S. G. HOWE.

Car-Brake.

No. 162,556. Patented April 27, 1875.

Fig. 1.

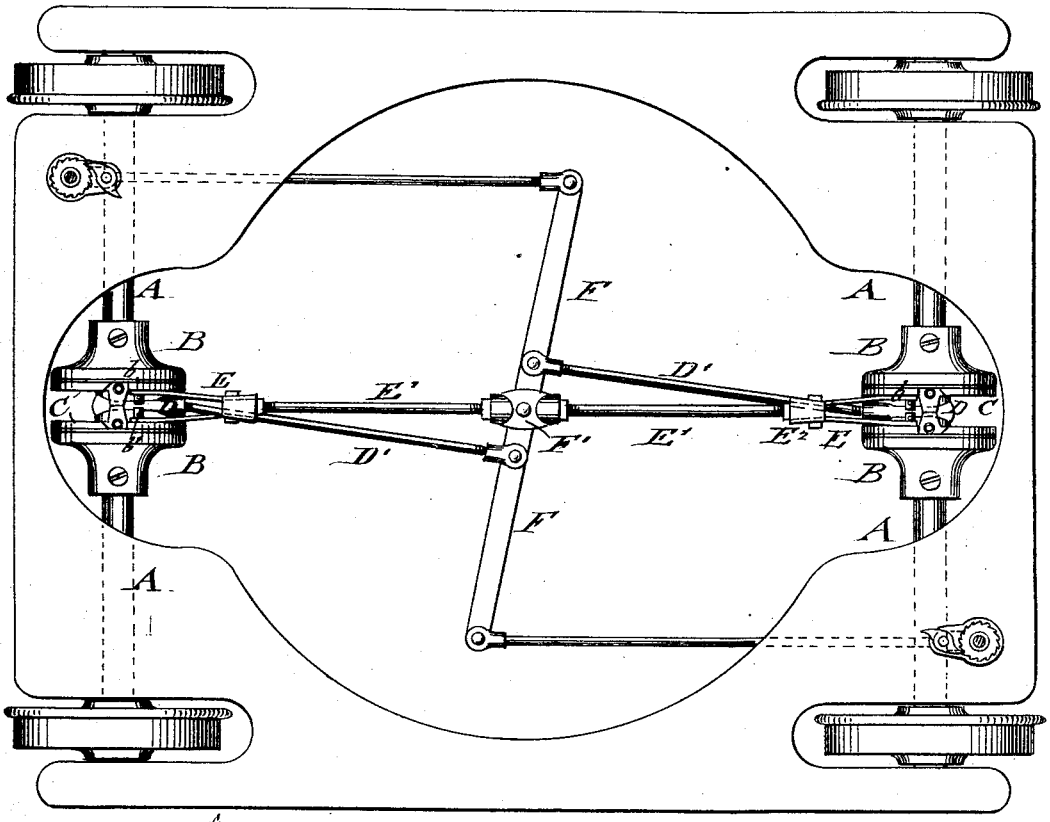


Fig. 2.

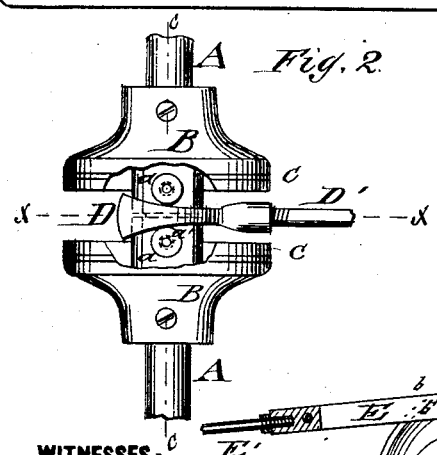


Fig. 3.

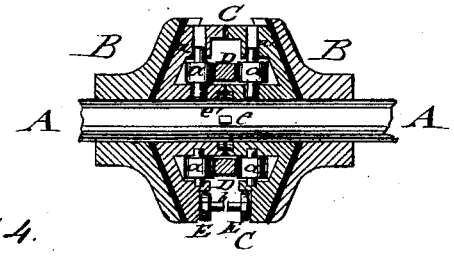
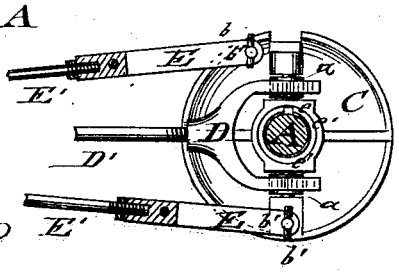


Fig. 4.



WITNESSES:

E. Wolff.

A. F. Tenney

INVENTOR:

S. G. Howe

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

SOLON G. HOWE, OF DETROIT, MICHIGAN, ASSIGNOR TO HIMSELF AND JAMES W. CHENEY, OF SAME PLACE.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **162,556**, dated April 27, 1875; application filed February 20 1875.

