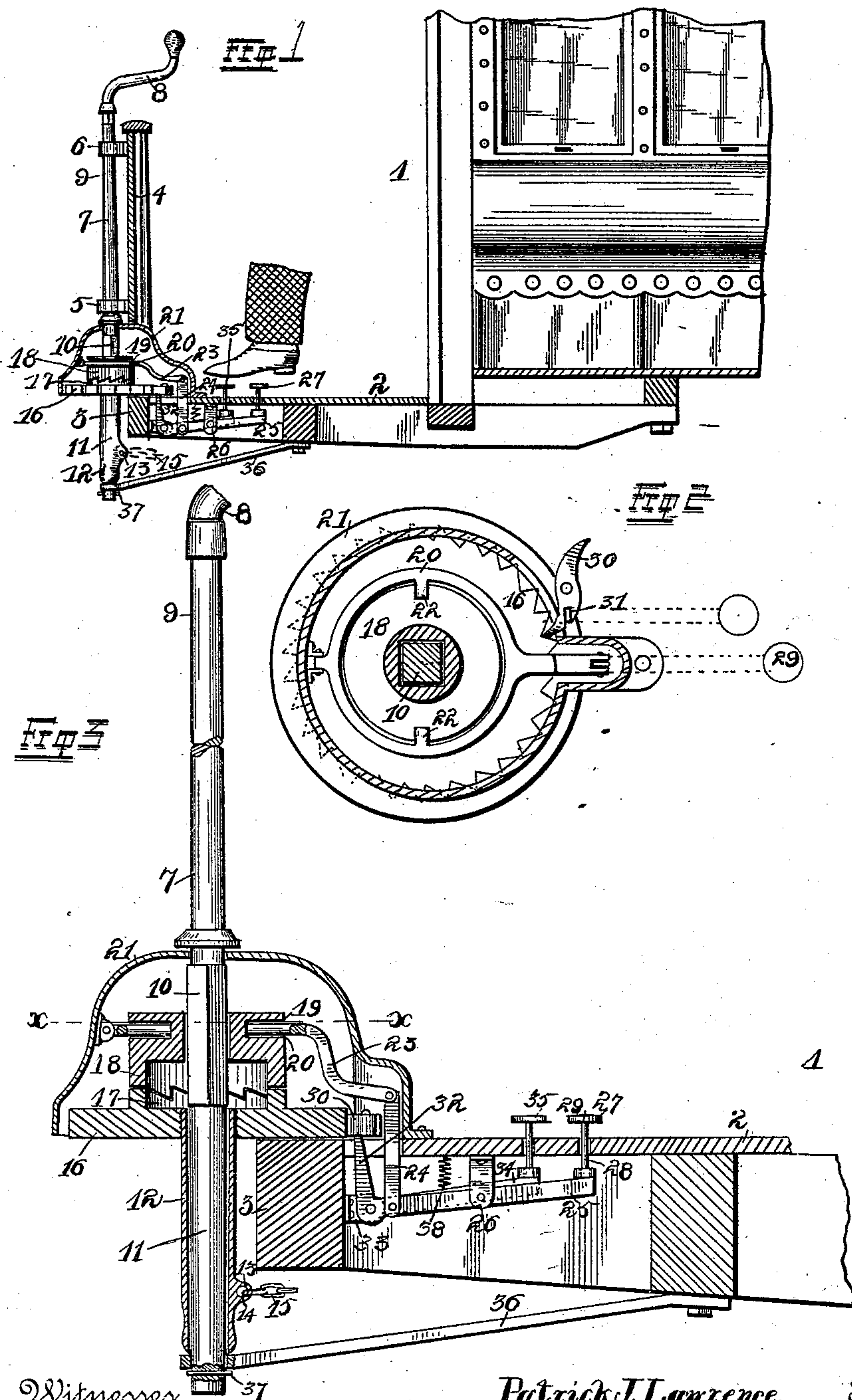


(No Model.)

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CAR BRAKE.

No. 486,785.

Patented Nov. 22, 1892.



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UNITED STATES PATENT OFFICE.

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CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 486,785, dated November 22, 1892.

Application filed June 13, 1892. Serial No. 436,551. (No model.)

To all whom it may concern:

Be it known that we, PATRICK J. LAWRENCE and MILES F. GARRETTSON, citizens of the United States, residing at Wellston, St. Louis county, State of Missouri, have invented certain new and useful Improvements in Instantaneous Release Mechanism for Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to improvements in instantaneous release mechanism for car-brakes; and it consists in the novel construction, combination, and arrangement of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a front elevation of our complete invention as applied to an ordinary street-car. Fig. 2 is a vertical sectional view and its parts, showing in detail the construction of same. Fig. 3 is a transverse sectional view taken through the line *x x* of Fig. 2.

The object of our invention is to construct a car-brake provided with an instantaneous release mechanism, in the operation of which the undue jarring of the car and the consequent wear and tear on the parts of the brake when released is entirely obviated. By the use of former car-brakes having a ratchet-wheel the pawl engaging same has been manipulated by the foot of the person running the car.

