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A. U. WILLING, J. CHRISTENSON & G. A. McLEAN.

DROP BRAKE HANDLE FOR CARS.

APPLICATION FILED NOV. 12, 1902.

NO MODEL.

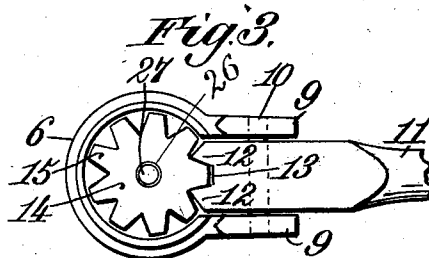
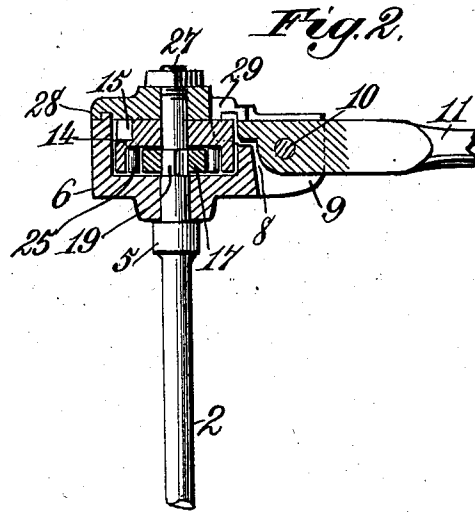
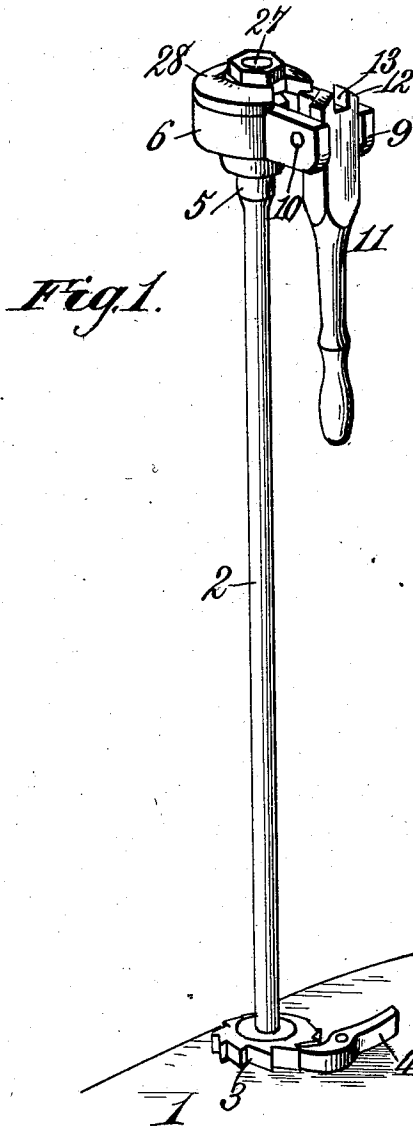


Fig. 4.

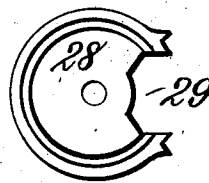
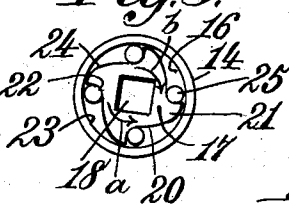


Fig. 5.



Witnesses,
Robert Everett,
James L. Norris, Jr.

Inventors,
Arthur U. Willing,
John Christenson,
George A. McLean.

By James L. Norris,
Atty.

UNITED STATES PATENT OFFICE.

ARTHUR U. WILLING, JOHN CHRISTENSON, AND GEORGE A. McLEAN, OF
OELWEIN, IOWA.

DROP BRAKE-HANDLE FOR CARS.

SPECIFICATION forming part of Letters Patent No. 726,129, dated April 21, 1903.

