No. 835,270. PATENTED NOV. 6, 1906.

T. F. H. ZEALAND.

CAR BRAKE.

APPLICATION FILED MAR. 17, 1906.

Fig. 1.

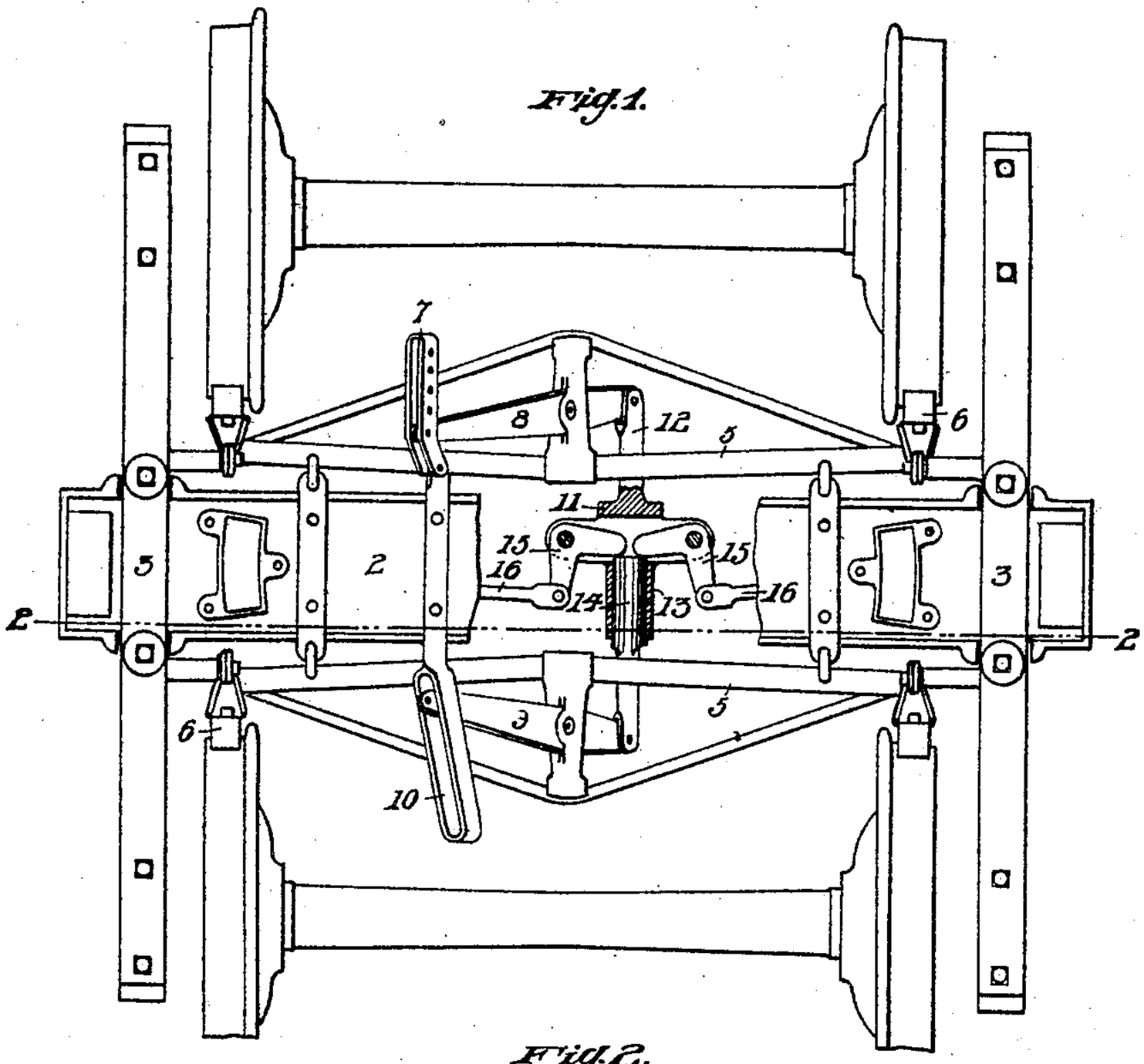


Fig. 2.

