

No. 676,743.

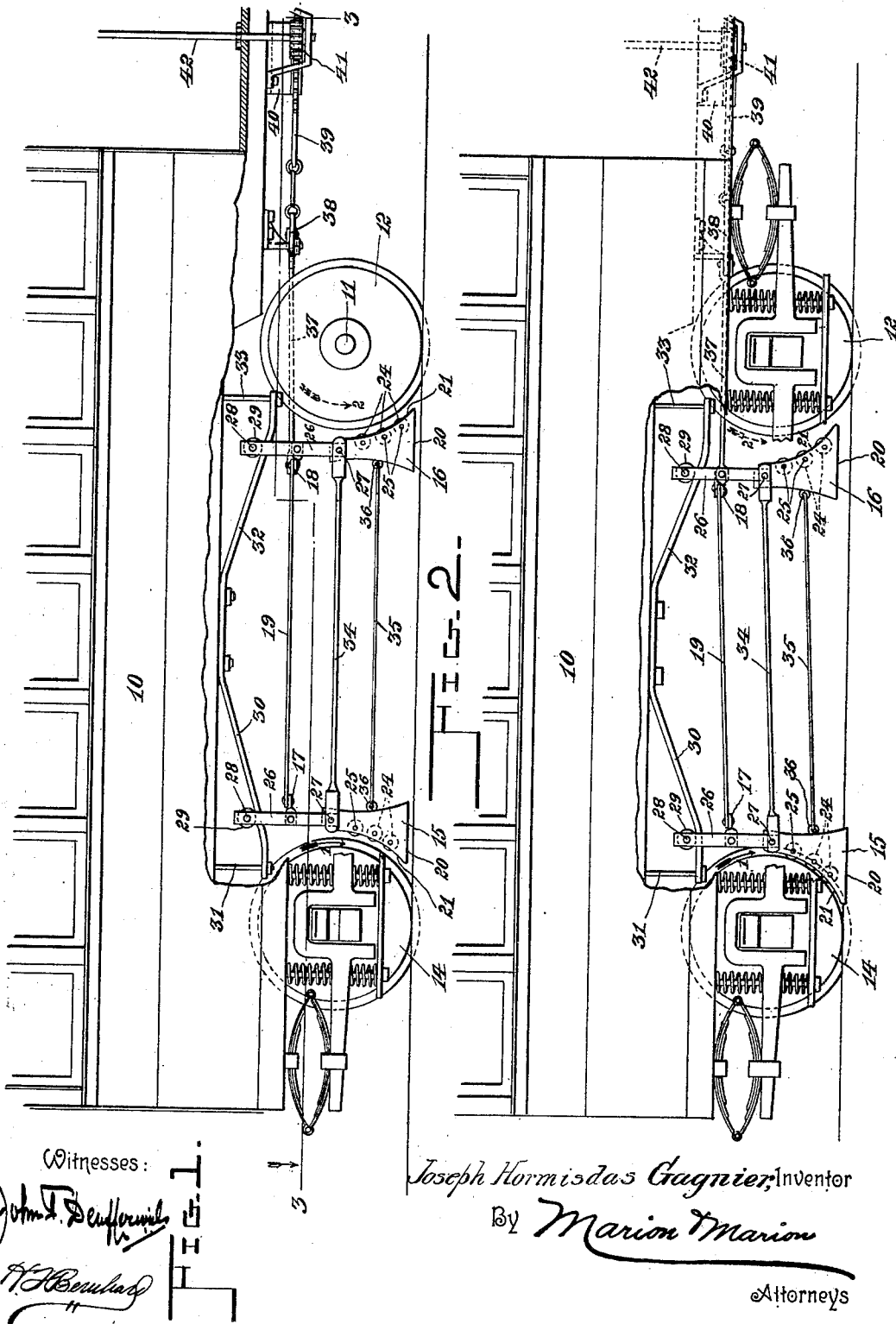
J. H. GAGNIER.  
CAR BRAKE.

Patented June 18, 1901.

(No Model.)

(Application filed Mar. 16, 1901.)

