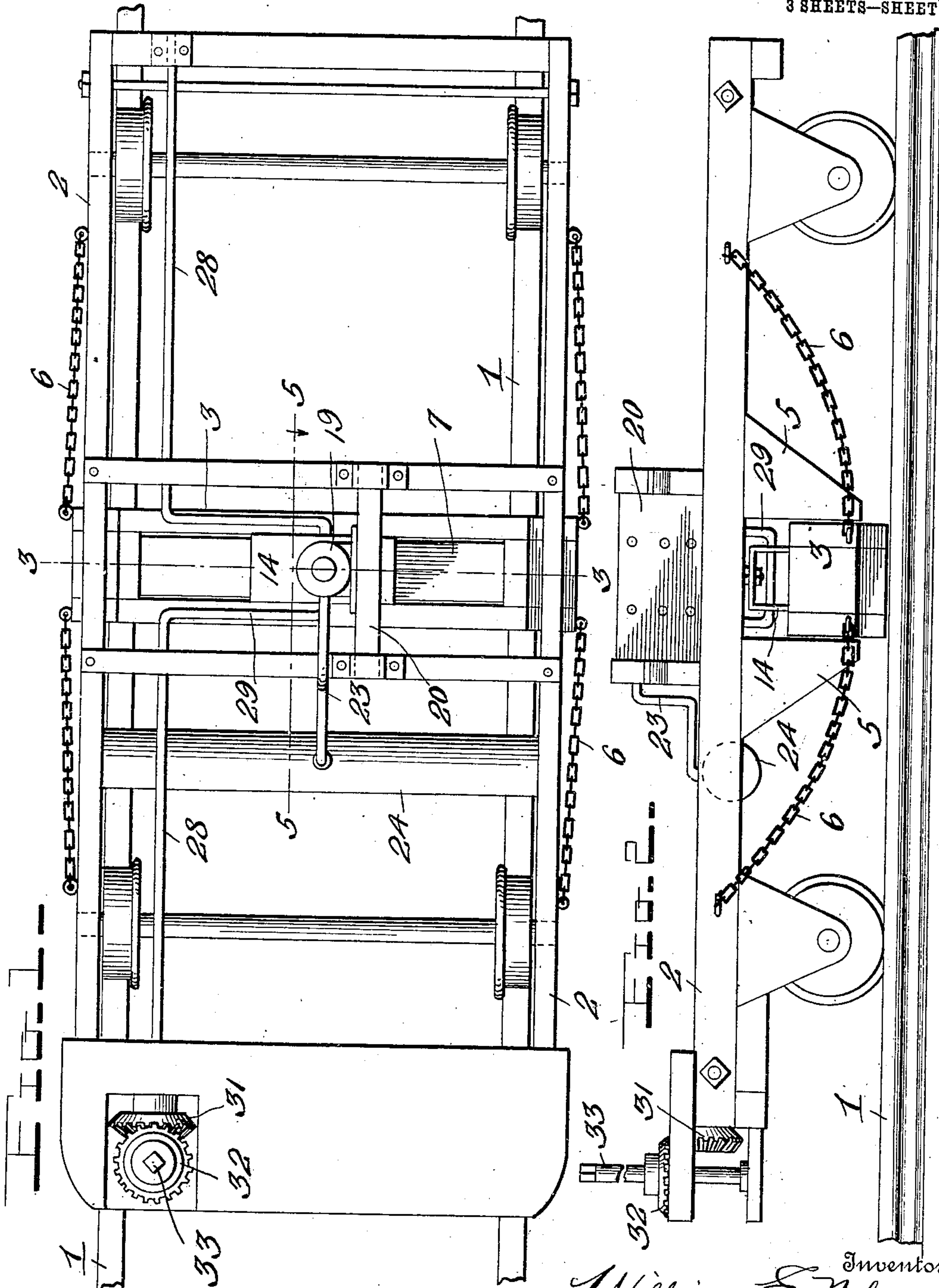


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SAFETY BRAKE FOR CARS.  
APPLICATION FILED OCT. 5, 1909.

955,536.