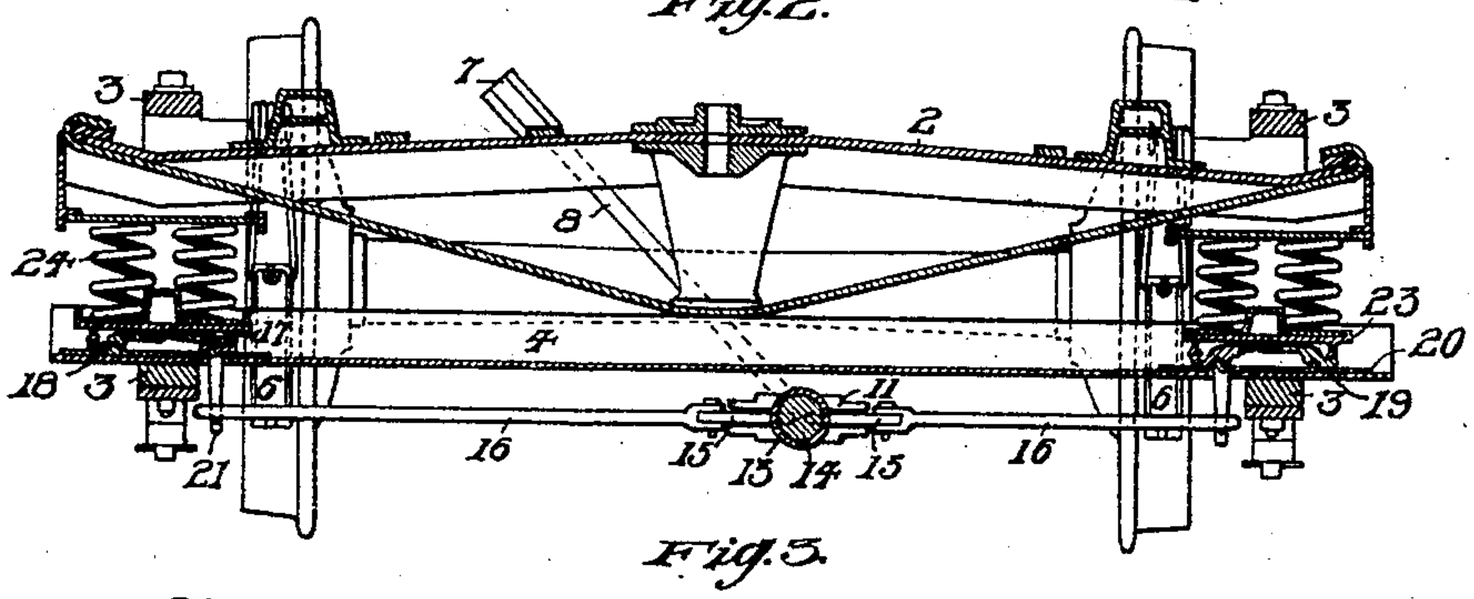


Fig. 3.

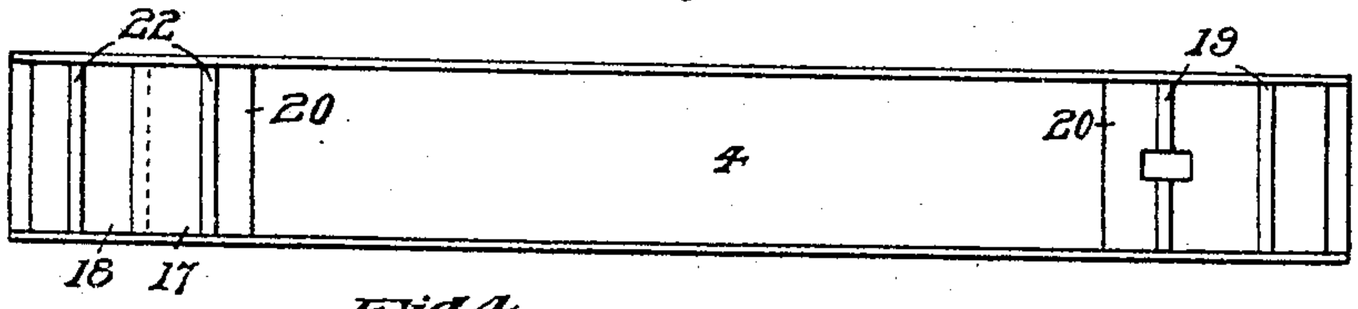
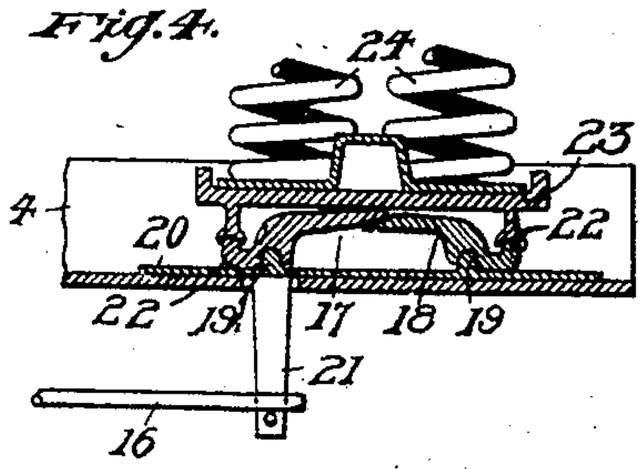


