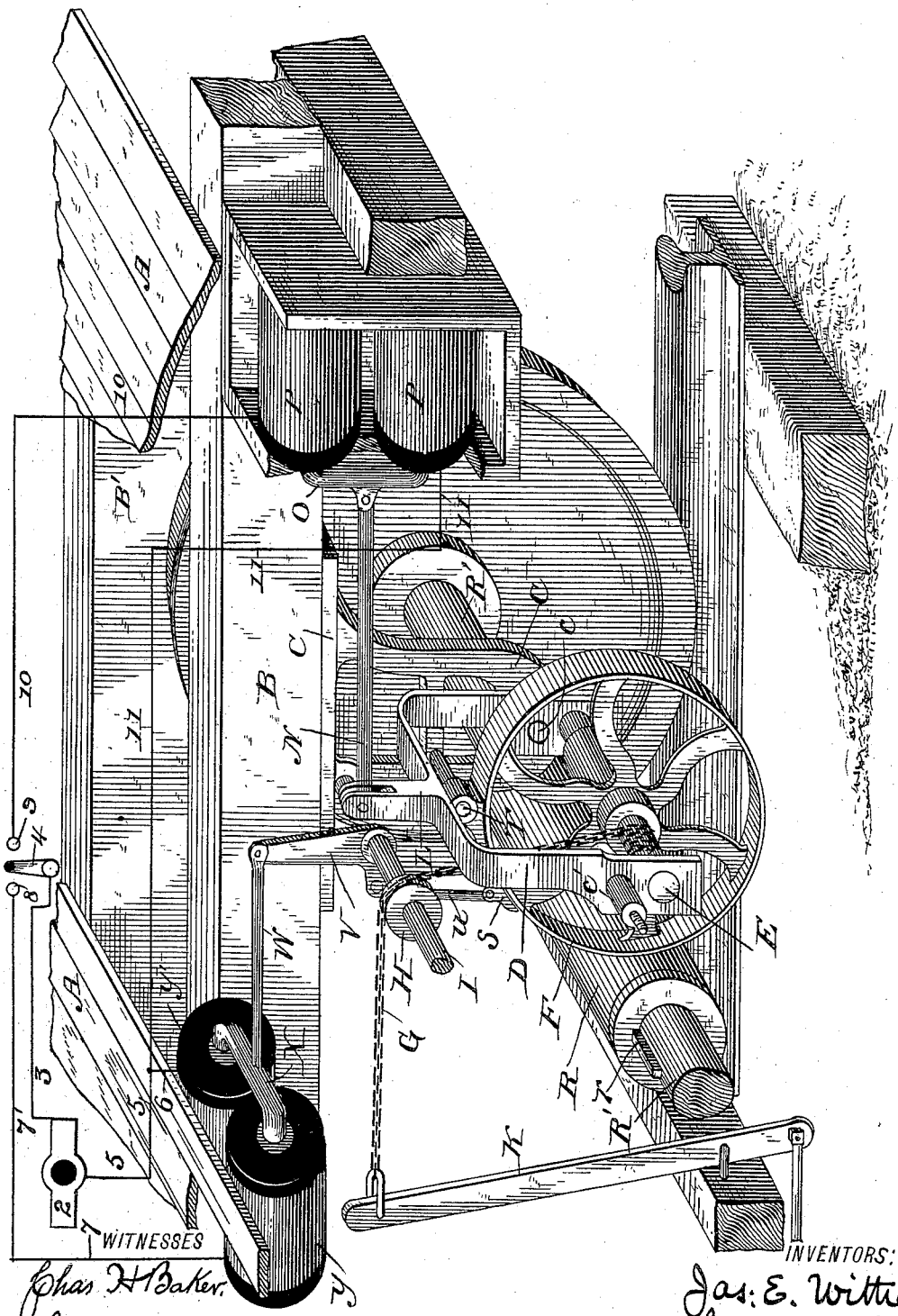
(No Model.)

J. E. WITHERS & G. H. DELVIN.

ELECTRO MAGNETIC CAR BRAKE.

No. 306,452. Patented Oct. 14, 1884.



UNITED STATES PATENT OFFICE.

