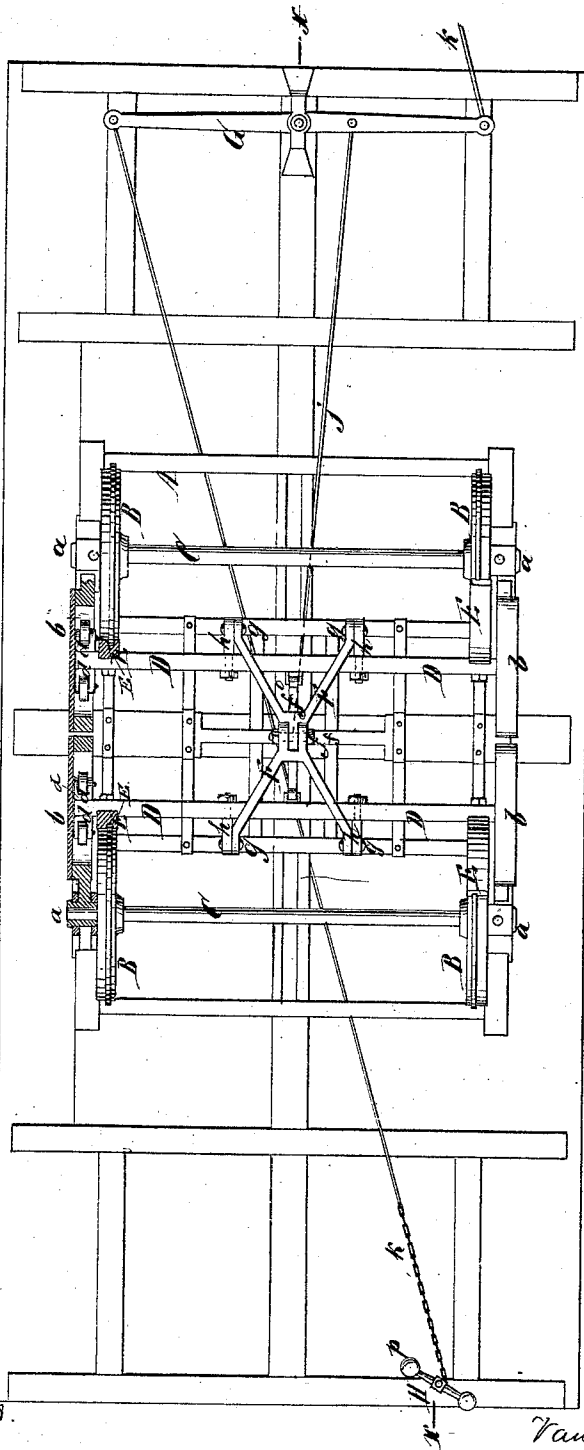


N. KIRCHRATH.
Car-Brakes.

No. 147,407.

Patented Feb. 10, 1874.

Fig. 1.