Fig. 4.



WITNESSES:

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CAR-BRAKE.

No. 835,270. Specification of Letters Patent. Patented Nov. 6, 1906.

Application filed March 17, 1906. Serial No. 306,571.

To all whom it may concern:

Be it known that I, THEODORE F. H. ZEALAND, a subject of the King of Great Britain, residing at Edgewood, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Brakes, of which the following is a specification, reference being had therein to the accompanying drawings.

Car-brake mechanism is usually so constructed that the maximum braking or brake-shoe pressure has fixed relation to and is determined by the weight of the car when empty, this pressure, as a general rule, being about seventy per cent. of the wheel-pressure on the track when the car is light. A greater pressure would tend to lock the wheels and cause them to slide and flatten. It is obvious, however, that such maximum pressure is deficient for effectively braking a loaded or partially-loaded car, and it is also clear that when loaded or partially loaded the wheels will stand much greater pressure without sliding than when the car is empty.

The purpose of this invention is to provide a variable braking pressure, which is determined automatically by the weight of the car.

In the present embodiment of the invention I make use of power sufficient for braking loaded or partially-loaded cars, and so apply that power that it exerts upward pressure on the car-body while being transmitted to the brake-shoes, the arrangement being such that the braking pressure is regulated by the resistance of the car-body to upward movement. If that resistance is greater than can be overcome, the full braking power is transmitted to the brake-shoes, whereas if the power is sufficient to lift the car-body a proportionately less amount of pressure is transmitted to the wheels.

In the accompanying drawings, Figure 1 is a top plan view, partly broken away, of a car-truck and brake mechanism having my invention applied thereto. Fig. 2 is a vertical cross-sectional view on line 2 2 of Fig. 1. Fig. 3 is a top plan view of the spring-channel. Fig. 4 is a detail view of the mechanism for transmitting upward pressure to the car-body.

Referring to the drawings, 2 designates the truck-bolster, 3 the arch-bars, and 4 the spring channel or plank. 5 represents the brake-beams; 6, the brake-shoes; 7, the lever-strap, and 8 the dead brake-lever fulcrumed thereto; 9, the live brake-lever, and 10 the guide therefor, the parts thus enumerated being of usual or any preferred construction.

The braking power is transmitted to and through live lever 9, and in brake mechanism of usual construction the lower ends of levers 9 and 8 are positively connected. In applying my invention I provide a yielding or compensating connection for these levers, the movement or play of this connection being dependent upon the amount of pressure to be transmitted to the brake-shoes.

The lever connection, as here shown, consists of a head 11, having at one side arm 12, connected to dead lever 8, and at the opposite side guide 13 for the plunger-like push-bar 14, the latter being connected to live lever 9. Fulcrumed in opposite sides of head 11 are the bell-crank levers 15, having their outer arms connected to rods or links 16 and their inner arms disposed toward each other and adapted to be engaged by plunger 14. Rods 16 extend to opposite sides of the truck and are connected to mechanism for exerting upward pressure on the car-body, the arrangement being such that when the car-body is lifted the rods move inward and the bell-cranks move or turn in response to the pressure of plunger 14.

