J. HICKEY & T. McNEILL.

Car-Brake.

No. 211,328. Patented Jan. 14, 1879.

FIG. 1.

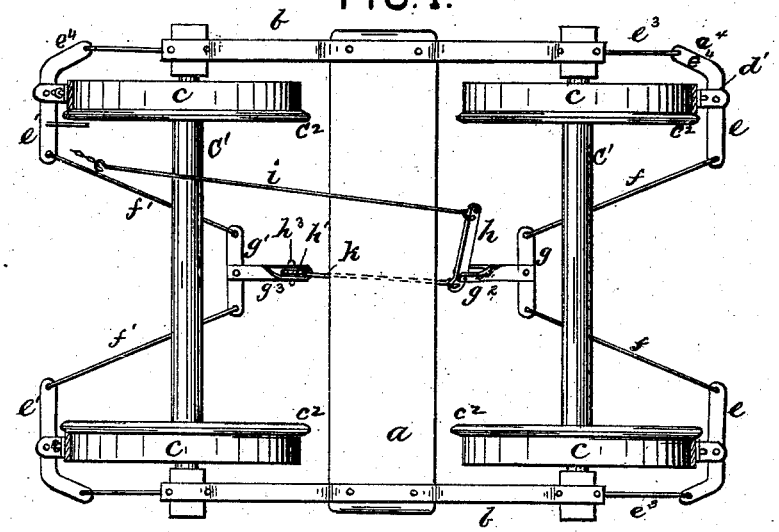


FIG. 3.

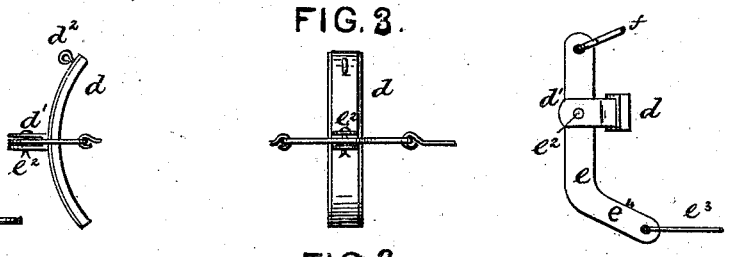
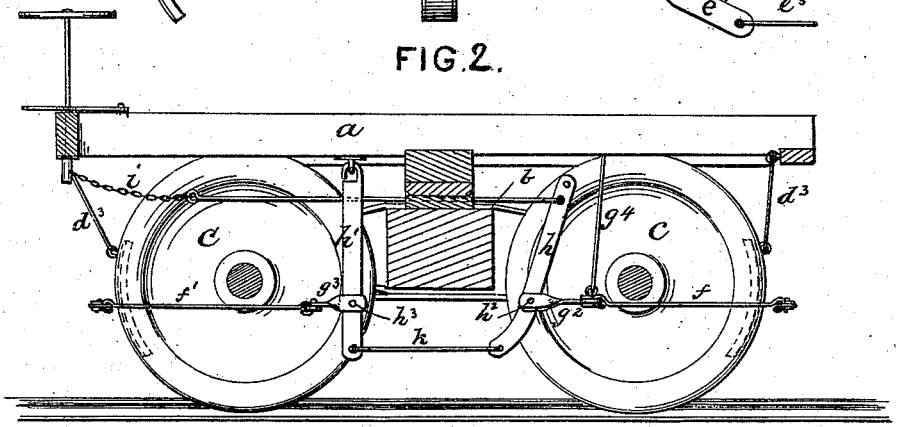


FIG. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN HICKEY AND THOMAS McNEILL, OF SHEBOYGAN, WISCONSIN.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **211,328**, dated January 14, 1879; application filed June 28, 1878.

To all whom it may concern:

Be it known that we, JOHN HICKEY and THOMAS McNEILL, of Sheboygan, in the county of Sheboygan and State of Wisconsin, have invented certain new and useful Improvements in Car-Brakes; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improved car-brakes.

