

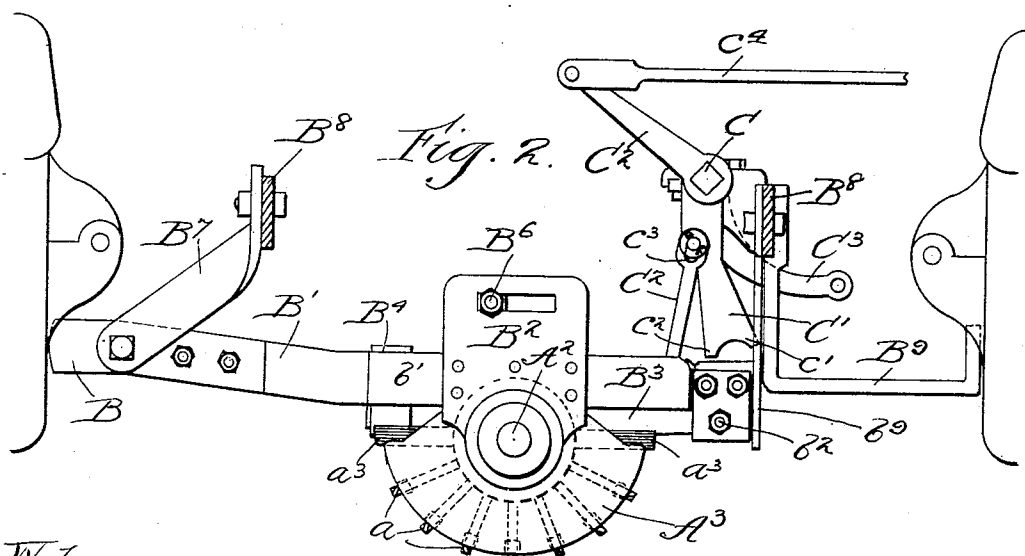
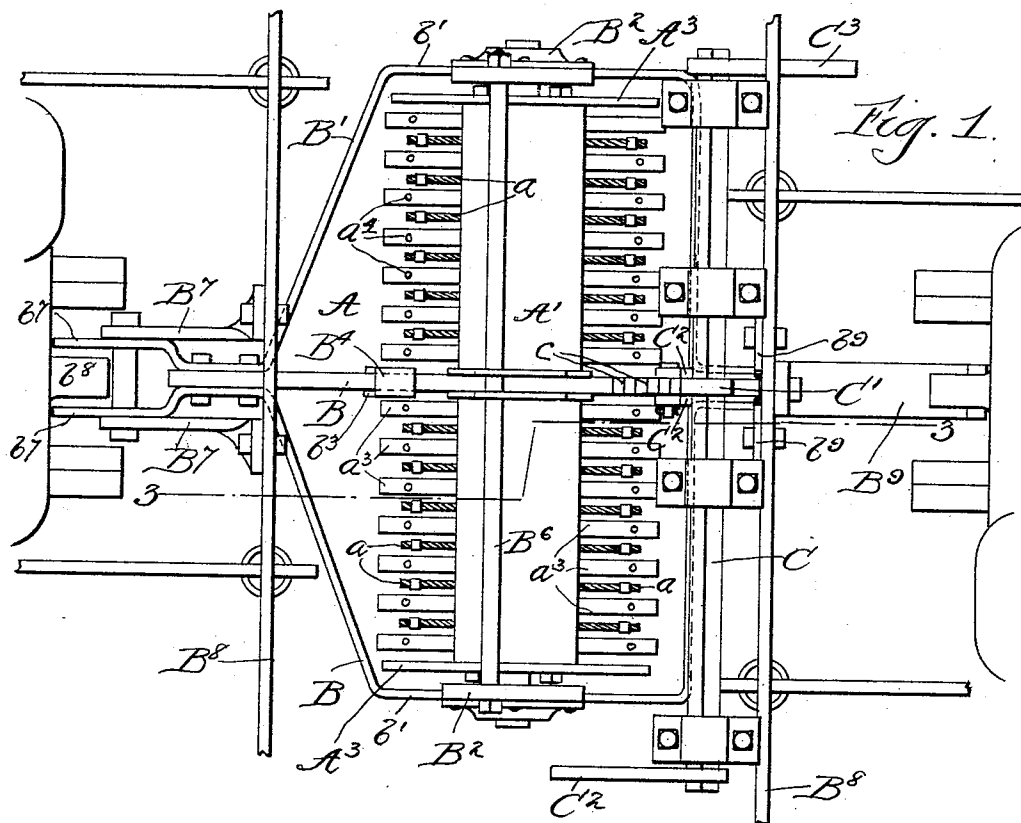
(No Model.)

