

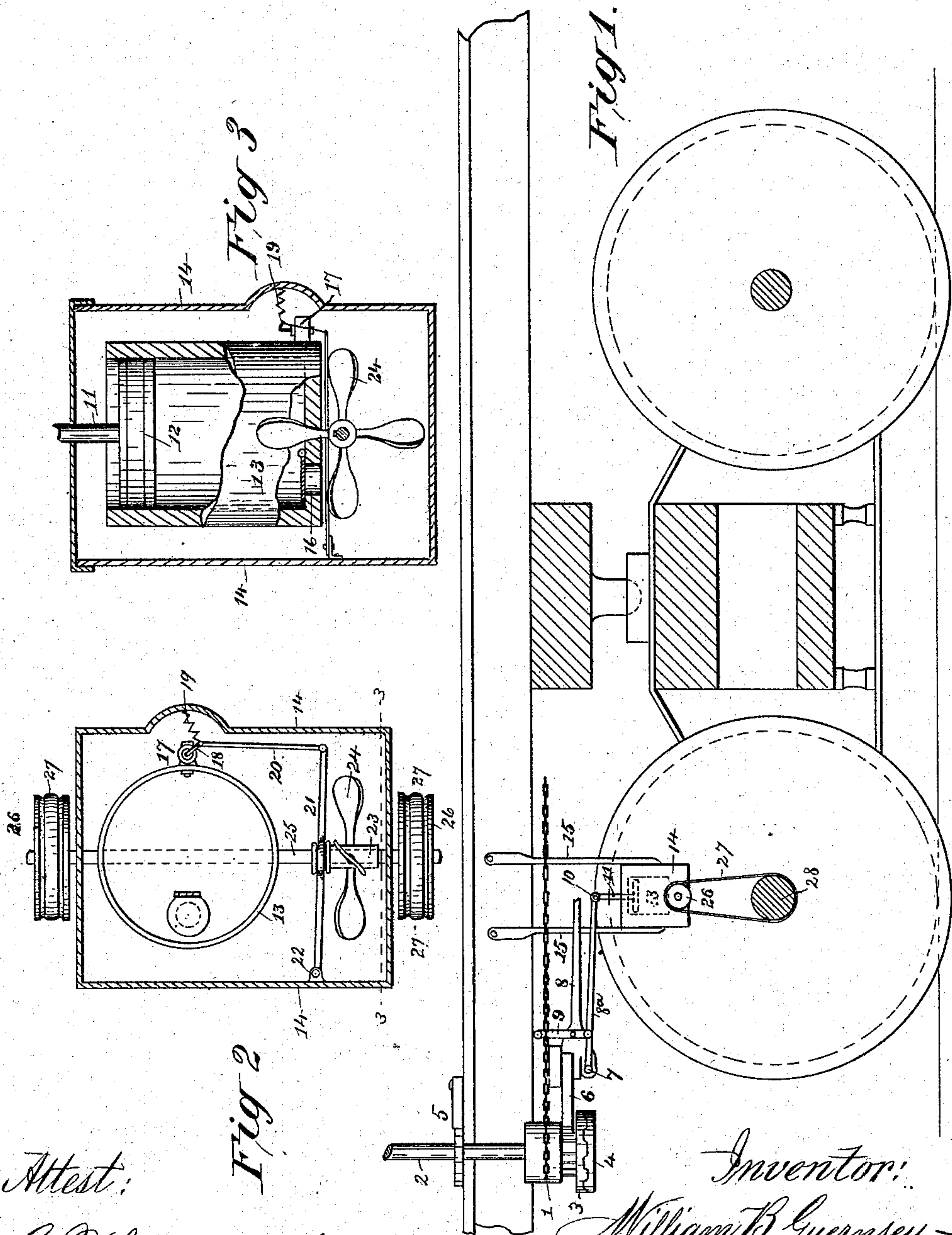
(No Model.)

W. B. GUERNSEY.

AUTOMATIC STOP FOR DRAW BAR BRAKES.

No. 288,568.

Patented Nov. 13, 1883.



Attest:

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# UNITED STATES PATENT OFFICE.

WILLIAM B. GUERNSEY, OF NORWICH, NEW YORK, ASSIGNOR TO JANE M. GUERNSEY, OF SAME PLACE.

## AUTOMATIC STOP FOR DRAW-BAR BRAKES.

SPECIFICATION forming part of Letters Patent No. 288,568, dated November 13, 1883.