2 Sheets—Sheet 1.



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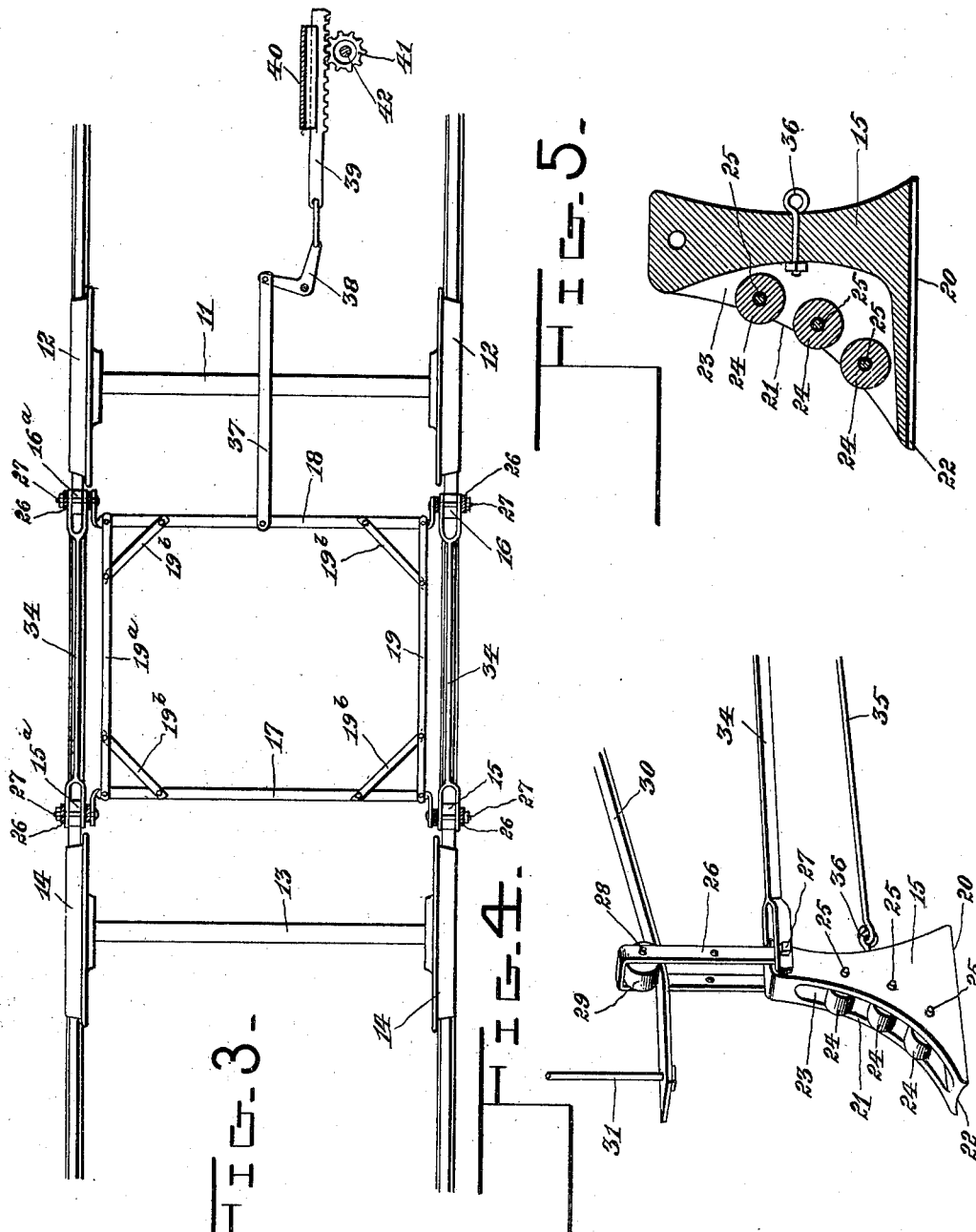
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# UNITED STATES PATENT OFFICE.

JOSEPH HORMISDAS GAGNIER, OF MONTREAL, CANADA.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 676,743, dated June 18, 1901.

Application filed March 16, 1901. Serial No. 51,441. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH HORMISDAS GAGNIER, a subject of the King of Great Britain, residing at the city and district of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Car-Brakes; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in car-brakes; and one object of the invention is to provide a simple and efficient track-brake which may be used in an emergency to exert powerful action on the car-wheels and the track jointly, so as to effectually control and arrest a car, particularly if the ordinary brake gets out of order on a heavy grade.

