B. F. STEWART.

CAR-BRAKE.

No. 185,461. Patented Dec. 19, 1876.

Fig 2.

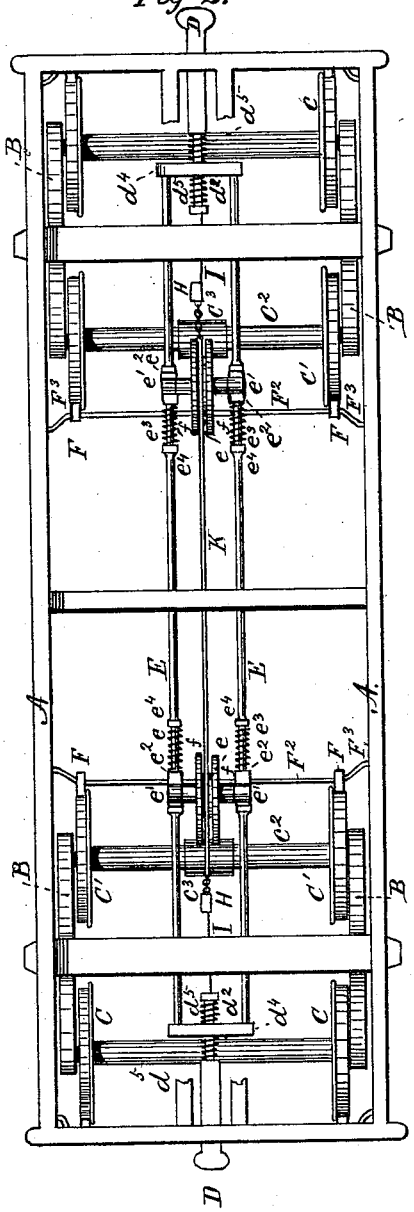


Fig 1

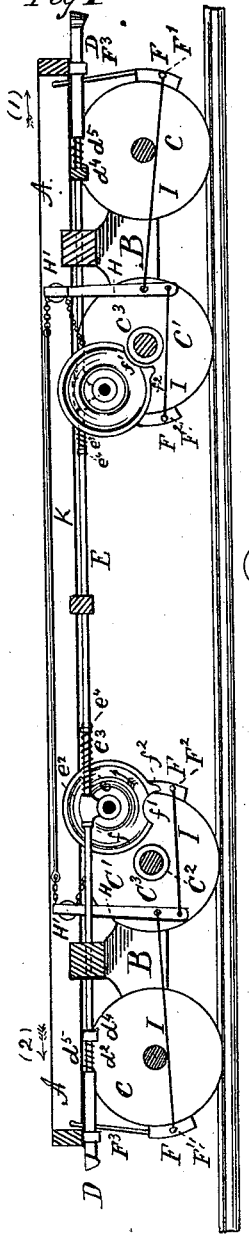


Fig 5.

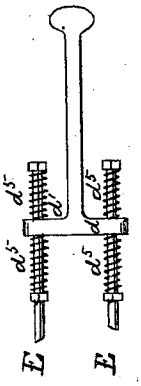
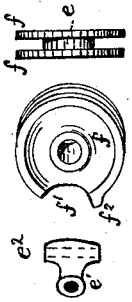


Fig 4.

Fig 3.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. STEWART, OF NEW PHILADELPHIA, OHIO.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **185,461**, dated December 19, 1876; application filed August 31, 1876.

To all whom it may concern:

Be it known that I, BENJAMIN F. STEWART, of New Philadelphia, in the county of Tuscarawas and State of Ohio, 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 thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in that class of car-brakes wherein the momentum or weight of the train of cars is employed as the power to operate and set the brakes. It consists in sliding draw-bars united together by sliding draft-rods, and having a limited independent horizontal movement; in a windlass or series of windlasses, supported by the draft-rods, and arranged and constructed so as to be revolved by the axles of the car-wheels and wind up the brake-chains and set the brakes; and in other mechanism, all of which will be fully hereinafter explained.

In the drawings, Figure 1 is a side view, partly in section. Fig. 2 is a plan of the under framing and running-gears of a car with my improvements attached thereto; and Figs. 3, 4, and 5, are detail views, showing parts of my invention.

