 4, and its depending ends are provided with insulated metallic fingers 5 and 6, the free ends of which are in electrical connection with the rings x x', forming the termini of the magnets W. To these

fingers 0 and 6 are connected the conducting-wires 5 and 8, which run to the engine-cab.

9 is a disk, secured flush within the face of the cylinder V, so as to allow the poles 5 of the magnets W and the face of the rim of the cylinder to come into contact with the adjoining face of the friction-pulley R, which face forms the armature of the magnet V W. When the car is in motion, the friction-wheel 10 S keeps the pulley R rotating, and as it is loosely mounted on the shaft D it revolves without impediment. If, now, the engineer sends a current through the wires 7 and 8, the compound magnet V W is forcibly attracted 15 to the face of the pulley R, which causes said magnet, shaft D, and drum E to rotate also. This motion winds the chain F around the drum and sets the brakes by means of the brake-lever H, which retards the momentum 20 of the car. If that is all that is desired, when that is accomplished the engineer breaks the current on the wires 7 and 8, the magnet V W is released from the pulley R, the brake-lever returns to its normal position, and the pulley 25 continues to revolve, as before. If, however, the engineer desires to apply the brakes so as to stop the car and keep the brakes locked or set after the momentum has ceased, then he applies the current to the wires 7 and 8, as 30 above set forth, and when this has been accomplished he then connects the wire N O, so as to charge the magnet I K, and at the same time disconnects the wires 7 and 8 and releases the magnets V W. The magnets I K, 35 being charged, attract the disk-armature L, which is keyed to the shaft D, and as the magnet is rigid the shaft D and drum E are rigidly locked in position and the brakes remain set. By disconnecting the wires N O the disk- 40 armature L is released, and the drum E being free the parts return to their normal position.

10 is a dynamo-machine, and one of the terminal wires 7 connects with the finger 6 on the arm 2, and a branch, N, connects with the 45 magnet K, and through the series I K; thence

by the wire O to the switch-point 11. The current that enters the magnet W through the line 7 and finger 6 returns the finger 5 over the line 8 to the switch-point 12. The other terminal wire, 13, from the dynamo connects 50 with the lever-switch 14; and it will thus be seen that if the switch 14 be connected with the point 12 the compound magnet V W will be charged, and when connected with the point 11 the magnet I K is charged. It will thus 5 be seen that the brakes are entirely within control of the engineer, and may be instantly applied or released, and in so simple a manner as not to interfere with his other duties.

Having thus fully described my invention, 6 what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. In an electro-magnetic car-brake, the shaft D, pulley R, disk L, the latter arranged 5 to slide longitudinally on said shaft and to turn with it, the electro-magnet V W, its connections $x x'$, fingers 5 6, and arm 3, the drum E, chain F, and brake-lever H, in combination with the rods U U', axle T, and friction- 7 wheel S, substantially as and for the purpose set forth.

2. In an electro-magnetic car-brake, the pulley R, shaft D, magnet I K, armature-disk L, drum E, and chain F, in combination with 7 the magnet V W, axle T, and pulley S, as set forth.

3. In an electro-magnetic car-brake, the shaft D, mounted in the swinging brackets C C', and provided with the rotating magnet V 8 W, pulley R, and armature-disk L, in combination with the non-revolving magnet I K and friction-wheel S, as and for the purpose set forth.

In testimony whereof I affix my signature in 8 presence of two witnesses.

JAMES E. WITHERS.

Witnesses:

W. T. LAMBERT,
J. H. BOWLES.