E. STEWART.

Car-Brake.

No. 161,571. Patented March 30, 1875.

Fig. 1.

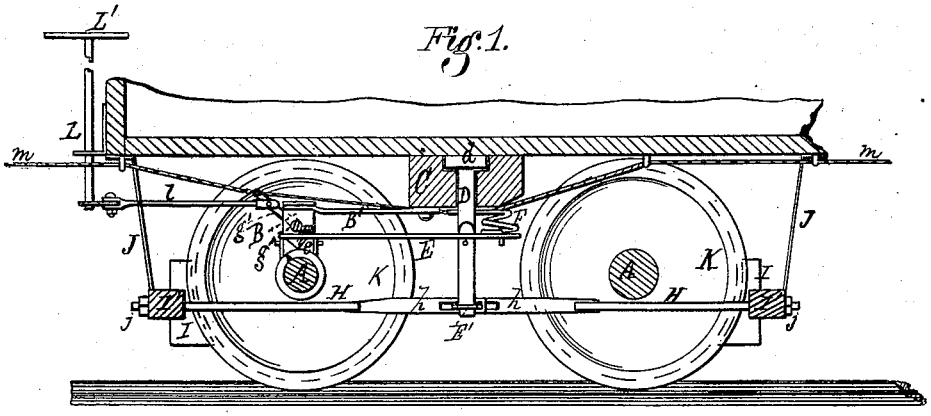


Fig. 2.

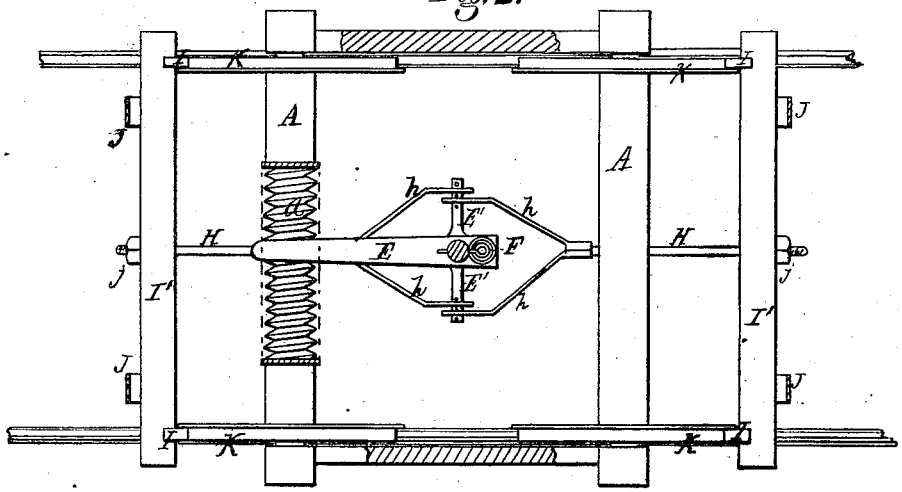


Fig. 3.

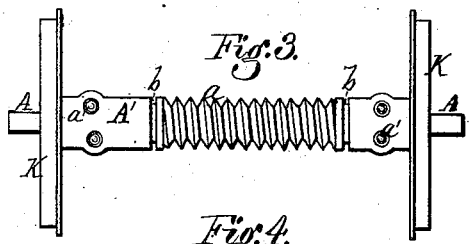
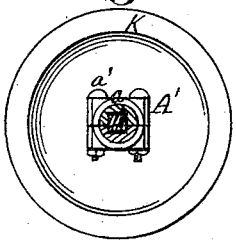


Fig. 4.



Witnesses:

Alex Mahon

John G. Center

Inventor:

Edward Stewart

by A. M. Smith,

Attorney.

UNITED STATES PATENT OFFICE.

EDWARD STEWART, OF FORT MADISON, IOWA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **161,571**, dated March 30, 1875; application filed February 26, 1875.

To all whom it may concern:

Be it known that I, EDWARD STEWART, of Fort Madison, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1 represents a vertical longitudinal section through a car-truck, showing the means for actuating the brakes applied thereto. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of one pair of wheels, with the sectional or divided worm or screw applied to the axle, and Fig. 4 is a transverse section through said axle and divided screw.

Similar letters of reference denote corresponding parts in all the figures, wherever used.

The invention relates to the means for applying the brakes to car-wheels, and consists, first, in a novel arrangement of lever and links in connection with a worm or screw on the rotating axle, for causing the rotation of the latter to actuate the brakes, and with a speed and power proportionate to the velocity of movement of the car or train.