A is the main or under frame which supports the car, and to which is secured, by ordinary and well-known means, the frames B, each of which supports an outer and an inner pair of wheels, C C^1. C^3 is a collar made of wood or other suitable material, rigidly affixed at or near the center of the axle C^2 of the wheels C^1. The windlass, hereinafter described, bears against and is revolved by it; and it prevents unusual and unnecessary wear of the windlass and axle, and by its semi-elastic character prevents the windlass from being broken or injured when the latter is brought suddenly in contact with it. D D are the draw-bars, each of which is provided with the lateral extensions d d^1 on its rear end, or it is formed or provided with the rear horizontal extension or shaft d^2, which extends through a central hole, d^3, in the separate cross-bar d^4, to the ends of which are affixed rigidly, or in bearings, the ends of the draft-rods hereinafter described. On the shaft d^2 are placed the springs d^5 d^5, between the inner or nearer ends of which is placed the cross-bar d^4, and they prevent the jar occasioned by the sudden starting or stopping of the train, and lessen the strain on the draft-rods. E E are the draft-rods, which have their ends fixed in the outer ends of the cross-bar d^4, and with the draw-bars D D are supported in suitable bearings to the framing A, with capability of a free independent sliding horizontal movement. When the draw-bar D, having lateral extensions d d^1, is employed, the springs d^5 d^5 are placed on the ends of the rods E E, which slide in bearings in the ends of said extensions, as shown in Fig. 5. e e are windlasses for winding up the brake-chain, the axis of each of which is journaled in the lugs e^1 e^1, supported by bearing e^2 e^2, with capability of a sliding movement on the rods E E, and are held by the springs e^3 e^3 bearing against the bosses or shoulders e^4 e^4. They are placed slightly within or toward the center of the car from a vertical line passing through the center of the axis C^2 of the wheel C^1, so that a slight forward or backward movement of the draw-bars D and rods E will bring the circumference of the disks hereinafter described firmly against the circumference of the collar C^3. The springs e^3 e^3 permit of a sufficient movement of the bearings e^2 e^2 on the rods E to relieve all strains or sudden jars, and thereby they prevent breaking of or other injury occurring to the draft-rods or to the windlass and its attachments. I employ two windlasses, e e, thereby rendering it immaterial in which direction, whether forward or backward, the car be moved. If the car was moved always in the same direction, or with the same end forward, there would be no need but for one windlass. f f are two disks secured to the windlass e. One disk to each windlass would be sufficient, but I, by preference, employ two to each windless, to give greater strength and steadiness of movement. They are made of such diameter that a slight forward or backward movement of the draw-bars and draft-rods will bring their circumferences firmly against the

circumference of the collar C^3, in which position they will be made to revolve by the friction of the two surfaces, and thereby turn the windlass to which is attached the brake-chain. f^1 are circular recesses, formed in the circumferences of the disks f, and are adapted to fit over the collar C^3, so that when the draw-bars are drawn out in the forward movement of the car, and the disks are brought in contact with the collar, they will drop over and furnish ample space in which the revolutions of the said collar may be continued without friction on the circumference of the disks, the latter remaining at rest. In the adjustment of the windlass they are placed downward, so that with slight movement they will be brought into position over the axle or collar when it is desired that the brakes be held off the wheels.

F are the brakes, which are applied in sets of four, one to each wheel, and they are connected together in pairs by cross bars or rods F^1 F^2, and supported in position by means of links or chains F^3, one end of which is connected to the frame A, while the other is attached to the brakes, as shown. To the centers of the pair of brake-bars F^1 carrying the brakes, which are applied to any two pairs of wheels framed together, are secured the ends of the rods I I, which extend inward toward each other to a convenient point between said pairs of wheels, and are attached to a double lever, H, in such manner that each is a fulcrum or center of motion for the other, and so that in the operation of the apparatus the brake-bars F^1 will be drawn toward each other and apply the brakes F to the car-wheels. To the upper ends of the levers H are affixed the friction-pulleys H′ H′, over which the brake-chain K is passed. The pulleys are protected by suitable guards to prevent the chain from being thrown therefrom. K is the brake-chain. Its ends are secured by any suitable means to the windlasses *e e*, and it passes over the pulleys H′ H′. It is made taut, so that by the slightest revolving movement of either windlass its end will be wound up, the length of intervening chain shortened, and the levers H H actuated accordingly. If, under any circumstances, it should be desirable that only one windlass be used, it should be placed so as to be actuated by the axle of the wheels C′ under the rear part of the car. In this case the forward end of the brake-chain could be secured to a cross rod or bar between the draft-rods E, or to a rod supported by the lugs e^1 e^1 on the front bearings e^2 e^2; but such an arrangement is only serviceable for applying the brakes in a forward movement of the cars. The brake-chain and levers H H are so arranged in connection with the actuating-windlass *e* that about a half-revolution of the disk *f* is sufficient to set the brakes tight enough to bring the car-wheels to a dead-lock. f^2 are small lips on, or projections from, the circumference of the disks *f* at the side of the recesses f^1. They prevent the accidental catching of the edge of the recesses on the collar c^3 in this forward movement of the car. If such accident should occur (which cannot occur when this lip is employed) it would result in the revolving of the disks and windlass, and consequent setting of the brakes, for it will be perceived that the revolution of the windlass in either direction will produce the same result.