JAMES E. WITHERS AND GEORGE H. DELVIN, OF HENDERSON, KENTUCKY.

ELECTRO-MAGNETIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 306,452, dated October 14, 1884.

Application filed February 18, 1884. (No model.)

To all whom it may concern:

Be it known that we, JAMES E. WITHERS and GEORGE H. DELVIN, citizens 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.

Our invention has relation to electro-magnetic car-brakes; and the object is to provide a simple and reliable form of brake for railroad-cars completely within the control of the engineer, and capable of being set or released instantly, as occasion requires; and the novelty consists in the construction of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

The figure in the drawing is a perspective view of our improved brake as it appears applied to a car.

A A is the car-floor laid upon the timbers B B'.

C is a hanger secured to the timber B, and in its lower end is journaled the trunnion *c* of the frame D, while a similar hanger (not shown) provides a support for the opposite trunnion, *c'*, of said frame. In this frame D, below the trunnions *c c'*, is journaled a shaft, E, upon which is mounted a pulley, F, and one end of the chain G is likewise rigidly secured to said shaft E, thence passing over the sheave H on shaft I, and then secured to the brake-lever K. The top of the frame D is provided with an arm, L, to which is secured one end of the pitman N, the other being connected to the U-shaped movable magnet-cores O, which slide freely in the helices P P'. By this construction it will be seen that if the helices P P' are charged they become electro-magnets and draw the U-shaped core O inwardly, and the frame D being mounted in the trunnions *c c'*, which form its fulcrum, as its top is drawn in by the action of the magnet, the pulley F is thrown into contact with the small friction-pulley R. This causes the large pulley F to rotate and wind the chain G upon the shaft E, which operates the brake-lever K, and thereby sets the brakes.

S is a curved shoe, the rear end of which is journaled upon a counter-shaft, T, mounted in the hanger C. The forward end of this shoe is provided with a connecting-rod, U, connecting it to the shorter arm of the bell-crank lever V, mounted upon the shaft I. The longer arm of this lever has a pitman, W, secured to the U-shaped core X sliding in the helices Y Y'. The object of this construction is to lock the brakes after they are set, which is accomplished by charging the helices Y Y', which draws the core X inward, thereby forcing the shoe S against the pulley F, thereby rigidly locking it, and through it the brake-lever K when set.

2 represents a dynamo-machine, and one wire, 3, runs to the switch-lever 4. The other wire, 5, is connected to the helices Y Y' by the branch 6, thence through said helices and through the wire 7 to the left-hand switch-point 8. From the right-hand switch-point, 9, a wire, 10, runs through the helices P P', and thence by the line 11 to the dynamo over the line 5. It will thus be seen that when the train is in motion, if the switch-lever 4 be moved to the right-hand point, 9, the helices P P' will be charged and the pulley F brought into contact with the friction-pulley R, which imparts motion to said pulley F, thereby winding the chain on the shaft E, and set the brake-lever K to lock the brakes on the train in this position. The switch-lever 4 is then moved to the left-hand point, 8, which releases the helices P P' and their connected mechanism, but at the same instant charges the other pair of helices Y Y', thereby pressing the shoe S firmly against the large pulley F and retaining it in that position. To release the brakes entirely, the switch-lever 4 is moved to a central position between the points 8 and 9, and of course there is no circuit through either of the magnets.

The small hub or friction-pulley R may be made in halves and secured upon the car-axle R' by a key, *r*, and it is preferably made of any of the fibrous materials in common use.

Having thus fully described our invention, what we 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

helices P P′, U-shaped core O, connecting-rod N, frame D, mounted upon trunnions *c c′* in hangers C, and provided with shaft E, pulley F, and chain G, in combination with the friction-hub R and the brake-lever K, as and for the purpose set forth.

2. In an electro-magnetic car-brake, the combination, with the helices Y Y′, core X, pitman W, bell-crank lever V, connecting-rod U, and shoe S, of the shaft E, pulley F, chain G, sheave H, and brake-lever K, and the friction-hub R, rigidly secured to the car-axle R′, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES E. WITHERS.
GEORGE H. DELVIN.

Witnesses:
R. C. SOAPER,
H. F. DADE, Jr.