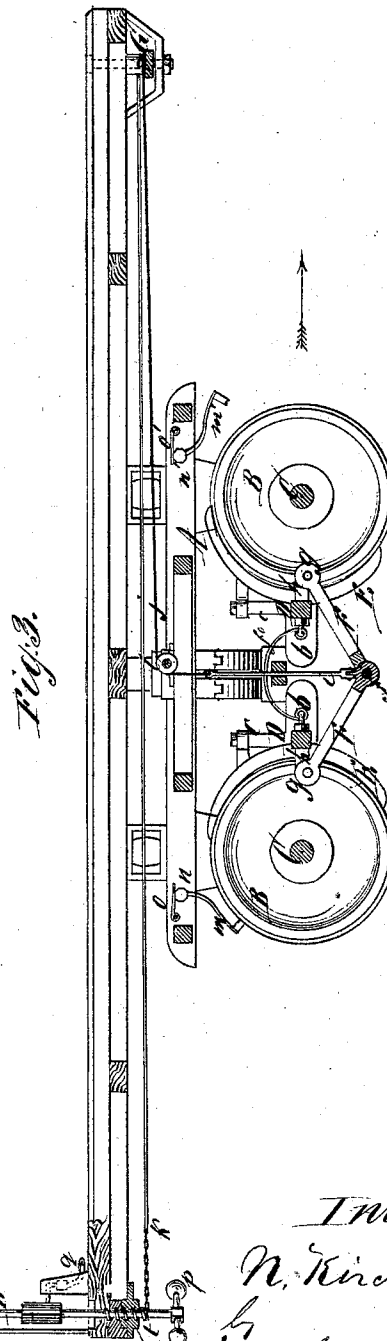
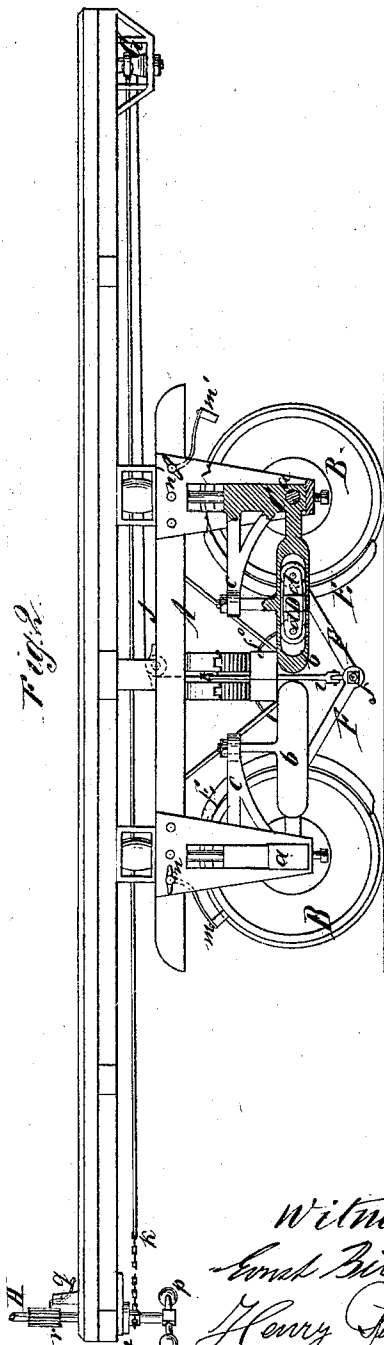
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UNITED STATES PATENT OFFICE.

NORBERT KIRCHRATH, OF NEW YORK, N. Y.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **147,407**, dated February 10, 1874; application filed December 26, 1873.

To all whom it may concern:

Be it known that I, NORBERT KIRCHRATH, 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 an inverted plan of this invention, partly in section. Fig. 2 is a sectional side view of the same. Fig. 3 is a longitudinal section of the same in the plane *x x*, Fig. 1.

Similar letters indicate corresponding parts.

This invention relates to a car-brake in which the brake-heads slide in guides which are secured to the axle-boxes, so that the brake-shoes will always preserve a uniform relation toward the wheels. With the brake-heads are combined toggle-levers, which connect with the windlass, so that if the windlass is turned, the toggle-levers are straightened out, and the brakes are applied with great force. On the spindle of the windlass is mounted a fly-wheel, so that when to said spindle a rapid revolving motion is imparted, the momentum of the fly-wheel serves to apply the brakes. On the spindle of the windlass is cut a screw-thread, the successive coils of which receive the brake-chain, while said screw-thread causes the spindle to descend as the brake-chain winds on it, and thereby the strain on said chain is constantly in the same direction.

In the drawing, the letter A designates the truck of a railroad-car, which runs on four wheels, B B, mounted on axles C C. These axles have their bearings in boxes *a a*, of the usual construction, and from these axle-boxes extend in a horizontal direction guide-boxes *b b*, which support the brake-heads D D. The guide-boxes *b b* are steadied in their position by brackets *c c*, and the brake-heads are provided at their ends with forks *d d*, containing anti-friction rollers, (see Fig. 1,) so that the same move easily in the guide-boxes, and that they are retained in the desired position. Said brake-heads are situated between the wheels B B, and they carry the brake-shoes E E;

and since the guide-boxes of the brake-heads are attached to the axle-boxes of the wheels, and since said brake-heads, consequently, will preserve their relative position toward the wheels under all circumstances, the shoes E E can for this reason be made to embrace one-third or more of the circumference of the wheels, and when the same are pressed up against the wheels, they will bear on them uniformly at all points, and thereby their effect is materially increased. If the brake-heads are attached to the truck-frame, the relative position between the brake-shoes and the wheels changes every moment the wheels rise or fall, and said shoes act on the wheels only at one point, whereby their effect is greatly diminished, and it would be useless to increase the bearing-surface of said shoes; and, furthermore, by connecting the brake-heads to the axle-boxes, the brake-shoes will clear the wheels if the brake-heads are moved back only a small fraction of an inch, and only a small motion is required to apply or take off the brakes.