A further object of the invention is to provide an improved construction which normally occupies an inoperative relation to the track-surface and the car-wheels, said brake mechanism being easily and quickly lowered into operative position and adapted to work with equal efficiency when the car is traveling in a forward direction or if it should happen to move in an opposite wrong direction on a grade when the ordinary brake becomes disarranged.

With these ends in view my invention consists in the novel construction, arrangement, and combination of parts, as will be hereinafter fully described and claimed.

In the drawings hereto annexed, forming a part of this specification, Figure 1 is a side elevation of a portion of a car, partly broken away and showing the brake mechanism in its operative position. Fig. 2 is a similar view representing certain of the brake elements lowered into position for engagement with the surface of a track and with the tread of a car-wheel. Fig. 3 is a sectional plan view in the plane of the dotted line 3-3 on Fig. 1. Fig. 4 is a detail perspective view of one of the emergency brake-shoes with the other parts associated therewith, and Fig. 5 is a vertical detail section through one of said brake-shoes.

The same numerals of reference denote like parts in each figure of the drawings.

10 designates a portion of a car body or frame.

11 is the front axle, having the front wheels 12, and 13 is the rear axle, with the rear wheels 14.

15 15<sup>a</sup> designate a pair of brake-shoes arranged in coöperative relation to the rear wheels 14, and 16 16<sup>a</sup> is another pair of brake-shoes in active relation to the front wheels 12.

The brake-shoes 15 are connected in a pair by a transverse rod or brace 17, and in like manner the shoes 16 of the other pair are connected by the cross-rods 18. To these cross-rods are attached the rods or bars 19 19<sup>a</sup>, which extend longitudinally of the car and which form, with the bars 17 18, a substantially rectangular frame, as represented by Fig. 3, the corners of this frame being stayed by the braces 19<sup>b</sup>.

Each brake-shoe is preferably cast in a single piece of metal in the form represented by Figs. 4 and 5—that is to say, a block of cast metal of approximately triangular shape is employed. This shoe is provided with a substantially straight rail-face 20 and with a curved wheel-face 21, the rail-face being formed with a groove 22, which is curved transversely to conform to the top face of the rail, as shown by Figs. 4 and 5. The shoe is furthermore provided with a longitudinal slot or cavity 23, which opens through the curved wheel-face 21 thereof, and in said slot or cavity is arranged a series of friction-rolls 24, which are loosely mounted on the spindles 25, the same being supported in the slotted portion of the shoe. (See Fig. 5.) The active surfaces of the friction-rolls project beyond the curved face 21 of the shoe for the purpose of riding against the tread of the car-wheel when the brake is applied, said rolls tending to reduce the friction and wear between the car-wheel and the brake-shoe. Each brake-shoe is furthermore provided with a hanger 26, which is attached to the upper end of the shoe by means of a bolt 27, and in the upper portion of this hanger is supported the shaft 28 of a friction-roller 29. The friction-rolls of the rear shoes 15 15<sup>a</sup> are arranged to ride upon inclined tracks 30, one of which is shown by Figs. 1 and 2, said tracks being fastened to the car or frame thereof and braced at their other ends

by the stay-rods 31, the tracks being inclined downwardly toward the plane of the car-wheels. The rollers of the front shoes 16 16<sup>a</sup> are arranged to ride upon other tracks 32, also fastened to the under side of the car or the frame thereof and inclined toward the front wheels, said tracks being stayed by the rods 33. If desired, the tracks for the front and rear shoes on one side of the car may be made from a single piece of metal, bent as shown by Figs. 1 and 2 and fastened to the car; but this is optional. It will be observed, however, that the tracks 30 32 are inclined in opposite directions in order that the shoes 15 15<sup>a</sup> may travel downwardly and rearwardly toward the rear wheels 14, while the front shoes 16 16<sup>a</sup> are moved in an upward direction on the tracks 32 and away from the front wheels 12.

In addition to connecting the brake-shoes in pairs I employ the rods 34, which are attached pivotally to the shoes by the bolts 27, which connect the hangers to said shoes, and, furthermore, the shoes are connected in pairs on the sides of the car by the stay-rods 35, the latter being attached to the eyebolts 36, which are fastened to the shoes.

