

(No Model.)

R. H. BLACK.
CAR BRAKE.

Patented Feb. 11, 1896.
Fig. 1.

No. 554,434.

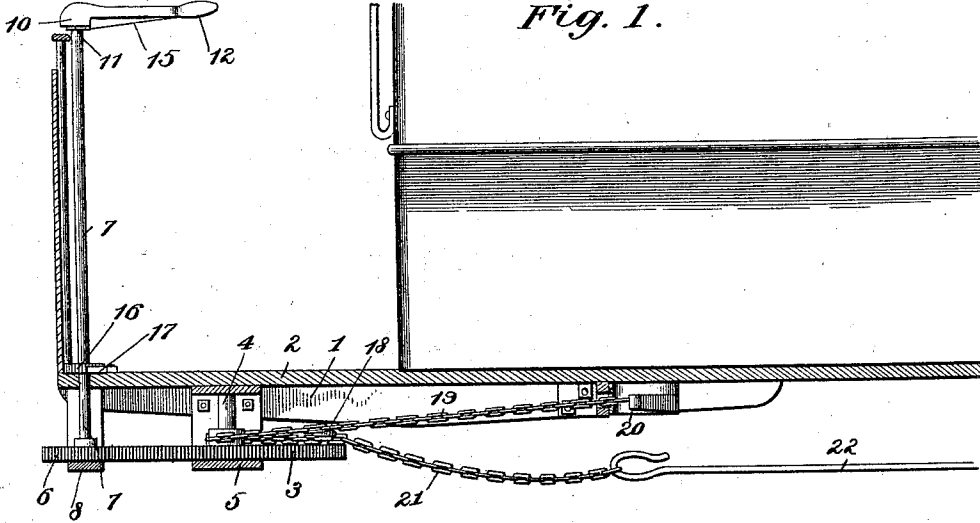


Fig. 2.

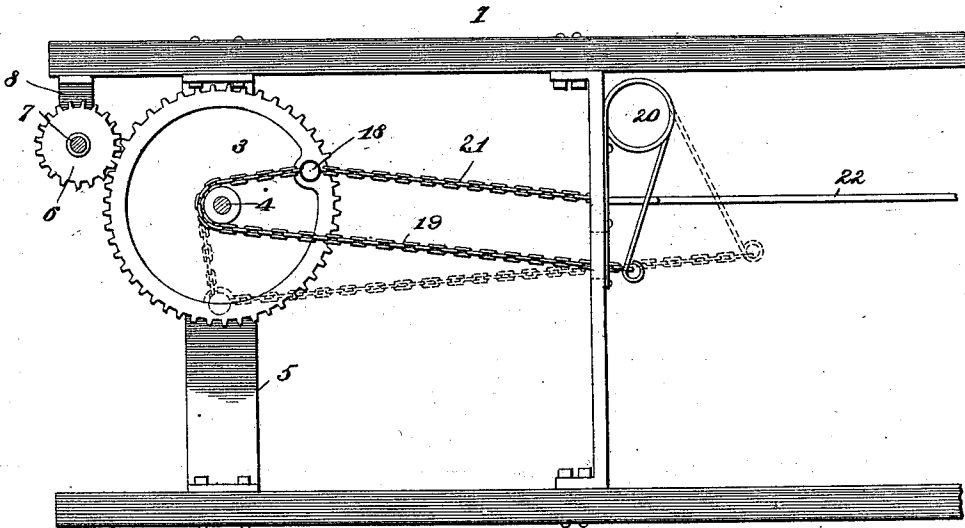
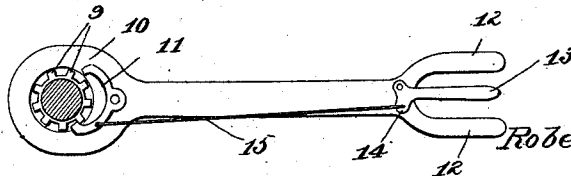


Fig. 3.



Inventor

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Witnesses

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ROBERT H. BLACK, OF HOMESTEAD, PENNSYLVANIA.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 554,434, dated February 11, 1896.

Application filed October 29, 1895. Serial No. 567,307. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. BLACK, a citizen of the United States, residing at Homestead, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Car-Brake, of which the following is a specification.

This invention relates to an improvement in car-brakes designed especially for use in connection with street-cars, to be used as a supplementary or emergency brake, or as the ordinary brake, when desired.

The object of the present invention is to provide a simple and efficient brake mechanism of durable construction, in which the brake-shoes may be quickly and vigorously applied to the wheels by spring-power.

Other objects and advantages of the invention will appear in the course of the subjoined description.

The invention consists in a car-brake mechanism embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a sufficient portion of a car to illustrate the application of the present improvement. Fig. 2 is a top plan view of the car-truck frame, the car-body and flooring being removed to show the arrangement and operation of the improved brake mechanism. Fig. 3 is a plan view of the hand ratchet-lever by means of which the brakes are applied.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the accompanying drawings, 1 designates the truck-frame of a car of any ordinary description, and 2 the flooring thereof.

3 designates a large spur gear-wheel, which is mounted upon a vertical shaft 4, arranged beneath the car-flooring and interposed between the same and a transverse supporting bar or bracket 5 extending across between the side sills or wheel-pieces of the truck and having its ends bolted or otherwise secured thereto in any convenient manner.