The invention further consists in a novel construction of the worm or screw, which is made separate from the axle, and in sections, in such manner as to adapt it to be readily applied to cars in use.

The truck-frame, with the wheels, axle, and also the brakes applied thereto, may be of the usual or any preferred construction, except in the particulars hereinafter specifically described.

The axles A between the wheels are either enlarged, and have a beveled screw-thread, *a*, cut or otherwise formed thereon, as shown in Fig. 2, or said axles may be of the usual diameter, either round or squared, as shown in Fig. 4, and the screw-thread, instead of being formed thereon, is formed upon a longitudinally-divided block, A′, which is squared at its ends, and adapted to receive bolts, as shown at *a′*, which firmly clamp the two parts to the axle and insure their rotation therewith. With the latter construction the screw can be readily applied to cars in use without change of the axles. At each end of the screw *a* is formed a groove, *b*, (see Fig. 3,) in which the arms of an angular plate or frame, B, rest, said plate being connected midway of its width or transverse length with the central truck-bar C, by means of a strap or plate, B′. The bar C is perforated centrally of its length, and has a pendent rock-shaft, D, mounted in it, said shaft being upheld by a hub or collar, *d*, at its upper end, resting in a cylindrical socket in the upper face of the bar C. Upon this shaft D, midway of its height, or thereabout, a lever, E, is secured, a square or polygonal perforation in said lever matching the form of the shaft at and below the point of attachment of the lever, in such manner that a lateral vibration of the lever imparts a rocking motion to the shaft. This lever is upheld on the shaft by a pin or bolt underneath, and over its short heel end E′, and between said end and the bar C is placed a spring, F, the tension of which serves to press the heel end of the lever down, and to raise the long arm of said lever, which extends over the axle A, and between said axle and the angular plate B, and is provided on its lower face, at a point directly over the screw *a*, with a conical tooth or spur, *e*, adapted in form to match and work in between the threads of screw *a*, but held disengaged therefrom by the action of the spring F. The vertical arms of the angular plate B are perforated to form bearings for a rock-shaft, *g*, which is provided with a cam or eccentric plate extending the whole distance between the upright arms of plate B, and serving when the shaft *g* is rotated to overcome the tension of the spring F, and thereby to cause the tooth or spur *e* to engage with the screw *a*, and thus to be moved laterally, carrying the arm E with it, and rocking the shaft D. The lower end of this shaft is provided with a cross-head or arms, E′, and to these arms the forked ends of connecting-rods H are attached, said arms being provided with elongated slots, as shown in Fig. 1, in which the arms E′ work. The rods H, at their opposite ends, are connected with the brakes I by passing through the brake-bars I′, or through blocks connected therewith, and are made adjustable in length for varying the throw of the brake-rods by means of nuts *j*. The brake-bars are sus-

pended by spring J, the tension of which serves to hold the brake away from the wheel K, except when such tension is overcome, as hereinafter described. The length of the rods H is so adjusted that the outer ends of the slots in forks *h* will rest against the arms E′, so that by the vibration of said arms in either direction one or the other of them will draw the rods H, and therewith the brake-bars, inward, thus bringing the brakes I into action, while the other of said arms is free to move backward in the slot in the opposite arm of the fork. The cam-shaft *g* is armed at one end, or it may be at both ends, with a crank-arm, *g′*, and from this a pivoted link, *l*, is extended to the front or rear of the car, (either or both,) and connects with a crank on the lower end of a vertical shaft, L, the upper end of which is armed with a hand-wheel or lever, L′, by means of which the brakeman can rotate the cam-rod *g*, and cause the spur or tooth *e* to engage with, or to be disengaged from, the screw *a* for actuating the brakes, as above described.

In addition to the above, a cord, *m*, may be applied to the crank-arms *g*, and, coupled to similar cords upon the several cars of the train, may extend to within reach of, or so as to be controlled by, the engineer, in such manner that by simply drawing on the cord the brakes upon the entire train can be thrown simultaneously into action, or any desired number can be thus coupled and so operated by a single brakeman.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of vibrating lever E, the screw on the axle, rock-shaft D, and connecting-rods H *h* for actuating the brakes, substantially as set forth.

2. The longitudinally-divided axle-sleeve A′, provided with screw-threads, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EDWARD STEWART.

Witnesses:
J. H. WESTON,
J. A. NUNN.