While in our improvement the brake is still operated by the driver, the brake is released by the use of combinations of levers adapted to be operated by the foot, which we have found much more expeditious and safe in the operation of car-brakes.

Referring to the drawings, 1 indicates an ordinary railway street-car with parts broken away. It is provided with an extending platform 2, embodying the usual construction. Secured to the front cross-piece 3 of said platform 2 and projecting at right angles therefrom is a dash-board 4. Secured to said dash-board 4 are receiving collars or eyebolts 5 and 6, in which the brake-rod 7 is held a relative distance from the front of the dash-board 4.

We will now minutely describe the con-

struction of the brake-rod 7. Its upper terminal 8 is curved in such a manner as to provide a suitable lever-hold for the proper manipulation of the brake by the operator of the car. Below said handle 8 the brake-rod 9 is rounded and bears directly in the collars 5 and 6. Below this portion 9 the brake-rod 10 is squared and its lower terminal 11 is rounded and fits into a sleeve 12, for the purpose more fully hereinafter described. This sleeve is provided with a lug 13 and has a perforation 14, adapted to secure the brake-chain 15. Mechanically secured to the upper end of said sleeve 12 is a ratchet-wheel 16. This ratchet is secured at its exact center, and the joint is preferably made in such a manner that while the joint is perfectly secure, yet the sleeve is detachable. The sleeve 12 is cylindrical in form and adapted to receive the lower portion 11 of the brake-rod 7. Formed integrally with or secured to the top of the ratchet-wheel 16 is a clutch-jaw 17, provided with a central perforation, which is square and adapted to receive the squared portion 10 of the brake-rod 7, and said perforation coincides with the sleeve 12. A clutch-jaw 18, provided with a perforation through its center similar to that of the clutch 17, is adapted to fit upon the squared portion 10 of the brake-rod 7 and engage said clutch 17. The clutch-jaw 18 is provided with an annular groove 19 near its upper end, for purposes more fully hereinafter described. A yoke 20, circular in form and larger than the periphery of the clutch-jaw 18, is pivotally secured in a horizontal position at one side to the casing 21, which serves as a protector for the working mechanism of our brake. Projecting inwardly from the inner periphery of the yoke 20 are circular lugs 22, which are adapted to engage within the annular groove 19 of the clutch-jaw 18. The opposite side of the yoke to that which is secured to the casing 21 has a downwardly-projecting lever 23, which is practically S-shaped in side view and which is pivotally secured to an upright lever 24. A horizontal lever 25, pivoted at its center to a bracket 26 and at one end with the depending lever 24, has a foot-treadle 27 secured to its outer or free end. Said foot-treadle 27 comprises an upright bar 28, which

is secured at its lower end to the horizontal lever 25, and has upon its upper end a flat cap 29, by means of which it is manipulated. The operation of these levers will be described farther on. As is usual in car-brake construction, the ratchet-wheel 16 has a pawl 30 or "dog" adapted to engage the serrated edge or teeth of said ratchet 16. Said pawl 30 embodies the usual construction and design, except that it is provided with a slot 31, which is adapted to engage a bell-crank lever 32, which has its lower end pivoted to a bracket 33, secured upon the inside face of the cross-piece 3 of the platform 2. This lever has a projecting arm 34 extending from its pivoted position on the bracket 33 and extending backward toward the foot-treadle 27, and has upon its free end a treadle 35, similar in construction to the treadle 27, and is located a relative distance therefrom, in order that both treadles 27 and 35 can be operated at once or independently of each other. As before stated, the casing 21 serves as a protector from the effects of dirt, weather, &c., and also as a support for the pivoting of the yoke 20. While the upper part of the brake-rod is securely held by its bearings 5 and 6, the lower part is adjustably secured by means of a removable brace-rod 36, which may be removed by withdrawing the pin 37, which projects through the lower end 11 of the brake-rod 7.

Having briefly stated the object and described the construction of our invention, we will now proceed with its operation.

As before stated, our invention is especially applicable for street-railway car use, and in the following explanation it will be premised that the brake is connected with the brake-shoes by the intermediate chains, &c. When the brake is locked the parts are in position, as shown in Fig. 3, and the chain is partially wound upon the sleeve or drum 11. When it is desired to release said brake, the foot is placed upon the treadles 27 and 35 and the following operation is the result: The downward movement of the treadle 35 forces down the horizontal lever 34, and consequently the other end of said lever, which engages in the slot 31 in the pawl 30 and forces the same backward out of the tooth of the ratchet 16 by which it has been engaged, thus releasing said ratchet from its contact with the pawl 30. Coinciding with this movement of the treadle 35 and its accompanying levers is the raising of the clutch 18 from its engagement in the clutch 17. This operation takes place in the following manner: The lowering of the treadle 27, secured to one end of the lever 25, tilts up the opposite end of said lever 25 upon its pivoted connection to the bracket 26. This vertical motion is imparted to the lever 24 and also to the lever 23 connected thereto, and this movement raises the yoke 20 and at the same time elevates or releases the clutch-jaw 18 by means of the lugs 22, which are part of the yoke 20, and are engaged in the annular