The mechanism which I employ to apply the brakes consists chiefly of toggle-levers F F, which are connected in the center under the middle of the truck by a pivot, *f*, while their ends are fastened by means of pivots *g* to arms *h*, which extend from the brake-heads, as shown in Figs. 1 and 3. From the central joint of these toggle-levers extends a rod, *i*, Fig. 3, which connects by a chain and rod, *j*, with the cross-lever G, Fig. 1, and from the end of this lever extend rods and chains *k k*, each being attached to a windlass, H, on the opposite ends of the car. One such windlass only is shown in the drawing. The chain *j*, which connects the toggle-levers F F with the cross-lever G, passes over a pulley, *l*, which is secured to the truck-frame. When the windlass is turned, the chain *k* winds up thereon, and the strain produced on the chain *j* has a tendency to straighten out the toggle-levers F F. By this action the brake-heads are forced apart, and the brakes are applied with great force. As soon as the strain on the chain *j* ceases, the toggle-levers sink down to their original position, Fig. 3, and the brakes are taken off, being drawn back by a spring, *f'*, which acts on the brake-heads. (See Figs. 1

and 3.) On the truck-frame are applied scrapers $m m'$, which extend from shafts $n n'$, a portion of each of which is polygonal, and exposed to the action of a spring, o or o' . By this arrangement the scrapers can be readily thrown in or out of action, as may be required, according to the direction in which the car moves. The scrapers are attached to springs, which serve to keep them in contact with the wheels when in action. If the shaft n' , for instance, is turned, as shown in Fig. 3, the spring o' bears on one of the flat surfaces of the polygonal part of the shaft n' , and the scraper m' is raised from the wheel. If the car moves in the direction of the arrow marked near it in Fig. 3, the scraper n is brought to bear on its wheel, so that the dirt carried up by said wheel is removed before it can get between the periphery of the wheel and the brake-shoe, and injury to the working parts is avoided. The spindle of the windlass H extends through the platform of the car, and on its lower end is mounted a fly-wheel, p , so that when a rapid revolving motion is imparted to the windlass, the momentum acquired by said fly-wheel is sufficient to apply the brakes. By these means no time is lost in applying the brakes; all the brakeman has to do is to fling around the windlass, and the work is accomplished. A spring-pawl, q , which engages with a ratchet, r , on the spindle of the windlass, retains the same in any position in which the same is brought. When the windlass is to be turned back, the spring-pawl has to be thrown out of gear with ratchet-wheel by stepping on it with the foot. On the spindle of the windlass is formed a coarse screw-thread, s , Fig. 3, which screws in a nut, t , secured to the under surface of the platform. If the spindle is turned

in the proper direction, therefore, it moves downward as the chain k winds up in the spiral of the screw-thread, and the strain on said chain always remains in the same direction, so that said chain is not liable to bind, and the brakes can be applied with the least possible power.

By means of this brake a car can be stopped very readily, and all the parts are so constructed that they are not liable to get out of order.

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

1. The guide-boxes b , mounted in a horizontal position upon the axle-boxes of a car, and supported by the braces c , to form the bearings and supports for the brake-heads D , having anti-friction rollers applied to them, all being constructed and combined substantially as and for the object specified.

2. The combination of the toggle-levers F with the brake-heads D , which are supported by guide-boxes b between the wheels of a railroad-car, substantially as set forth.

3. The scrapers $m m'$, mounted on partly polygonal shafts $n n'$, acted on by springs $o o'$, in combination with the wheels of a railroad-car, substantially as described.

4. The brake-spindle H , provided with a screw-thread, s , engaging with a nut, t , to move said spindle downward when revolved to set the brake, and combined with the chain k , to wind in the screw-thread s , and connected with the brakes, in the manner and for the object set forth.

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Witnesses:

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