C. B. FAIRCHILD.
VEHICLE BRAKE.

2 Sheets—Sheet 1.

No. 569,150.

Patented Oct. 6, 1896.



Witnesses
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St. M. Rhein.

Inventor
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(No Model.)

2 Sheets—Sheet 2.

C. B. FAIRCHILD.
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Fig. 3.

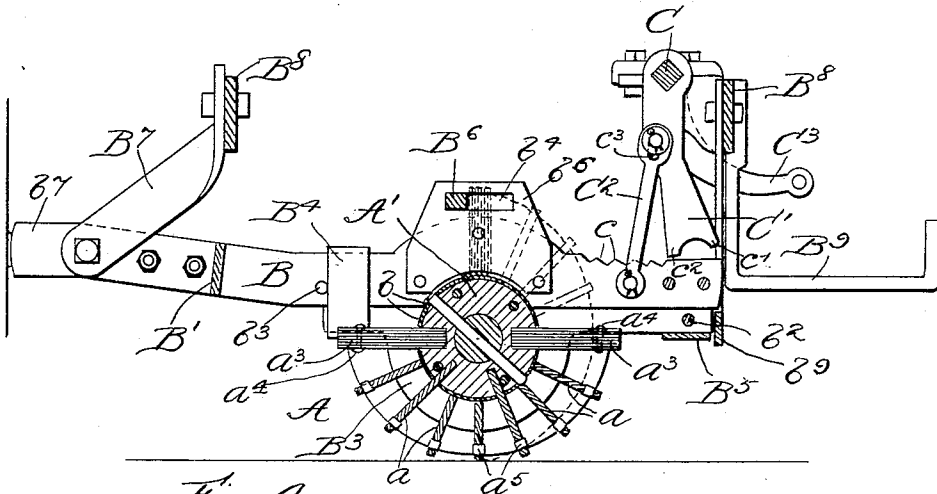


Fig. 4.

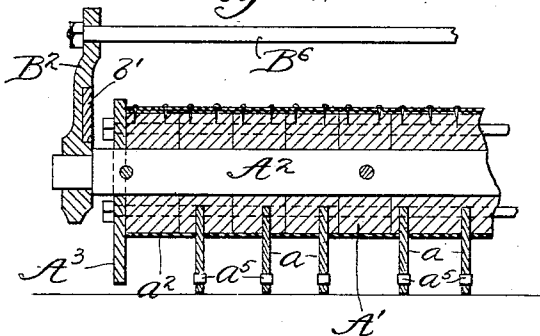


Fig. 5.

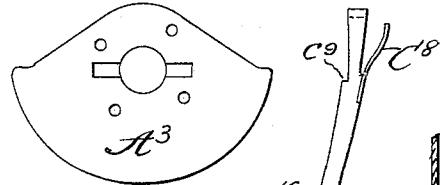


Fig. 6.

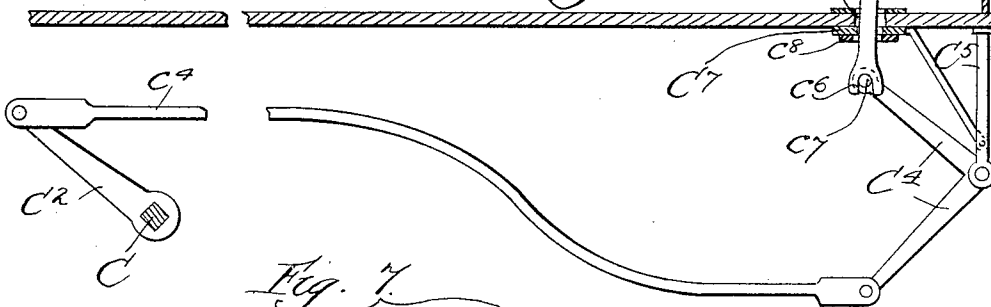
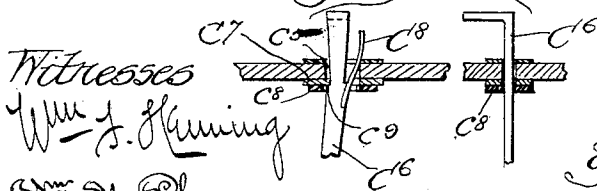


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES B. FAIRCHILD, OF NEW YORK, N. Y., ASSIGNOR OF ONE-EIGHTH
TO DANIEL W. BOSLEY, OF CHICAGO, ILLINOIS.

VEHICLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 569,150, dated October 6, 1896.

Application filed February 18, 1896. Serial No. 579,719. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. FAIRCHILD, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented an Improved Vehicle-Brake, of which the following is a specification.

This invention relates to improvements in vehicle-brakes, and relates particularly to improvements in what may be termed "pavement" brakes of the general type comprising, broadly, a brush supported upon the vehicle and adapted to be lowered and raised to depress the free ends of the brush-teeth into and to raise them out of contact with the road-bed or pavement.

The object of the present invention is to provide a brake of this type of such construction that when the free ends of the brush-teeth are brought into contact with the road-bed or pavement said brake will be applied quickly, automatically, and with desired force.

A brake embodying my invention comprises a revoluble brake-brush, consisting of a rigid hub or body in which are secured two sets of brush-teeth, said brush being supported in permanent longitudinal adjustment upon said car and being movable toward and from the road-bed; means to lower and raise said brake-brush; surfaces thereon which come into contact with the road-bed or pavement as said hub is depressed and by engagement therewith operate to rotate said brush to bring the free ends of the brush-teeth into contact with the said road-bed or pavement, said brush-teeth projecting farther from the axis of rotation of said brush than do the rotating surfaces at the point where, normally, they first strike the road-bed or pavement; means to lock said brake-brush in depressed position, and stops to limit the rotation of said brake-brush.

The invention also consists of the various other features, combinations of features, and details of construction hereinafter described and then pointed out in the claims.

In the accompanying drawings a brake embodying my invention is fully illustrated, said brake being shown as applied to the motor-car of an electric street-railway.

Figure 1 is a top plan view of my improved brake. Fig. 2 is a side view thereof. Fig. 3

is a longitudinal vertical sectional view on the line 3 3 of Fig. 1. Fig. 4 is a partial longitudinal sectional view of the brake-brush. Fig. 5 is a side view of one of the cam plates or shoes secured to the brake-brush. Fig. 6 is a side view of mechanism for operating the brake, and Fig. 7 is a view showing the operating-lever depressed.

Referring now to the drawings, A designates, as a whole, a brake-brush embodying my invention, consisting of a rigid hub or body A', in the surface of which are secured a plurality of brush-teeth *a*, which project radially therefrom. The hub or body portion A' of said brake-brush is preferably made of hard-wood plank rigidly secured together in sections or layers in such manner that the grain of adjacent layers runs in different directions, to the lateral faces of which are secured iron plates or washers. Preferably, also, a metallic plate *a*² is secured to the surface of the hub or body portion A' of the brush A, said plate being perforated in proper manner to permit the brush-teeth *a* to be inserted through it into said hub or body portion A'.

The brake-wheel A is rigidly secured to a horizontal shaft A², mounted, so as to rotate freely, in suitable bearings formed on a brake-frame supported beneath the car at the middle thereof in such manner that said brush A will be bodily movable toward and from the road-bed or pavement, so as to bring the free ends of the brush-teeth *a* into and out of engagement with said road-bed or pavement.

The brush-teeth *a* comprise teeth which terminate at different distances from the axis of rotation of the brake-brush A, said teeth being so arranged and disposed that the free ends of said teeth may be described as forming a regularly-curved surface which is eccentric to the axis of rotation of said brake-brush, and the normal position of said brush is such that when said brake-brush is depressed that portion of said eccentric surface which is the shortest distance from the axis of rotation of said brake-brush will come into contact with the road-bed or pavement first, and such, also, that rotation of said brush, due to the movement of the car, will bring the brush-teeth which project farthest from said axis of rotation into contact with said road-bed or pavement.