Application filed November 12, 1902. Serial No. 131,070. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR U. WILLING, JOHN CHRISTENSON, and GEORGE A. McLEAN, citizens of the United States, residing at Oelwein, in the county of Fayette and State of Iowa, have invented new and useful Improvements in Drop Brake-Handles for Cars, of which the following is a specification.

This invention relates to drop brake-handles for cars, and more especially to that class of brake-handles which are so constructed and arranged that when the brake-handle is turned in one direction it will apply the brake and when it is turned into inoperative position the brake will be released; and it has for its object to construct and arrange a brake-handle of the type referred to in such manner that the brake-handle will normally be pendent alongside the brake-staff, whereby when the brake is released it will be incapable of injuring either the operator, the passengers, or any part of the car and will also be out of the way, so as not to interfere with the free ingress and egress to and from the car.

It also has for its object to simplify and improve the construction and render more efficient and certain the operation of this class of brake-handles generally.

To these ends our invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a perspective view illustrating our improved brake applied to a car-platform. Fig. 2 is a vertical sectional view. Fig. 3 is a top plan view, the cap being shown removed. Fig. 4 is an inverted plan view of the cap, and Fig. 5 is a similar view of the clutch.

This invention is more particularly designed to be employed on vestibule-cars. In such cars it is the practice to arrange the brake-staff in close proximity to the end of the vestibule—usually a few inches therefrom—in order that the space in the vestibule may be economized so far as possible and not interfere with the ingress and egress of the pas-

sengers, and for this reason the ordinary and well-known brake-handle is unsuitable for such cars. The brake-handle which we are now about to describe is especially designed for the class of cars referred to.

Referring to the drawings, the numeral 1 indicates the platform of the car, in the forward end of which is journaled a vertical brake-staff 2. Said brake-staff is connected at its lower end to the brake mechanism in the well-known usual or any preferred manner and has fixed thereon immediately adjacent to the upper side of the platform a ratchet-wheel 3, which is adapted to be engaged by a pawl 4, pivoted to the platform and arranged to be operated by the foot of the brakeman, the parts being constructed and arranged in the customary manner. The upper portion of the brake-staff is provided with a cylindrical enlargement 5, on which is rotatably mounted a hollow hub 6. The upper edge of one side of said hub is recessed, as at 8, and projecting laterally from the hub on each side of said recess are two perforated ears or lugs 9, said lugs being arranged parallel one to the other, as shown. Pivoted between said lugs by a pivot-pin 10 is a brake-handle 11, provided on its inner end with two oppositely-beveled teeth 12, said teeth having between them a recess 13 for the purpose hereinafter explained. Owing to the fact that the handle 11 is pivoted between the lugs 9 of the hub near its inner end, the preponderance of weight of the brake-handle will be on its outer end, and hence said handle will automatically drop by gravity to a pendent vertical position. Rotatably arranged in the hollow hub 6 is a cylinder 14, the upper portion of which has formed on its periphery a series of radially-projecting cogs or teeth 15, the periphery of said cylinder below said teeth being cylindrical, as shown. The un-toothed or lower portion of said cylinder is hollow, forming an annular inverted-cup-shaped recess 16. In said cup-shaped recess is rotatably arranged a cam-wheel 17, provided centrally with a square aperture 18. The brake-staff 2 immediately above the cylindrical portion 5 is made square in cross-section, as indicated at 19, and said square portion of the brake-staff is fitted in the