Heretofore the trucks of railway-cars have been equipped with wooden beams, suspended by means of chains or other devices from the ends of the trucks or car-body parallel with the axles, having brake-blocks attached to their ends by means of bolts. These brake-blocks were pressed against the wheels by means of an arrangement consisting of a vertical lever attached to the center of one beam by a short link at a point about seven inches from the lower end of the lever. A long rod running from the center of the opposite beam to the lower end of the vertical lever completed the connection. This method is objectionable, because the beams are so large and heavy that the failure of the hangers is a thing to be dreaded, as it frequently results in the ditching of the train, and the wooden beam, large as it is, is not always equal to the requirements of a power-brake, and consequently has to be trussed or increased in size. This adds to the weight, and the weight is increased at a point where the truck is least able to carry it. The manner, too, in which the leverage is obtained causes an unequal amount of pressure to be imparted to the several brake-shoes, and they, being attached to the rigid beam, are incapable of adjusting themselves to the bevel of the wheels or the constantly-varying position of the truck.

The object of this invention is to provide a braking apparatus for railway-cars which will automatically conform to the bevel or tread of the wheels and to the position of the truck, and to impart an equal pressure to the several brake-shoes, and to insure the application of the whole bearing-surface of said shoes on the face of the wheels when the brakes are set, and to dispense with wooden brake-beams.

It consists in having the brake-shoes supported and hinged with capability of free lateral swinging movement on horizontal levers, having their outer ends fulcrumed outside of the wheels to the truck-frame, and having their inner ends connected by rods to an equalizer occupying an intermediate position between the rails and between the center and the end of the truck, all of which will be hereinafter more fully explained.

In the drawings, Figure 1 is a plan, and Fig. 2 is a vertical longitudinal section, of a car-truck having our improvements attached thereto; and Fig. 3 shows detail views of the brake-shoe and the operating-lever.

a is the truck-frame, and *b* are the jaws which support the bearings in which revolve the axles of the wheels *c*, all constructed and arranged in the usual manner. *d* is the brake-shoe, on the center of the back of which are formed the ribs or brackets d^1, and on the upper end of which is fixed a loop or eye, d^2, by which it is suspended by a hanger-rod, d^3, to the frame *a*. The shoe is formed and adapted to fit the face of the wheel in the well-known manner.

e is the brake-bar, to which is attached the brake-shoe *d* by means of a suitable bolt or pin, e^2, passing through the ribs or brackets d^1.

The shoe *d* and the brake-bar *e* are supported in place by the hanger d^3, attached to the upper end of the shoe, which arrangement permits easy and free longitudinal movement of said brake-bar and shoe, by which the latter will be thrown by its own gravity off the wheel *c* when the brake is released.

The shoe is so attached that it rotates slightly on pin e^2, so as to permit ready and perfect adjustment to the bevel or tread of the wheel in any position into which the truck may be put.

The brake-bar *e* has its outer part, e^4, bent inward toward the axle *c'*, so that its extreme end is brought within the line of the circumference or tread of the wheel *c*. Its outer end is fulcrumed by a loose hinge-joint on a rod or extension, e^3, of the jaw *b* outside of the wheel *c*, so that it will turn freely horizontally, and also vertically sufficiently to adjust itself au-

tomatically to the radial movement of the hanger d^3, while its other end extends to the inner side of, and at right angles across, the face of said wheel and the brake-shoe, as shown, and has affixed to it one end of the connecting-rod f, which has its opposite end attached to one end of the equalizing-bar g or g^1.

All car-wheels are made slightly tapering or cone-shaped on the tread from the flange c^2 outward. In order to apply the brake-shoe successfully to such tapering tread, when the brake-bar is fulcrumed outside the wheel, as described and shown, it is necessary that the fulcrum-joint of said brake-bar shall be located at a point within the circumference of said tread when thus arranged. The curved movement of the brake-shoe adapts the latter more readily to the tread, and a stronger hold is given, and less power is requisite to operate and give effectiveness to the mechanism.