Application filed June 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. GUERNSEY, a citizen of the United States, residing at Norwich, in the county of Chenango and State of New York, have invented an Automatic Reversal Stop for Draw-Bar Brakes, of which the following is a specification.

This invention relates to automatic brake mechanisms, and particularly to such as that described in my former application for Letters Patent filed June 3, 1882, Serial No. 63,225, the object of the present invention being to furnish a governor or shifting device for such automatic draw-bar brakes, by which the initial relations of brake application which are automatically assumed by the mechanism upon the first starting of the car will be maintained until such movement has ceased, or until it has been retarded to such a degree as may be predetermined by the apparatus; and a further object of this invention is to provide for the automatic adjustment of the brake apparatus, by which an application of the brakes will not occur when the car is moved in a direction contrary to that of its preceding movement.

To the above ends my invention consists in an apparatus operating upon the hand-brake staff, which is provided with a clutch and constitutes one terminus of the brake system (the movable draw-bar constituting the other terminus) in such manner as to cause a separation of the members of the clutch and a resulting release of the brakes, and also to prevent such action upon the clutch through movements of other parts of the mechanism.

In order that my invention may be fully understood, I will describe it with reference to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a car-truck and part of the platform with my invention applied. Fig. 2 is a horizontal section of the governor on an enlarged scale. Fig. 3 is a vertical section of the same on the line 3 3 of Fig. 2.

The present invention is shown and will be described as applied to a system of automatic brakes embodied in my former application above referred to, so much of said mechanism

being shown as will impart a clear conception of my invention and its application to the said mechanism.

In the said drawings, 2 designates the hand-brake staff, which occupies the usual position on the platform of the car, and is provided with a ratchet-disk and pawl, 5, to prevent the unwinding of the brake-chain. At its lower end the staff 2 carries a disk, 4, rigidly attached to the lower extremity of said staff and provided on its upper face with a series of engagement-teeth. Above this lower disk, 4, is a similar disk, 3, with engagement-teeth on its lower face corresponding with those on the disk 4. This disk 3 is formed integrally with or rigidly attached to a barrel, 1, arranged to revolve upon the brake-staff. A portion of the barrel 1, between its cylindrical portion and its disk 3, is provided with gear-teeth on its circumference, as shown in the drawings. The barrel 1 and the disk 3 move in unison about the brake-staff 2, and are also arranged to slide vertically upon said staff. The disks 3 and 4 constitute a clutch, which is disconnected or separated by the vertical movement of the barrel 1, for a purpose hereinafter described. A chain is attached to the periphery of the barrel and connects at its opposite end with the brake-beams, in a manner shown in my former application above referred to.

8 designates a bar pivoted upon hangers 9. This bar 8 is designed to constitute a connection (at its inner end) with adjusting devices (not here shown) such as are described in my said former application. An arm or mutilated wheel, 6, is pivoted at its inner end to the outer end of the bar 8, the gear-teeth on the outer end of said arm 6 engaging with the toothed section of the barrel 1. The arm 6 is so attached to the bar 8 as to turn or swing laterally with the rotation of the barrel 1, but has no vertical movement independent of the bar 8.

The operation of the parts thus far described, which are the same as those shown in my former application above referred to, is more clearly understood by reference to said application. A lever, 8<sup>a</sup>, is pivoted to



the lower end of the hangers 9, and also at its outer extremity to the outer extremity of the bar 8, as shown at 7. The inner end of this lever 8<sup>a</sup> is jointed at 10 to one extremity of a piston-rod, 11, which passes downward through the top of a casing, 14, and through the head of a cylinder, 13, contained therein, and is attached to a piston, 12, working in said cylinder 13. The casing is suspended beneath the body of the car by hangers 15, and carries a shaft, 25, extending transversely of the car through the lower part of the casing 14, upon each end of which shaft 25 is a pulley, 26, rigidly secured thereto, so as to cause the shaft 25 to turn with them. Motion is imparted to the pulleys 26 and shaft 25 by the rotation of the car-axle 28 through the medium of elastic bands 27, passing over said pulleys 26 and beneath the axle 28. The cylinder 13 within the casing 14, which contains water or other suitable liquid, is provided with an ingress-port, 16, covered by an inwardly-opening valve, and said cylinder is also provided with a cock, 17, the valve-arm 18 of which is connected to a spring, 19, attached to the casing 14 and tending to keep the cock open. A rod, 20, is connected at one end with the valve-arm 18, and at its opposite end it is jointed to a lever, 21, fulcrumed at 22 upon the casing 14. This lever 21 is so formed as to embrace a sliding sleeve, 23, upon the shaft 25, before mentioned. The sleeve 23 constitutes the hub of a propeller-wheel, 24, and is mounted upon the shaft 25 in such manner as to turn with it, and also to slide longitudinally upon said shaft.