In the preferable construction shown the hub or body portion A' of the brake-brush A is cylindrical in shape and is secured to the shaft A², so as to be concentric therewith, and the brush-teeth *a*, which are only inserted in one half of said hub A', comprise teeth which project relatively short and long distances from the surface of said hub, the teeth which project the shortest distance being at the middle, circumferentially, of said brush-surface and relatively longer teeth being arranged symmetrically on both sides thereof. Means are also provided to maintain said brush in such position that normally the shortest teeth will come into contact with the road-bed or pavement first as said brush is depressed. It is obvious that rotation of the brush in either direction from its normal position will operate to bring relatively long teeth into contact with the road-bed or pavement. In the construction shown, where the brush-teeth *a* are disposed on one side of the hub or body portion A' of the brake-brush, the weight of said teeth will operate to maintain said brake-brush in desired normal position. With a different disposition of brush-teeth said brake-brush could be maintained in normal position by springs applied thereto.

Desirable dimensions for the hub A' are about thirty inches (30") long by about seven inches (7") in diameter, and the teeth are secured therein so as to project therefrom distances varying from about three and one-half inches (3½") at the middle of the brush-surface to about four and one-half inches (4½") at the extreme edges thereof, circumferentially, the variation being proportioned to their distance from the middle of the brush. As shown, said teeth are disposed in nine equidistant rows, which extend parallel with the axis of said brush, and the lengths of the teeth of each successive row, both ways from the middle row, increasing by one-fourth of an inch.

As shown, the brush-teeth *a* comprise teeth of two different forms. The teeth forming both outer rows (shown in detail in Fig. 3 of the drawings) consist of a plurality of strips or plates A³ of sheet-steel drawn to a mild spring temper and secured together by a rivet *a*⁴, so as to form a laminated structure. The teeth of the intermediate rows (shown in detail in Fig. 4) consist of strands of wire cable drawn to a mild spring temper, adjacent to the free ends of which are secured collars or ferrules *a*⁵ to prevent said teeth from fraying.

My invention also contemplates the use of other forms of brush-teeth, all as fully described in Letters Patent of the United States, issued to myself and Daniel W. Bosley jointly, and dated September 15, 1896, No. 567,951.

The distance from center to center of adjacent teeth in the three outer rows on each side of the brush-surface is about two inches, (2"), and the distance between the teeth of the remaining rows is about four and a half inches (4½").

Obviously the size and proportions of my improved brush admit of a wide range of variation to meet special requirements.

Rigid shoes or plates A³ are secured to the shaft A² at opposite sides of the brake-brush A, which are adapted to come into contact with the road-bed or pavement as said brake-brush is depressed and prevent the farther depression thereof. The brush-teeth *a* project beyond said shoes A³ and will come into contact with the road-bed or pavement in advance of said shoes or cams, which will thus operate to limit the flexure of said brush-teeth. As shown, the plates secured to the ends of the hub or body A' of the brake-brush are formed by said shoes or cam-plates A³.

The brake-frame upon which the brake-brush A is supported consists of three members, comprising a middle member B and two lateral members B', which are secured together at their ends into a rigid structure. The middle frame member B is designed to sustain the entire thrust due to the application of the brake. For this reason it is made very strong, and a hole or opening *b* is formed therein through which the hub A' of the brake-brush A passes, the sides of said hole being closely adjacent to the sides of said cylinder. The lateral members B' are oppositely bent, so as to form parallel sections *b'*, between which the brake-brush A is mounted, suitable bearings being formed thereon to receive the ends of the shaft A² of the brake-brush. As shown, the bearings for said shaft A² are formed in plates or brackets B², rigidly secured to the middles of said parallel sections *b'* of said lateral frame members B'.

Owing to the manner in which they are bent the lateral frame members B' are weak to sustain strains. Any pressure on the brake-brush A, therefore, will cause said side frame members B' to yield until the surface thereof comes into contact with the sides of the hole *b* in the middle member B, which will then take practically the entire thrust thereof. To provide for assembling said middle member B so that the hole *b* therein shall inclose the hub A' of the brake-brush, said hole or opening *b* is formed partly in said frame member B and partly in a detachable section B³. As shown, the detachable section B³ is supported in position by hangers or clips B⁴ B⁵, of which the hanger or clip B⁴ hangs loose upon the frame member B at one side of the brake-brush, and the other hanger or clip B⁵ is secured to said member by bolts, as clearly shown. A bolt or screw *b*² secures said yoke B³ in fixed position relatively to the frame member B, and a pin *b*³ prevents displacement of the hanger B⁴ relatively to said movable section B³. A suitable stop is also provided on said brake-frame to arrest the rotation of the brake-brush A. As shown, said stop is formed by a rod or bar B⁶, which is supported in slots *b*⁴, formed in upward extensions of the plates or brackets B² and in brackets or lugs *b*⁶, rigidly secured to the middle frame