square aperture 18, formed in the cam-wheel. The cam-wheel is provided with a plurality of curved sides 20 and a plurality of outwardly-projecting cams 21, each of said cams
 5 having a concave face 22 and a convex face 24, the concave face of the cams being of such size as to loosely receive therein friction-rollers, hereinafter described. Spaces are thus formed between the curved edges 20 of the
 10 cam-wheel and the annular wall 23 of the cylinder, each of said spaces diminishing in width as they recede from the concave faces 22 of the cams, and in each of said spaces is arranged a roller 25, said rollers being of such
 15 diameter that when they are in contact with the concave faces 22 of the cams they will rest loosely between the same and the adjacent wall 23 of the cylinder, and when said cam-wheel is turned in the direction of the
 20 arrow a said rollers will revolve loosely within the spaces before referred to, at the same time they are carried around in a circular path by the cams 21. When the cam-wheel, however,
 25 is turned in the reverse direction, as indicated by the arrow b, said rollers will immediately be gripped or clamped between the curved edges 24 of the cam-wheel and the annular
 30 wall 23 of the cylinder, whereby said cylinder wheel, or to describe the operation of the arrangement herein shown more accurately
 35 should the cylinder 14 be turned in one direction the rollers will revolve loosely between the concave faces 22 of the cams and the annular wall 23 of the cylinder and will exert
 40 no effect whatever upon the cam-wheel; but should the cylinder be turned in the reverse direction then the rollers will immediately be clamped between the curved edges 20 of the
 45 cam-wheel and the annular wall 23 of the cylinder, thereby firmly clutching the cam-wheel and the cylinder together, whereby the cam-wheel will be compelled to rotate with the cylinder. The upper or solid portion of the cylinder
 50 14 is provided centrally with a cylindrical perforation 26, and loosely passing through such perforation is a cylindrical portion 27 of the brake-staff 2, which is formed immediately above the square portion 19 of said
 55 staff. It will be obvious, therefore, that the hollow hub 6 and the cylinder 14 are capable of rotating on the brake-staff, while the cam-wheel is incapable of rotating independently of said staff. Fixed to the top of the
 60 hollow hub 6 is a cap or cover 28, through a perforation in the center of which projects the upper end of the brake-staff, as shown, and said cap is provided on one side, immediately over the inner end of the brake-handle,
 65 with a slot or recess 29 to permit of a vertical oscillatory movement of the brake-handle as it is raised and lowered. As before stated, the brake-handle 11 normally hangs suspended vertically from the lugs 9 9, and
 when in such position it is out of engagement with the teeth 15 of the cylinder. When it is raised to a horizontal position,

however, the teeth 12 will engage the opposite sides of one of the cog-teeth 15 of the cylinder and such tooth will lie between the
 70 teeth 12 of the brake-handle 6, interlocking the brake-handle and the cylinder rigidly together. Then by oscillating the brake-handle back and forth in a horizontal plane the cylinder will alternately be clutched to and
 75 loosely rotated about the cam-wheel and its rollers, whereby the brake will be applied. When the brake is applied, the pawl 4 will be thrown into engagement with the ratchet-wheel 3 on the brake-staff and will hold the
 80 brake in its applied position. When the brakeman releases the brake-handle, the latter will immediately drop to its vertical suspended position, where it will be out of the way and rendered incapable of doing any
 85 damage or injury when the brake is released. To release the brake, the brakeman has only to throw the pawl 4 out of engagement with the ratchet-wheel 3 with his foot, whereupon the brake-staff will be free to rotate to let
 90 the brake off, and the upper end of the brake-staff will then loosely rotate in the hollow hub 6, to which the brake-handle is attached, whereby said brake-handle will not rotate with the brake-staff as the latter rotates to
 95 release the brake. By the arrangement shown the brake-handle is at all times out of the way excepting during the actual time the brake is being set, whereby it will not interfere with the free and unobstructed ingress
 100 and egress of the passengers to and from the car, and, furthermore, as soon as the brakes have been set and the brakeman has released said handle the latter will automatically drop to the position described. Thus when the
 105 brake is released, which, as before described, is done merely by releasing the pawl 4, the handle cannot possibly rotate with the brake-staff, and hence is effectually prevented from doing damage or injury. It will also be noted
 110 that by constructing and arranging the clutch mechanism in the manner described when the brake-handle is turned in the proper direction to set the brake the clutch will immediately take hold, and hence there will be no
 115 lost motion with a consequent loss of time and labor.

We have described our improved brake-handle as being especially designed for vestibule-cars; but it will be obvious that it may
 120 be employed for various other purposes, and we contemplate applying it to every purpose to which it is applicable. It will also be evident to those skilled in the art that various changes and alterations may be made in the
 125 details of construction, and we wish it to be understood that we do not limit ourselves to such details excepting as is hereinafter specifically pointed out in the appended claims.