The operation of the device is as follows: The hand-brake staff 2 is turned in such manner as to wind the brake-chain upon the barrel 1, and the pawl-and-ratchet device 5 is connected or its parts brought into engagement. In this position of the parts the hand-brake staff constitutes one terminus of the brake mechanism, and the draw-bar (not shown) will constitute the other terminus thereof. By disengaging the pawl-and-ratchet device 5 the brake mechanism will be voluntarily released and inoperative, as will be clearly understood by reference to my former application. With the brake-chain wound upon the barrel 1 and the pawl-and-ratchet device 5 in position of engagement, a rotation of the barrel 1 can only occur upon a disengagement of the clutch members 3 4, produced by an endwise or vertical movement of the barrel on its shaft. An impediment to this upward movement of the barrel is met in the arm or mutilated wheel 6, which is held from vertical movement by the action of piston 12 in the cylinder 13 in the following manner: So long as the movement of the car continues, the revolution of propeller 24 in the liquid in casing 14, acting upon the valve-arm 18 through the medium of sliding sleeve 23, lever 21, and rod 20, holds the valve of cock 17 shut against the counter-stress of spring

19. This valve being closed, the body of water within the cylinder 13 prevents the descent of piston 12.

It will be seen that no upward movement of the arm 6 can occur without a much greater downward movement of the piston 12, such downward movement resulting from the pivotal position of lever 8<sup>a</sup>, and thus when the piston 12 is held against depression the arm 6 is held against elevation. Thus so long as the movement of the car continues at a rate in excess of that at which the spring 19 can open the cock-valve, no change in the relative adjustment of the mechanism can occur which will produce a release (automatically) of the brakes, and any retarding of the speed of the train-motor will inevitably produce an automatic application of the brakes through the action of devices described in my previous application. On the other hand, it will be seen that when the train has decreased in speed to an extent sufficient to cause the spring 19 to open the valve of cock 17, the piston 12 is free to descend. This descent of the piston 12 will be produced by the tendency of the clutch segments or members 3 and 4 to separate, owing to the form of their engagement-teeth, upon the stress application of the brake-chain to the barrel 1, such separation being accompanied by an upward movement of barrel 1, which carries arm 6 with it. Thus when a car provided with my invention is stopped, and then started in a direction opposite to the direction of its last movement, an application of the brakes will not occur, but the mechanism will be permitted to adjust itself to the new conditions.

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

1. In an automatic brake apparatus, a fluid-stop controlled from the rotary parts of the vehicle, and so arranged that when the vehicle is at rest the fluid contained in the stop shall cease to operate as an obstacle to the free movement of the draw-bar, thereby determining the non-application of the brakes.

2. The combination, with an automatic draw-bar-brake mechanism having one of its termini in a hand-brake staff, such staff being provided with a separable clutch, of a system of devices arranged to control the separation of the said clutch, in order to prevent such separation except under predetermined conditions, said system of controlling devices being actuated through connection with the rotary members of the truck, substantially as herein shown and described.

3. A reversal stop for automatic car-brakes, consisting of a cylinder placed within a casing, and provided with an ingress-port having an automatically-operating valve, and an egress-port, with a spring-valve arranged to keep said egress-port open, in combination with a hydraulic governor actuated through connections with the rotative parts of the



truck, and provided with connections to the valve of the egress-port, whereby the movement of said governor keeps said valve closed, substantially as set forth.

5 4. In an automatic draw-bar-brake apparatus, the combination of a clutch, 3 4, a hydraulic-stop apparatus, 12 13, suitable connec-

tions, 6 7 8 8<sup>a</sup> 11, and a hydraulic governor, 21 23 24, to control the release of the clutch, substantially as set forth.

W. B. GUERNSEY.

Witnesses:

OCTAVIUS KNIGHT,  
L. M. HOPKINS.