member B, the position of said bar being such that as the brake-brush rotates in either direction one of the extreme rows of brush-teeth *a* will come into contact therewith. To permit the brush-teeth to engage the road-bed or pavement in desired manner, and owing to the fact that the extreme rows of brush-teeth are diametrically opposite each other, the slots *b*⁴ are longer than the corresponding dimensions of the rod or bar B⁶. With a proper proportion of parts, however, a rigid stop could be substituted for said movable stop.

The brake-frame, constructed as described, is pivoted adjacent to one end to brackets B⁷, rigidly secured to one of the transverse frame-bars B⁸ of the truck-frame of the car, so as to be suspended between the motors mounted on said car, and in such position that the pivoted end of the brake-frame will be closely adjacent to one of said motors and the opposite end thereof closely adjacent to a bracket or support B⁹, rigidly secured to one side of one of the transverse frame-bars B⁸ of the truck-frame, so that the thrust due to the application of the brake will cause the end of the brake-frame to abut against a motor or against the bracket B⁹, which in turn abuts against one of the motors. The motors will thus sustain the thrust due to the application of said brake. In order to prevent lateral displacement of said brake-frame, the extreme ends of the lateral frame members B⁷, at the pivoted end of said frame, are spread apart to form a yoke or fork, as clearly shown at B⁷, which said fork or yoke embraces a projection *b*⁸, formed on the motor, and the opposite end of said frame is confined between the adjacent sides of a U-shaped rod or bar *b*⁹, the ends of which are rigidly secured to one of the truck-frame bars B⁸, as clearly shown.

While any suitable means may be employed to lower and raise the free end of the brake-frame so as to depress the free ends of the brush-teeth into and to raise them out of contact with the road-bed or pavement, I prefer to employ the means shown in the drawings, which I will now describe.

Rigidly secured to a shaft or bar C, above the free end of the brake-frame, is a pawl C', which is adapted to engage teeth *c*, formed on the top of said free end of the brake-frame, and to maintain the same in a depressed position against a thrust tending to force it up. As shown, the pawl C' is what may be termed "double," the free end thereof being bifurcated, forming two prongs or projections *c*' *c*², which are relatively short and long, when referred to their pivotal point, and which are in such relative positions that the shorter prong or projection *c*' will engage the teeth *c* on the brake-frame in advance of the longer prong *c*². The shorter prong *c*' will thus engage the teeth *c* at a less depression of the brake-frame than is required to bring the longer prong *c*² into engagement therewith,

while said longer prong *c*² will engage said teeth *c* after the prong *c*' has passed out of engagement therewith. In this manner the range of the locking device is materially increased.

The free end of the brake-frame is connected with the pawl C' at a distance from its pivotal point by links C², which are pivoted at one end to the free end of the brake-frame, and slots *c*³, in the other ends of which engage a pin secured in said pawl C'. Pivotal movement of said pawl in the direction to disengage said pawl from the teeth *c* will thus operate to raise the free end of the brake-frame to retract the brake-brush A' from engagement with the road-bed or pavement, while the slots *c*³ permit limited pivotal movement of the pawl C' without raising the end of the brake-frame.