To all whom it may concern:

Be it known that I, SOLON G. HOWE, of Detroit, Wayne county, Michigan, have invented a new and Improved Car-Brake, of which the following is a specification:

Figure 1 represents a top view of my improved car-brake as applied to the axles of a street-car. Fig. 2 is a detail top view of the brake, with parts broken off to show wedge-bail; and Figs. 3 and 4 are, respectively, vertical, longitudinal, and transverse sections of the brake, on the lines *c c* and *x x*, Fig. 2.

Similar letters of reference indicate corresponding parts.

The invention relates to improvements in that class of car-brakes in which the friction is applied to the axle instead of the circumference of the wheels, so that the unequal wear of the wheels and axles is avoided, and great power exerted with little action of the brake-handle, for stopping quickly and effectively the car, the whole brake being easily arranged and adjusted, and reliable, simple, and durable in application.

The invention consists, mainly, of double friction-cones, which are placed on the axles, and carried, by the action of a wedge-bail on friction-rollers of the cones, against corresponding double shells keyed fast to the axles. The friction-cones are applied by the wedge-bail, and released by spring-braces, both being operated by intermediate rods and lever-connection from the hand-wheels at the ends of the car. The axle is lubricated through perforations of the center pins of the friction-rollers, and the cones are secured in their regular position and motion on the axle by a stationary projecting pin of the axle entering annular grooves of the cone-hubs. The spring-braces are attached to the upper and lower part of each cone, and secured to their lever-connecting rods by wedge-shaped blocks with binding side ridges or ribs, by which the constant strain exerted on the cones, to withdraw them from the shells, is increased.

In the drawing, A represents the axles of a street or other car, to which are keyed, symmetrically to the longitudinal axis of the car, two shells, B. Inside of the same, and sliding on the axle, are arranged two friction-cones, C, which are fitted accurately inside of the shells, the friction of the cones and shells being increased by leather lining applied to either cone or shell with rivets, glue, or cement. The friction-cones C are operated by means of a wedge-bail, D, for being forced against the shells, and by spring-braces, E, which are attached to the upper and lower parts of the cones, for releasing them from the shells at the instant when the action of the wedge-bail is discontinued. The wedge-bail D and spring-braces E are connected by rods D′ and E¹, which are provided with right and left hand screw-threads and jam-nuts, for being readily adjusted in length to a centrally-fulcrumed lever, F, the bail-rods D′ of each axle being pivoted equidistant from the fulcrum of the lever, while the spring brace-rods are firmly secured in sockets of the center lever-rest F′. The outer ends of the fulcrumed lever F are connected by rods and chains with the usual hand-wheels and ratchet-shafts on the platforms at both ends of the car.

The turning of either hand-wheel produces the forward swinging of the lever, and the corresponding motion of the forked bails D, which act, by their wedge-shaped ends, on small friction-rollers *a* at the upper and lower part of each cone C. The cones are thereby separated and forced against the shells, stopping the car quickly by the brake action produced thereby. On the release of the hand-wheel the spring action of the lever carries cones and lever back into the former position, and releases thereby the shells.

The spring-brace rods E¹ extend at each side of the center lever-rest F′ to the cones C—one to the upper, the other to the lower, part of the cones—each rod being supplied with two spring-braces, E, which are applied by fastening-screws to recesses formed by flanges or ridges at the sides of the wedge-shaped brace-block E². The object of the tapering or wedge-shaped block E² is to bring the outer ends of the spring-braces into closer proximity, and increase thereby the spring action of the same for the quicker withdrawing of the cones from the shells. The outer ends of the spring-braces E are firmly applied by cross-pins *b* to lugs *b′* of the cones, at diametrically opposite

points, so that the sliding motion is perfectly even and steady.

The friction-rollers *a* turn in bearings of the cones, the pivot-pins *a'* of the upper rollers being made with central perforations or oil-channels extending through the entire length down to the axle, so that axle, cones, and rollers may be oiled through the oil-duct at the same time.

The axle A is provided with a fixed projecting pin, *e*, that runs in an annular slot, *e'*, of each cone-hub, for the purpose of preventing the cones from working together from side to side against the shells, and defining thereby the exact position on the axle until forced against the shells by the brakeman.

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

1. The car-brake constructed of double shells, keyed to the axle, and sliding friction-cones fitting therein, and to be operated by wedge-bail and spring-braces with intermediate lever-connection from the brake-wheels of the car, all combined substantially as and for the purpose set forth.

2. The sliding friction-cones, provided with friction-rollers at upper and lower parts, in combination with the sliding wedge-bail to act thereon, for pressing the levers against the shells, as set forth.

3. The combination of the center-pin of the upper friction-rollers of the cones, having oil-channel throughout its length, with the axle, for lubricating axle, cones, and rollers, substantially as described.

4. The spring-braces attached to tapering spring-brace block, having binding side flanges or ridges, all combined as set forth.

SOLON G. HOWE.

Witnesses:
E. CHENEY,
E. Z. GUILD.