6 designates a smaller spur gear or pinion,

which is secured to and rotates with a vertical standard 7, the latter being mounted at its lower end in a transversely-projecting bracket 8, arranged about in the same horizontal plane with the bracket 5, so as to bring the pinion 6 into horizontal alignment with the large spur-gear 3. The standard 7 passes upwardly through the flooring of the car, at the front and rear platforms thereof, and is provided at its upper end with a series of teeth 9, disposed around the same, over which is placed the hub of a hand-lever 10, by means of which the standard is turned for winding up the brake mechanism. This hand-lever is provided with a centrally-pivoted and double-pointed pawl 11, which is adapted to engage with the teeth of the standard 7 in whichever direction it may be vibrated.

The swinging end of the hand-lever 10 is bifurcated or provided with two separate but integrally-formed handles 12, and intermediate said handles is arranged a thumb or finger lever 13, which is pivoted to the hand-lever at the fork thereof. This thumb or finger lever is of the elbow or bell-crank type, being provided with a short arm 14, from which a rod 15 extends to and connects pivotally with the double-pointed pawl 11 upon one side of the pivot thereof. By means of this arrangement it will be seen that by grasping the finger-lever 13 in conjunction with one or the other of the handles 12 of the hand-lever, the double-pointed pawl 11 may be vibrated in such manner as to cause it to engage the teeth of the standard 7 for turning said standard in the desired direction. The standard 7 is further provided with a ratchet-wheel 16, keyed thereto and arranged just above the platform of the car, with which a foot-operated pawl 17 is adapted to engage for holding the standard against turning, in a manner well understood.

The large spur-gear 3 is provided with a pin 18, projecting preferably from the upper face thereof and located at a distance from the center of said wheel equal to about half the throw of the brake-shoes. From this pin a chain 19 extends to and connects with the free end of a strong spring 20, another similar chain 21 extending between said pin 18 and the longitudinally-arranged brake-rod 22. The spring

20 may be of any size, shape, or type, according to the desire of the manufacturer, and as may be found most expedient in practice, the essential point being that its free end shall have a movement equal to the throw of the brake beams or shoes.

In operation the chain 19, which is interposed between the pin 18 on the spur-gear and the spring 20, is wound around the vertical shaft 4 of said spur-wheel by rotating the standard 7 and the spur-pinion secured to the lower end thereof and meshing with the large spur 3. The standard 7 is prevented from turning backward by means of the pawl and ratchet described, and the spring 20 is thus held compressed, with the chain 19, extending around the shaft 4, in the manner illustrated in Fig. 2. Under this adjustment the chain 21, which connects with the longitudinal brake-rod 22, is slack. The spring 20 under these conditions operates with reduced power upon the large spur-gear 3, but sufficient leverage is provided so that when the pawl 17 is thrown out of engagement with the ratchet on the standard 7 said spring will quickly revolve the gear 3, thereby drawing upon the chain 21 to an extent equal to twice the distance of the pin 18 from the shaft 4 plus one-half the diameter of said shaft, or the distance which the chain extends around it. Under the proper adjustment of the chains 19 and 21 the slack in the brake mechanism will all be taken up by the time the pin 18 has traveled one-half its course. From this point on, the leverage on the chain 21 is greatly increased, enabling the spring 20 to firmly and effectually set the brakes. Should it be desired to still more firmly apply the brakes, this may be done by vibrating the hand-lever in the proper direction, the effect of which will be to advance the pin 18 still farther in the circle in which it travels, thus winding the chain 21 farther around the vertical shaft 4.

It will be apparent that two separate pins may be employed on the large spur-gear in lieu of the single pin described, in which case one pin will receive the spring-chain while the other will operate the brake-chain. These pins may be arranged diametrically opposite or in any position found desirable. The brake mechanism hereinabove described is designed to be used in lieu of the ordinary brake mechanism or as a supplementary or emergency brake, for which purpose the device is well adapted by reason of the celerity with which the same operates.

If desired, the spring 20 may be dispensed

with and the brakes applied directly by hand-power, in the usual manner.

It will be apparent that any preferred form of hand lever or crank may be used for turning the standard 7 and applying the brakes, and that other changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a car-brake mechanism, the combination with a gear-wheel mounted beneath the car platform or flooring, of a chain interposed between said wheel and the brake beam and shoes, a second chain interposed between said gear-wheel and an actuating-spring, and means for rotating said gear-wheel for adjusting the brake mechanism, substantially in the manner and for the purpose specified.

2. In a car-brake mechanism, a gear-wheel mounted to revolve beneath the platform or flooring of the car and provided with a crank-pin, in combination with a spring for actuating said gear-wheel also arranged beneath the car body or platform, a chain connecting said spring and crank-pin on the gear-wheel, a second chain connecting said crank-pin with the brake-rod, and means for rotating and holding said gear-wheel at the desired point, substantially as and for the purpose described.

3. In a car-brake mechanism, a spur gear-wheel mounted on a vertical shaft beneath the car platform or flooring and provided with a crank-pin, a spring for actuating said gear-wheel arranged beneath the car-body, a chain interposed between and connecting said crank-pin and spring and adapted to wind around said shaft, and a second chain interposed between said crank-pin and the brake-rod and adapted to be wound around the shaft of the spur-gear by the tension of the spring, in combination with a revoluble standard provided with a hand-lever at its upper end, and a pinion or small gear fixed upon the lower end of said standard and meshing with said spur-gear, all arranged for joint operation substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROBERT H. BLACK.

Witnesses:

WILLIAM TUNSTALL,
FRANK EVANS.