Rigidly secured to the bar or shaft C at opposite sides of the car are lever-arms C² C³, the free ends of which are connected by brake-rods *c*⁴ with the free ends of corresponding bell-cranks C⁴, pivotally supported upon suitable brackets C⁵, secured to the body of the car, the relation of parts shown being such that depression of the free ends of the bell-crank arms, other than those to which the brake-rods *c*⁴ are connected, will actuate the various parts so as to disengage the pawl C' from the brake-frame and to raise the free end of said brake-frame. As shown, said bell-cranks C⁴ are actuated by foot-levers C⁶, connected thereto, which project upward through the floor of the car in position to be depressed by the foot of the operator. Preferably only a single bar C⁶ is used, which is adapted to be quickly attached to either of said bell-cranks, as desired. To this end the foot-lever C⁶ is confined so as to be vertically movable in a slot *c*⁵, formed in the floor of the car, and a slot *c*⁶ in the lower end thereof embraces a pin *c*⁷, which projects laterally from the bell-crank. Rubber pads *c*⁸ are secured to the car so as to be in frictional engagement with the sides of the foot-lever C⁶, and will prevent displacement of said lever from jolting of the car. Depression of the foot-lever C⁶ will thus operate to trip the pawl C' and release and raise the free end of the brake-frame and through it to raise the brake-brush A out of contact with the road-bed or pavement. A catch is also provided to maintain said brake-frame in its raised position. As shown, a notch *c*⁹, formed in the foot-lever C⁶, is adapted to engage the edge of a plate C⁷ on the car, and a spring C⁸, secured to the said foot-lever in proper position therefor, forces the notch *c*⁹ under the edge of the plate C⁷, which will obviously operate to maintain said brake-frame and brake-brush in raised position and inoperative.

When it is desired to apply the brake, all that is necessary is to strike the foot-lever C⁶, so as to disengage the notch *c*⁹ from the plate C⁷. The free end of the brake-frame will then fall by gravity until the free ends of

the shortest brush-teeth strike the road-bed or pavement, and the pawl C', engaging the teeth c in said brake-frame, will maintain said brake-frame in such depressed position.

5 The movement of the car over its road-bed will operate to rotate the brake-brush A and bring the relatively long brush-teeth at one edge thereof into contact with the pavement, while the teeth at the other edge of said

10 brush, coming into contact with the bar or rod B⁶, will arrest the rotation of said brake-brush, whereby a strong frictional engagement will be created between the road-bed and the brush-teeth in contact therewith,

15 which will stop the car.

When it is desired to release the brake, the foot-lever C⁶ is depressed, whereby the pawl C' is tripped, and through the medium of the links C² the free end of the brake-frame raises, and with it the brake-brush A. The slots c³ in the links C² provide for sufficient movement of the free end of the brake-frame relatively to the locking-pawl C' to permit the tripping thereof. It will sometimes happen, however, that the upward thrust on the

25 brake-frame is too strong to allow said pawl to be tripped when the brake-brush is in full engagement with the pavement. In such cases the pressure on said brake-frame can

30 be quickly relieved by starting the car backward. In the drawings I have shown said brake-actuating mechanism at one end only of said car.

It is obvious that any other well-known

35 mechanism may be used to impart rotation to the shaft or bar C, but I consider the mechanism shown as preferable, owing to the ease and despatch with which the brake may be applied.

40 I claim—

1. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, said brush being supported

45 permanent longitudinal adjustment upon the vehicle and being movable toward and from the road-bed, surfaces formed on said brake-brush which come into contact with the road-bed or pavement, when said brake-brush is

50 depressed, and by engagement therewith operate to rotate said brake-brush to bring the free ends of the brush-teeth into contact with said road-bed or pavement, the free ends of said brush-teeth extending farther from the

55 axis of rotation of the brake-brush than do the rotating surfaces at the point where, normally, they first come into contact with the road-bed or pavement, means to lower and raise said brake-brush, means to secure it in

60 depressed position and stops to limit the rotation of said brake-brush, substantially as described.

2. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality

65 of brush-teeth, said brake-brush being mounted upon a brake-frame, pivoted, adjacent to

one end, to a rigid portion of the car, surfaces formed on said brake-brush, which come into contact with the road-bed or pavement, when

70 said brake-brush is depressed, and by engagement therewith operate to rotate said brake-brush to bring the free ends of the brush-teeth into contact with said road-bed or pavement, the free ends of said brush-

75 teeth extending farther from the axis of rotation of the brake-brush than do the rotating surfaces at the point where, normally, they first come into contact with the road-bed or pavement, means to lower and raise

80 the free end of said brake-frame, a lock to secure said free end of the brake-frame in depressed position and stops to limit the rotation of said brake-brush, substantially as described.

3. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured two sets of brush-teeth, said brush being supported in permanent longitudinal adjustment upon

90 the vehicle and being movable toward and from the road-bed or pavement, cam-surfaces formed on said brake-brush which come into contact with the road-bed or pavement, when said brake-brush is depressed, and by engagement therewith operate to rotate said brake-

95 brush to bring one set or the other of brush-teeth into contact with the road-bed or pavement, depending upon the direction of movement of the car, the free ends of the brush-

100 teeth extending farther from the axis of rotation of said brake-brush than do the rotating surfaces at the point where, normally, they first come into contact with the road-bed or pavement, means to lower and raise said

105 brake-brush, means to secure it in depressed position and stops to limit the rotation of said brake-brush, substantially as described.

4. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid

110 hub or body in which are secured two sets of brush-teeth, said brush being supported upon a brake-frame, pivoted, adjacent to one end, to a rigid portion of the car, surfaces formed on said brake-brush, which come into contact with the road-bed or pavement, when said brake-brush is depressed, and by engagement therewith operate to rotate said brake-brush to bring the free ends of one set or the other of brush-teeth into contact with

120 the road-bed or pavement, depending upon the direction of movement of the car, the free ends of the brush-teeth extending farther from the axis of rotation of said brush than do the rotating surfaces at the point where, normally, they first come into contact with the road-bed or pavement, means to lower and raise the free end of said brake-frame, a lock to secure the free end of the brake-frame in depressed position and stops to limit the rotation of said brake-brush, substantially as described.

5. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid

hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brush, said brake-brush being bodily movable toward and from the road-bed or pavement and being supported in permanent longitudinal adjustment upon the vehicle, means to lower and raise said brake-brush, means to secure said brake-brush in depressed position and stops to limit the rotation thereof, substantially as described.

6. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brush, a brake-frame, pivoted, adjacent to one end, to a rigid portion of the car, upon which said brake-brush is mounted, means to lower and raise the free end of said brake-frame, a lock to secure said free end of the brake-frame in depressed position, and stops to limit the rotation of the brake-brush, substantially as described.

7. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brake-brush, a brake-frame, comprising lateral members, in which are formed the bearings for the brake-brush and a middle member, a hole or opening in which embraces and the sides of which are closely adjacent to the hub of said brake-brush, said brake-frame being pivoted, adjacent to one end to a rigid portion of the car, means to lower and raise the free end of said brake-frame, a lock to secure the free end of the brake-frame in depressed position, and stops to limit the rotation of the brake-brush, substantially as described.

8. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brake-brush, said cam-surface being nearest to the axis of rotation of said brake-brush, at the middle, circumferentially, thereof and said brush being symmetrical on both sides of said middle line, said brake-brush being bodily movable toward and from the road-bed or pavement and being supported in permanent longitudinal adjustment upon the car, means to lower and raise said brake-brush, a lock to secure said brake-brush in depressed position and stops to limit the rotation thereof, substantially as described.

9. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brush, said brake-

brush being mounted upon a suitable brake-frame, supported in permanent longitudinal adjustment upon the car in such manner as to be bodily movable toward and from the road-bed or pavement, means to lower and raise said brake-brush, a lock to secure it in depressed position and stop to limit the rotation of said brake-brush, said stop consisting of a rod or bar supported in lugs or brackets formed on the brake-frame in the path of the brush-teeth, as said brake-brush rotates, substantially as described.

10. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, which form an eccentric or cam surface, relatively to the axis of rotation of said brush, a stop to limit the rotation of said brake-brush, a frame upon which said brake-brush is mounted, said brake-frame being supported in permanent longitudinal adjustment upon said car, and being movable toward and from the road-bed or pavement, a pawl or detent, which secures said brake-frame in depressed position, means to trip said pawl or detent to release said brake and means to raise said brake-frame, substantially as described.

11. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brake-brush, a stop to limit the rotation of said brake-brush, a brake-frame pivoted, adjacent to one end, to a rigid portion of the car, upon which said brake-brush is mounted, a pawl or detent pivotally supported above the free end of said brake-frame and adapted to lock the free end of said brake-frame in depressed position, said pawl or detent comprising two prongs which engage said brake-frame at different depressions thereof, means to trip said pawl or detent to release said brake and means to raise the free end of said brake-frame, substantially as described.

12. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brake-brush, a stop to limit the rotation of said brake-brush, a pivoted brake-frame on which said brake-brush is mounted so as to be in permanent longitudinal adjustment upon the vehicle, a pawl or detent pivoted above the free end of said brake-frame and adapted to lock the said free end of said brake-frame in depressed position, a lever applied to said pawl or detent to rotate the same so as to trip said pawl or detent and release the brake, and a link connecting the free end of said brake-frame with the said pawl or detent, at a distance from its pivotal point, substantially as described.

13. In a vehicle-brake, the combination of

a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brake-brush, a stop to limit the rotation of said brake-brush, a pivoted brake-frame on which said brake-brush is mounted, so as to be in permanent longitudinal adjustment upon the vehicle or car, a pawl or detent pivoted above the free end of said brake-frame and adapted to lock the same in depressed position, levers applied to said pawl or detent to rotate the same so as to trip said pawl or detent and release the brake and a link connecting the free end of said brake-frame with said pawl or detent at a distance from its pivotal point, said connection comprising a slot, which engages a pin secured in said brake-frame or in said pawl, substantially as described.

14. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brush, a stop to limit the rotation of said brake-brush, a pivoted brake-frame on which said brake-brush is mounted so as to be in permanent longitudinal adjustment upon the vehicle or car, a pawl or detent pivoted above the free end of said brake-frame and adapted to lock the free end of said brake-frame in depressed position, a lever applied to said pawl or detent to trip the same and release the brake, connection between the free end of said brake-frame and said pawl or detent, whereby pivotal movement of said pawl or detent to release the brake will raise the free end of said brake-frame and a catch to secure the same in raised position, substantially as described.

15. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub in which are secured a plurality of brush-teeth, the free ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brush, a stop to limit the rotation of said brake-brush, a pivoted brake-frame on which said brake-brush is mounted, a pawl or detent pivoted above the free end of said brake-frame and adapted to lock the free end of said brake-frame in depressed position, a bell-crank pivoted on the car, a rod connected to one arm of said bell-crank, the opposite end of which is applied to said pawl or detent, a lever applied to the other arm of the bell-crank, the relation of parts being such that depression of said lever so applied to the bell-crank will operate to trip the pawl or detent and release the brake, connection between the free end of said brake-frame and said pawl or detent such that rotation of said pawl or detent to release the brake will raise the free end of the brake-frame and a catch to secure the lever applied to the bell-crank in depressed position, substantially as described.

16. In a vehicle-brake, the combination with a brake-brush, consisting of a rigid back in which are secured a plurality of resilient brush-teeth, said brake-brush being supported in permanent longitudinal adjustment upon the car and being movable toward and from the road-bed and means to lower and raise said brake-brush, of rigid shoes on said brake-brush which come into contact with the road-bed when said brush is depressed, and limit the flexure of the brush-teeth, substantially as described.

17. In a vehicle-brake, the combination with a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of resilient brush-teeth, said brake-brush being supported in permanent longitudinal adjustment upon the car and being movable toward and from the road-bed or pavement, means to lower and raise said brake-brush, stops to limit its rotation and rigid shoes thereon which come into contact with the road-bed or pavement, when said brake-brush is depressed and operate to limit the flexure of the brush-teeth, substantially as described.

18. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brush, said brush being supported in permanent longitudinal adjustment upon the vehicle and being movable toward and from the road-bed or pavement, means to lower and raise said brake-brush, stops to limit the rotation thereof and means to maintain said brush in such position, that, normally, the shortest brush-teeth will come into contact with the road-bed first when said brush is depressed, substantially as described.

19. In a vehicle-brake, the combination of a revoluble brake-brush, consisting of a rigid hub or body in which are secured a plurality of brush-teeth, the ends of which form an eccentric or cam surface, relatively to the axis of rotation of said brush, said brush-teeth being so disposed that the weight thereof will maintain said brake-brush in such position, normally, that, the brush-teeth, which project the shortest distance from the axis of rotation of said brake-brush will be at the extreme lower side thereof, said brush being supported in permanent longitudinal adjustment upon the vehicle and being movable toward and from the road-bed or pavement, means to lower and raise said brake-brush and stops to limit the rotation of said brake-brush, substantially as described.

In testimony that I claim the foregoing as my invention I have hereunto set my hand this 8th day of February, 1896.

CHARLES B. FAIRCHILD.

Witnesses:

T. C. CRITTENDEN,
GRACE FERN.