This improved brake is operated by the momentum or weight of the cars, and it is immaterial in which direction the latter may be moving. No alteration of the position of any of the operating parts is required in changing from a forward to a backward or vice versa movement other than that which is made by the checking of the momentum of any part of the train. The setting, by hand, of the brakes on any car will cause the automatic setting of the brakes on all the other cars in the train.

The brake-chain, when it is shortened by having one of its ends wound up by one of the windlasses, draws the upper ends of the levers H H toward each other, and these levers, acting on the rods I I and brake-bars F′, force the brakes onto the wheels C C′.

The brake in the drawings indicates the car as being drawn in the direction of the arrow 1, and so long as due tension is exerted on the draft-rods, by reason of the draw-bar being drawn forward, as shown, the recesses in the disks of the forward windlass will rest over the forward collar C^3, and the brakes will be held off all the wheels. When the draft-rods E are forced in the direction of the arrow 2, by reason of the setting of the brakes on the engine, or on the rear or an intermediate car, whereby the momentum of the engine or of that car is checked, the disks of the rear windlass of all the other cars will be brought against the collars C^3, or against the axles of the wheels, when the collars are not employed, and the brakes will be set in manner hereinbefore explained.

It will readily be understood that any number of cars may be coupled together by the ordinary link, and that by this improved brake the entire train may be held under control by the engineer, or by a brakeman on any one of the cars therein, and that it is immaterial in which direction the train be moved in order to secure effective operation of the apparatus.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an automatic car-brake, the windlass *e*, provided with disks *f*, and having a recess, f^1 and stop f^2 arranged on its periphery, substantially as and for the purpose described.

2. The combination with the sliding draw-bars D, and the sliding draft-bars E, provided with a pair of windlasses *e e*, supported thereon by means of sliding bearings e^2, and operating the brakes F by means of cords or chains, in the manner and for the purpose substantially as described.

3. The combination, with the sliding draw-bars D, sliding draft-rods E, and the axles of the car-wheels, of the windlass *e*, and disks *f f*, supported by suitable bearings on the draft-rods, substantially as set forth.

4. The combination, with the sliding draw-bar D, sliding draft-rods E, and the axles of the car-wheels, of the windlass *e*, brake-chain K, and levers H H, as and for the purposes specified.

5. The combination, with the sliding draw-bars D, sliding draft-rods E, the axles of the car-wheels, and the brake-chain and connecting-levers for actuating the brakes, of a pair of windlasses, *e e*, provided with the disks *f f*, having the recesses f^1 f^1 and projections f^2, all arranged and adapted to automatically set the brakes either in a forward or reverse movement of the train, as set forth.

6. The arrangement of the sliding draw-bars D D, sliding draft-rods E E, windlasses *e e*, disks *f f*, having recesses f^1 and projections f^2, chain K, double levers H H, connected with the brakes by suitable rods and bars, whereby when the speed of the engine, or of the rear or any intermediate car of a train, (whether moving forward or backward) is checked by having its brakes first set, the momentum or weight of the other cars throughout the entire train will cause their brakes to be automatically set, as set forth.

7. The combination of the sliding draft-rods E and cross-bar d^4, having the central hole d^3, with the sliding draw-bar D, shaft d^2, and springs d^5 d^5, substantially as set forth.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

BENJAMIN F. STEWART.

Witnesses:

W. H. CRISWELL,

J. H. BOOTH.