We have described the construction and arrangement of the several parts pertaining to a single brake-shoe. All the shoes are made alike and have the same attachments.

The connecting-rods $f\,f$ of the brakes, applied to each pair of wheels $c\,c$, have their inner ends secured to the opposite ends of the equalizing-bar g, as shown.

To the centers of the equalizing-bars $g\,g^1$ are affixed the extensions $g^2\,g^3$, which extend inward, and are constructed and adapted to hold the brake-levers $h\,h^1$ in a vertical position, as shown.

h is the main brake-lever, having affixed to its upper end the brake-chain i, which connects with the brake-wheel or other mechanism, and having affixed to its lower end one end of the connecting-rod k, the opposite end of which is attached to the lower end of the vertical lever h^1.

The levers $h\,h^1$ have their fulcrums $h^2\,h^3$ intermediately between their ends, and at the same distances from their lower ends, in order to insure an equal strain on equalizers g and g^1.

The equalizer g is suspended on and held in place by a hanger, g^4, which has its upper end affixed to the floor of the car or frame of the truck.

The bar g^1 is supported in position by the brake-lever h, which has its upper end affixed to the car-floor or truck-frame.

The operation of the device will be readily understood by all persons connected with railroads, or by others having any knowledge of the construction and uses of the several parts of railway-cars.

The horizontal equalizers $g\,g^1$ insure an equal pressure of the brake-shoes on both sides. By using this device the truck is capable not only of lateral motion, but also of free rotation around the king-bolt when the brake is applied in rounding a curve.

Various changes may be made in the devices described and their arrangements and combinations.

The connections to the truck-frame may be made by extending the lower brace forward and connecting it to bars e by a hook or clevis; or the bars e may be made longer or shorter, or varied in shape at will; or they may be fulcrumed by having the outer ends of each two on opposite ends of the truck connected to each other by means of a rod running outside the wheels, under the strap b, parallel with the rails.

We are aware of the existence of the patent to P. R. Higby, March 8, 1864, No. 41,891, and we do not claim the invention set forth therein; but,

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The brake-bar e, having its outer end, e^4, bent inward toward the axle of the wheel c, and hinged with capability of a longitudinal and vertical swinging movement on the fulcrum e^3 outside of and within the line of the circumference of the tread of the truck-wheel, and supported in position at right angles to and across the face of said wheel by the hanger d^3, attached to the upper end of the shoe d, substantially as set forth.

2. The combination and arrangement of the brake-shoe d, provided with ribs or brackets d^1, brake-bar e, having its outer end bent inward and hinged or pivoted within the line of the tread of the wheels, and extension e^3 of the jaw b, with the wheels c, frame a, and the braking mechanism, substantially as set forth.

3. The combination, with the swinging levers $e\,e^1$, having their outer ends pivoted to the frame outside the wheels c, and adapted to support the brake-shoes in proper position to be applied to the wheels c, of the rods $f\,f'$, equalizing-bar g, having the connecting-arm g^2, brake-lever h, pivoted intermediately between its ends to the connecting-arm g^2, fulcrum-rod k, and brake-chain i, substantially as and for the purpose set forth.

4. The combination, with the brake-shoes, swinging bars $e\,e^1$, pivoted to the truck-frame outside of the wheels c, and having their opposite ends extended inward horizontally across the breast of said wheels, and the rods $f\,f'$, secured to the inner ends of the said bars $e\,e^1$, of the equalizing-bars $g\,g^1$, having connections $g^2\,g^3$, swinging bar or lever h^1, secured to the frame a, bar or lever h, fulcrum-rod k, and brake-chain i, all arranged to operate substantially as and for the purposes set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

JOHN HICKEY.
THOMAS McNEILL.

Witnesses:
JAMES McCLEMENTS,
JAMES BELL.