By constructing the cam-wheel with the
 130 curved edges and concavo-convex cams in the manner shown and described the instant the brake-handle is turned in the proper direction the friction-rollers will immediately

take hold and apply the brake, there being no lost motion between the cylinder, rollers, and cam-wheel.

By merely removing the cam-wheel, inverting it, and replacing it on the brake-shaft the brake will be converted from a right to a left hand brake.

Having described our invention, what we claim is—

1. In a device of the character described, the combination with a staff, of a hub rotatably mounted thereon, a drop-handle carried by the hub, and clutch mechanism arranged inside the hub, the handle normally hanging vertically by gravity from the hub, and engaging said clutch mechanism to lock the staff and handle together when the latter is raised to a horizontal position, substantially as described.

2. In a device of the character described, the combination with a staff, of a hub rotatably mounted thereon, a drop-handle pivotally attached at one end to the hub and normally hanging suspended therefrom by gravity, clutch mechanism arranged within the hub for locking the handle to the staff, and means carried by the handle for engaging and locking the clutch to the handle when the latter is raised to a longitudinal position, substantially as described.

3. In a device of the character described, the combination with a staff, of a hollow hub rotatably mounted thereon, a drop-handle pivotally attached at one end to the hub and normally hanging suspended therefrom by gravity, clutch mechanism arranged within the hub and rigidly fixed on the staff, and means on the handle for locking the clutch mechanism to the handle when the latter is raised to a horizontal position, substantially as described.

4. In a device of the character described, the combination with a vertical staff, of a hub rotatably mounted on the staff, a drop-handle pivoted at one end to the hub and normally hanging suspended therefrom by gravity, and means constructed and arranged to throw the handle into operative engagement with the staff when said handle is raised to a horizontal position, substantially as described.

5. In a device of the character described, the combination with a vertical staff, of a hub rotatably mounted on the staff, a drop-handle pivoted at one end to the hub and normally hanging suspended therefrom by gravity, means constructed and arranged to throw the handle into operative engagement with the staff when said handle is raised to a

horizontal position, a ratchet-wheel rigid on the staff, and a pawl pivoted to a fixed support and arranged to engage the ratchet-wheel and hold the staff against rotation in one direction when the handle drops out of operative position, substantially as described.

6. In a device of the character described, the combination with a vertical staff, of a hollow hub rotatably mounted on the staff, a drop-handle pivoted at one end to the hub and normally hanging suspended therefrom by gravity, a roller-clutch disposed within the hub and arranged to alternately engage and disengage the staff when said clutch is turned in opposite directions, and means constructed and arranged to lock said clutch and handle together when the latter is raised to a horizontal position, substantially as described.

7. In a device of the character described, the combination with a vertical staff, of a hollow hub rotatably mounted on the staff, an inverted-cup-shaped cylinder loosely mounted on the staff in the hub, a cam-wheel rigidly mounted on the staff in the cylinder, rollers disposed between the cam-faces of the cam-wheel and the interior of the cylinder, a drop-handle pivoted at one end to the hub and normally hanging suspended therefrom by gravity, and means arranged to lock the handle in engagement with the said cylinder when said handle is raised to a horizontal position, substantially as described.

8. In a device of the character described, the combination with a vertical staff, of a hollow hub rotatably mounted on the staff, an inverted-cup-shaped cylinder loosely mounted on the staff in the hub and provided on its periphery with radial teeth, a cam-wheel rigidly mounted on the staff in the cylinder, rollers disposed between the cam-faces of the cam-wheel and the interior of the cylinder, a drop-handle pivoted at one end to the hub and normally hanging suspended therefrom by gravity, and teeth formed on the interior end of said handle and arranged to engage the teeth on the cylinder when the handle is raised to a horizontal position, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

ARTHUR U. WILLING.
JOHN CHRISTENSON.
GEORGE A. MCLEAN.

Witnesses:

ERNEST PFEIFFER,
CHARLES A. HANCOCK.