

UNITED STATES PATENT OFFICE.

WILLIAM EBBITT, OF NEW YORK, N. Y.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. 123,003, dated January 23, 1872.

To all whom it may concern:

Be it known that I, WILLIAM EBBITT, of the city, county, and State of New York, have invented a new and useful Improvement in Car-Brakes; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of my invention, the line *x x*, Fig. 1, indicating the plane of section. Fig. 2 is a plan or top view of the same.

Similar letters indicate corresponding parts.

This invention consists in the arrangement of a three-armed lever, carrying in two of its arms guide-rollers for the brake-rope, extending throughout the length of the train, and in its third arm a friction-pulley, one part of which can be brought to bear against one of the axles of the car or engine, while its other part connects by a rope or chain with the brakes, said three-armed lever being hung in such a manner that by a strain on the brake-rope the friction-pulley is brought to bear against the axle, and as said pulley is caused to revolve, and as soon as the rope or chain extending to the brakes begins to wind up, the strain of this rope itself assists in keeping the friction-pulley in contact with the axle, and said pulley revolves until the car stops; but if the strain on the brake-rope ceases the weight of the lever with its attachments disengages the surface of the friction-pulley from the axle; the rope previously wound up on said pulley unwinds, partly by the weight of the lever and partly by the action of the brake-springs, and the brakes are taken off.

In the drawing, the letter A designates one of the trucks of a railroad car, which is supported by wheels B B' mounted on axles C C' in the usual manner. To the central cross-bar or bolster D of this truck is secured a bracket, E, which forms the bearing for the fulcrum-pin *a* of a three-armed lever, F. In the arms *b* and *c* of this lever are mounted guide-rollers *b'* and *c'* for the brake-rope G, which is intended to be carried throughout the entire length of the train, and which passes over the roller *b'* and under the roller *c'*, as shown in Fig. 1 of the

drawing, so that if said rope is strained the lever F swings in the direction of the arrow marked near it in said figure. The arm *d* of the lever F forms the bearing for a shaft, *e*, on which is mounted a friction-pulley, H. This pulley consists of a cage, *f*, and a drum, *g*, from which extends a rope, *h*, to the brake-lever *i*. The drum *g* is mounted loosely on the shaft *e*, while the cage *f* is firmly secured thereon, and said cage embraces the hub *j* of the drum *g*, and in its interior are shoes *k* which are pressed up against the circumference of the hub by means of set-screws *l* and springs *m*, so that the drum *g* is compelled to revolve with the cage until the power opposing the revolution of the drum exceeds the friction exerted by the shoes *k* on the hub *j*. By adjusting the set-screw *l* this friction can be regulated. If the brake-rope G is strained the rim of the cage *f* is brought to bear against the circumference of the axle C, and if this axle revolves the cage *f* is caused to revolve, and the rope *h* winds up on the drum *g*. By the strain of the rope *h* the rim of the cage *f* is held tight against the axle C, and as this strain increases the brakes are drawn up against the wheels, and the revolving motion of the cage *f* continues as long as the axle revolves. But if the strain of the rope *h* exceeds a certain limit the friction between the shoes *k* and the hub *j* is overcome, and the motion of the drum *g* stops. By these means the power with which the brakes are drawn up can be regulated, and the breakage of the rope *h*, or of any other portion of the brake mechanism, is avoided, and at the same time the brakes are always held up with the same force against the wheels, for if the brake-shoes should wear off, or whenever from some cause the strain on the rope *h* is decreased, the drum *g* continues to revolve and the rope *h* is wound up thereon until its strain reaches the desired limit.

By the peculiar arrangement of my lever F the following advantages are gained: First, a single lever forms the bearings for the guide-rollers of the brake-rope and for the friction-pulley, so that the construction of the entire apparatus is materially simplified. Second, it requires comparatively little power applied to the brake-rope G to keep the rim of the friction-pulley in contact with the axle, for as soon as the rope *h* begins to wind up the strain of

this rope draws the rim of the friction-pulley up against the axle, and for this reason the brake-rope G can be made to extend throughout the entire length of the train, and by straining this rope the levers F on all the cars are actuated, and the brakes on the whole train are thus under the control of the engineer or person having charge of said brake-rope G. Third, as soon as the strain on the brake-rope G ceases the weight of the lever F with its attachments has a tendency to unwind the rope *h* from the drum *g*, the strain on this rope ceases, the friction-pulley falls back from the axle, and the brakes are taken off.

I am aware that a patent was granted to Joseph Steger, June 28, 1870, for a car-brake, of which I am part owner, and in which the same objects are sought to be accomplished which I have accomplished by my invention, but a comparison of his mechanism with mine will show that I have materially simplified the

entire construction, and particularly that I have applied my lever F so that its weight assists in taking off the brakes.

I disclaim everything shown and described in the patent of Joseph Steger, dated June 28, 1870, and numbered 104,807.

What I claim as new, and desire to secure by Letters Patent, is—

The arrangement, on a railroad car, tender, or engine, of a three-armed lever, carrying in two of its arms guide-rollers for the brake-rope, and in its third arm a friction-pulley, said lever being hung so that its own weight has a tendency to disengage the friction-pulley from the axle of the car to which the same is attached, all as herein shown and described.

WM. EBBITT.

Witnesses:

W. HAUFF,
E. F. KASTENHUBER.