Any suitable means may be provided for manipulating the shoes; but in Figs. 1, 2, and 3 I have shown a draft-rod 37, having a pivotal connection with the cross-bar 18. This draft-bar is fulcrumed to one arm of a bell-crank lever 38, to the other arm of which lever is linked a reciprocatory rack 39, the same being slidably guided in the boxing 40, supported on the under side of the car. With this rack meshes a gear-pinion 41, that is secured to a brake-spindle 42, the latter extending upwardly through the machine-platform and having the usual hand-wheel for manipulation by the motorman or driver.

From the foregoing description, taken in connection with the drawings, it will be noted that the four brake-shoes are arranged between the car-wheels and that the rear and front shoes have the curved wheel-faces thereof arranged to face in opposite directions in order to be properly presented to the treads of the front and rear wheels. These brake-shoes are sustained by the hangers and the inclined tracks so that said shoes will lie directly over the track-rails and the concave rail-faces 20 will be presented in position to engage with the rails. In the normal position of the emergency-brake all the shoes are arranged as shown by Fig. 1, wherein the rail and wheel faces are free from engagement with the track-rails and the wheel-treads. When the car is traveling in a forward direction and the wheels rotate in the direction indicated by the arrow 1, the improved brake mechanism may be brought into service by turning the spindle 42, so as to move the brake-shoes in a rearward direction, whereby the shoes 16 16<sup>a</sup> are withdrawn from the front wheels, while the other pair of shoes 15 15<sup>a</sup> are lowered, so as to wedge themselves into place be-

tween the track-rails and the treads of the rear wheels 14. This movement of the rear shoes brings the rail-faces thereof firmly upon the track-rails, and the friction-rollers 24 forcibly impinge the treads of the rear wheels, whereby the shoes effectually chock the car-wheels. Should the ordinary brake give way or become disarranged when the car is ascending a hill or acclivity, the car will have a tendency to move in a backward direction, as indicated by the arrow 2. In this event the motorman turns the spindle 42 in a direction to move the brake-shoes in a forward direction, thereby bringing the front shoes 16 16<sup>a</sup> into position for service, while the rear shoes are retracted or drawn away from the rear wheels. The front shoes are thus forced or wedged into place between the track and the front wheels, so as to make the proper faces of the shoe engage with the rails and the wheel-treads, thus retarding and arresting the car.

It is evident that my improved brake may be used in conjunction with an ordinary car-brake, in which event it will serve the purpose of an emergency-brake; but I reserve the right, however, to equip a car with my improved track-brake irrespective of the ordinary brake.

Changes within the scope of the appended claims may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of the invention is embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described my invention, what I claim as new is—

1. In a car-brake, the combination of the oppositely-inclined roll-tracks, the front and rear shoes connected in pairs and suspended from said roll-tracks, and means for manipulating said connected shoes, substantially as described.

2. In a car-brake, the combination of inclined tracks, wheel-shoes having the rail and wheel faces, hangers attached to the shoes and provided with rolls arranged to travel on the tracks, cross and longitudinal rods connecting the shoes in pairs, and a suitable operating mechanism, as and for the purposes set forth.

3. In a car-brake, a group of shoes each having a solid cast-metal body provided with a flat rail-face, a curved wheel-face, a longitudinal recess in the wheel-face, and a series of rolls journaled in said recess of the wheel-face, combined with oppositely-inclined roll-tracks, hangers slidably fitted to said roll-tracks and each connected to one shoe of the group, and means for actuating the shoes, substantially as described.

4. In a car-brake, the combination of oppositely-inclined tracks on each side of a car-frame and between the wheels thereof, a series of hangers slidably fitted on the tracks,

a series of shoes connected to the hangers and each having wheel and track faces, a frame connecting the shoes, and means for shifting the position of the frame, substantially as described.

5 5. In a car-brake, the combination of inclined tracks, the hangers slidably fitted thereto, shoes connected to the hangers, side and cross rods connected to the shoes, stay-

rods connecting the shoes in pairs, and means for shifting the shoes, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOSEPH NORMISDAS GAGNIER.

Witnesses:

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F. MYNARD.