groove 19 of the clutch-jaw 18. While the periphery of said yoke 20 is pivoted to the casing 21, still the sliding movement of said lugs 22 within the annular groove 19 of said clutch-jaw 18 guarantees the upward or release movement of the said clutch-jaw 18. A spring 38, fastened between the horizontal lever 34 and the bottom of the car-floor 2, pulls said horizontal lever 34 upward, and consequently the treadle 35 is always in position for operation. The operator of the car winds up the brake and at the same time that the chain winds upon the sleeve 12 the pawl 30 is engaging the teeth of the ratchet 16. When it is desired to allow the clutch 18 to engage the jaw 19, the treadle 27 is released from the position in which it was held by the hook, as shown by dotted lines in Fig. 3, and consequently the clutch-jaw 18 is allowed to re-engage the clutch 17.

One of the principal objections to former car-brakes has been the necessity of either unwinding the brake-handle or else letting it fly back to its normal position by the sudden release of the pawl, which operation causes a loss of time and endangers the safety of the operator. In our invention we have embodied a construction which does entirely away with the objectionable feature before mentioned. When the brake is wound up and the brake-shoes are in contact with the wheels and it is desired to release the same, the foot is pressed downward upon the two levers 27 and 35, thus releasing the clutch engagement and withdrawing the pawl from its position in the teeth of the ratchet 16.

As the sleeve 12, the ratchet 16, and clutch-jaw 17 formed therewith are not in connection with the brake-rod in any secure manner, therefore in the release of said ratchet, clutch-jaw, and sleeve, with the brake-chain mounted thereon, the brake-rod remains perfectly stationary, and the sleeve 11, ratchet 16, and clutch-jaw 17 are the only parts of our invention which revolve.

The opposite faces of the clutch-jaw 18 and the jaw 17 are provided with what we term "ratchet-teeth" arranged to lock the said jaws together during revolution of the clutch-jaw in one direction and to permit said jaw to be revolved in the opposite direction without revolving the jaw 17 and the parts fixed to it, as shown. By this means we provide what may be termed a "ratchet-handle" in addition to the improved foot-operated release mechanism, the handle being freely revolvable in one direction without affecting the position of the sleeve or drum upon which the brake-chain is wound.

Having fully described our invention, what we claim is—

1. The improved release mechanism for street-car brakes, comprising the combination of a revoluble brake-handle, a ratchet-wheel 16, mounted to revolve without movement of said handle, a jaw 17, having ratchet-teeth and mounted to revolve with said ratchet-wheel,

a sleeve or drum 12 for the brake-chain, having its upper end connected to said ratchet-wheel 16 to revolve therewith, a clutch-jaw 18, mounted to slide vertically upon and revolve with said brake-handle and provided with ratchet-teeth which normally engage the teeth of said jaw, a dog or pawl normally in engagement with the teeth of said ratchet-wheel 16, and a foot-treadle for simultaneously disengaging this pawl from the teeth of said ratchet-wheel and disengaging the teeth of the clutch-jaw from the teeth of the jaw 17, substantially as and for the purpose set forth.

2. An instantaneous release mechanism for car-brakes, having a brake-handle suitably secured in bearings to the dash-board 4 of the car 1 and having mounted thereon a sleeve 12, ratchet 16, and a clutch-jaw 17, and said sleeve 12, ratchet 16, and clutch-jaw 17 being formed integrally with or mechanically secured with each other, substantially as set forth.

3. An instantaneous release mechanism for car-brakes, having a clutch-jaw 18, adapted to engage in the teeth of the clutch-jaw 17, said clutch-jaw 18 provided with an annular groove 19, into which fit the lugs 22 of a yoke 20, said yoke being pivotally secured on one side to the casing 21 and on the other side by means of a series of levers to a foot-treadle 27, and said clutch-jaw 18 being adapted to

be released from its engagement with said clutch-jaw 17 by the downward movement of the foot-treadle 27, projecting above the platform 2 of said car, substantially as set forth.

4. An instantaneous release mechanism for car-brakes, having a ratchet 16 revolvably mounted with a sleeve 12 and clutch-jaw 17 upon the brake-rod, a pawl 30, provided with a slot 31, a bell-crank lever 32, engaging in said slot 31 and connected by a series of levers pivoted to a bracket 26 and held in contact under the floor of said platform by a spring 38 with the treadle 35, and said pawl adapted to be released from its engagement in the teeth of said ratchet 16 by the downward movement of the treadle 35, substantially as set forth.

5. An instantaneous release mechanism for car-brakes, having a revoluble sleeve 12, a ratchet 16, a clutch-jaw 17, formed therewith, a yoke 20, and pawl 30, all forming parts of the release mechanism and incased and protected by a casing 21, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

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MILES F. GARRETTSON.

Witnesses:

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