In operation, power sufficient for properly braking the car when loaded is transmitted through live lever 9, such power being greatly in excess of that required and which can be safely used for the car when empty. When the power is applied, the described connection between levers 9 and 8 remains rigid unless it is sufficient to turn levers 15. With the car empty sufficient pressure is transmitted to the brake-beams for properly braking the wheels, and the excess power is expended on levers 15, which respond to the pressure of plunger 14 and lift the car-body. The resistance of levers 15 is of course dependent upon the load, and the greater their resistance the greater the power transmitted for braking the wheels. With the car fully or possibly only partially loaded levers 15 remain fixed, and as the connection between levers 9 and 8 is then positive the full power is transmitted to the brakes. Thus when applying the maximum braking power the amount thereof transmitted to the wheels is determined by the load. It will of course be understood that the improved mechanism may be so arranged as to remain inactive under light applications of the brake.

The mechanism at each side of the truck for exerting upward pressure on the car-body is here shown consisting of two plate-like lever devices 17 and 18, mounted to rock vertically on ribs 19, formed on a plate 20, the latter resting on the spring-channel. The inner edge of plate 17 overlaps plate 18, and extending downward from plate 17, through an aperture in the spring-channel, is arm 21, to which the outer end of rod or link 16 is connected. The outer portions of plates 17 and 18 have rocker-ribs 22 on their upper edges, which support the spring-seat 23, on which rest the truck-springs 24. Thus it will be seen that an inward pull on rod 16 tends to rock-plates 17 and 18, depressing their overlapping inner portions and elevating their outer portions, thereby lifting the spring-seat and trasmitting upward pressure through bolster 2 to the car-body. Obviously the greater the load the greater the resistance of the rocker devices to the pull of rod 16.

While I have here shown and described my preferred embodiment of the several features of the improved brake mechanism, it will be understood that the same may be differently constructed and variously applied without departing from the invention.

I claim—

1. In a car-brake, the live and dead brake-levers, and mechanism adapted to exert upward pressure on the car-body, said mechanism forming a compensating connection between the live and dead levers.

2. In a car-brake, brake-applying levers, mechanism movably connected to one of the levers for exerting upward pressure on the car-body, and an operative connection between the other brake-applying lever and the said car-lifting mechanism.

3. In a car-brake, two brake-applying levers, devices adapted to exert upward pressure on the car-body, levers connecting said devices with one of the brake-levers, and an operative connection between said connecting levers and the other brake-lever.

4. In a car-brake, two brake-applying levers, lever devices at opposite sides of the car for exerting upward pressure on the car-body, and two bell-crank levers having their fulcrums connected to one of the brake-levers, the other brake-lever being adapted to exert pressure on the free ends of the bell-cranks.

5. In a car-brake, two brake-applying levers, lever devices at opposite sides of the car for exerting upward pressure on the car-body, a head secured to one of the brake-levers, bell-crank levers fulcrumed in the head and connected to the said lever devices, and a device carried by the other brake-lever for exerting pressure on the bell-cranks.

6. In a car-brake, a rocking car-body support maintained normally depressed by the weight of the car-body, brake-applying mechanism, and a connection between said mechanism and the rocking support for raising the latter and regulating the pressure of the brake mechanism.

7. In a car-brake, a spring-channel, rocker devices operatively connected together and mounted on the channel and adapted to support the weight of the car, brake mechanism, and a connection between said mechanism and one of the rocker devices for raising said devices and regulating the pressure of the brake mechanism.

8. In a car-brake, a spring-channel, overlapping rocker devices mounted on the channel, a plate resting on the overlapping rocker devices and adapted to be held normally depressed by the weight of the car-body, brake mechanism, and a connection between said mechanism and one of the rocker devices for raising the latter and regulating the pressure of the brake mechanism.

9. In a car-brake, a spring-channel provided with rocker-ribs, two operatively-connected rocker devices mounted on said ribs, each of said devices having an upwardly-disposed bearing, a plate resting on said upwardly-disposed bearings and adapted to be held normally depressed by the weight of the car, brake mechanism, and a connection between said mechanism and the rocker devices for raising the latter and regulating the pressure of the brake mechanism.

10. In a car-brake, a spring-channel, a pair of operatively-connected rocker devices adjacent each end of the channel, said rocker devices being adapted to be held normally depressed by the weight of the car, a downwardly-projecting arm carried by one member of each pair of said devices, two brake-applying levers, two bell-crank levers carried by one of the brake-levers and connected to said depending rocker-arms, and means whereby the other brake-lever is adapted to exert pressure on the free ends of the bell-crank levers.

In testimony whereof I affix my signature in presence of two witnesses.

THEODORE F. H. ZEALAND.

Witnesses:
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VINNIE M. MYERS.