Patented Apr. 19, 1910.

3 SHEETS—SHEET 1.



Witnesses

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FIG. 3.

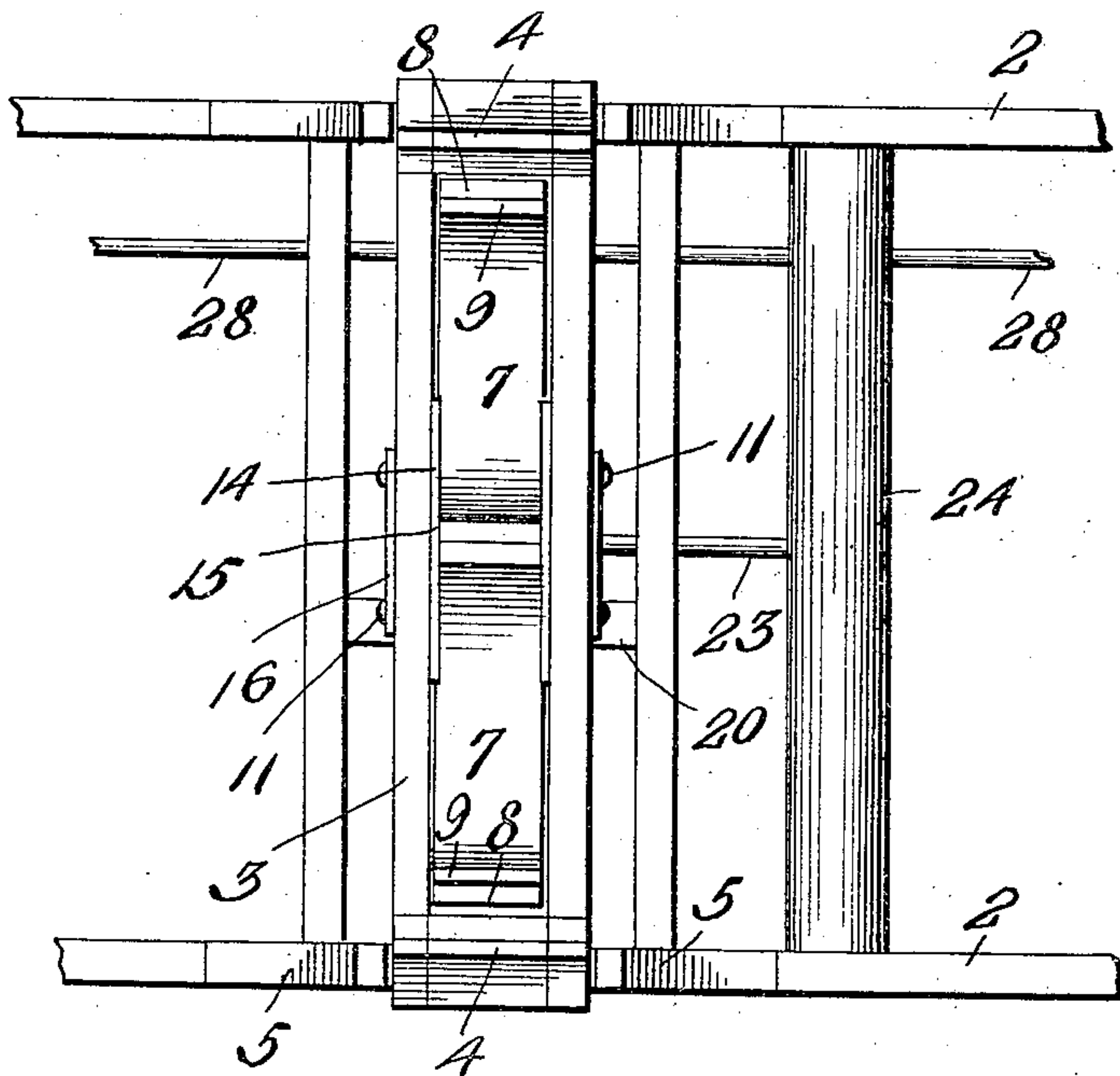
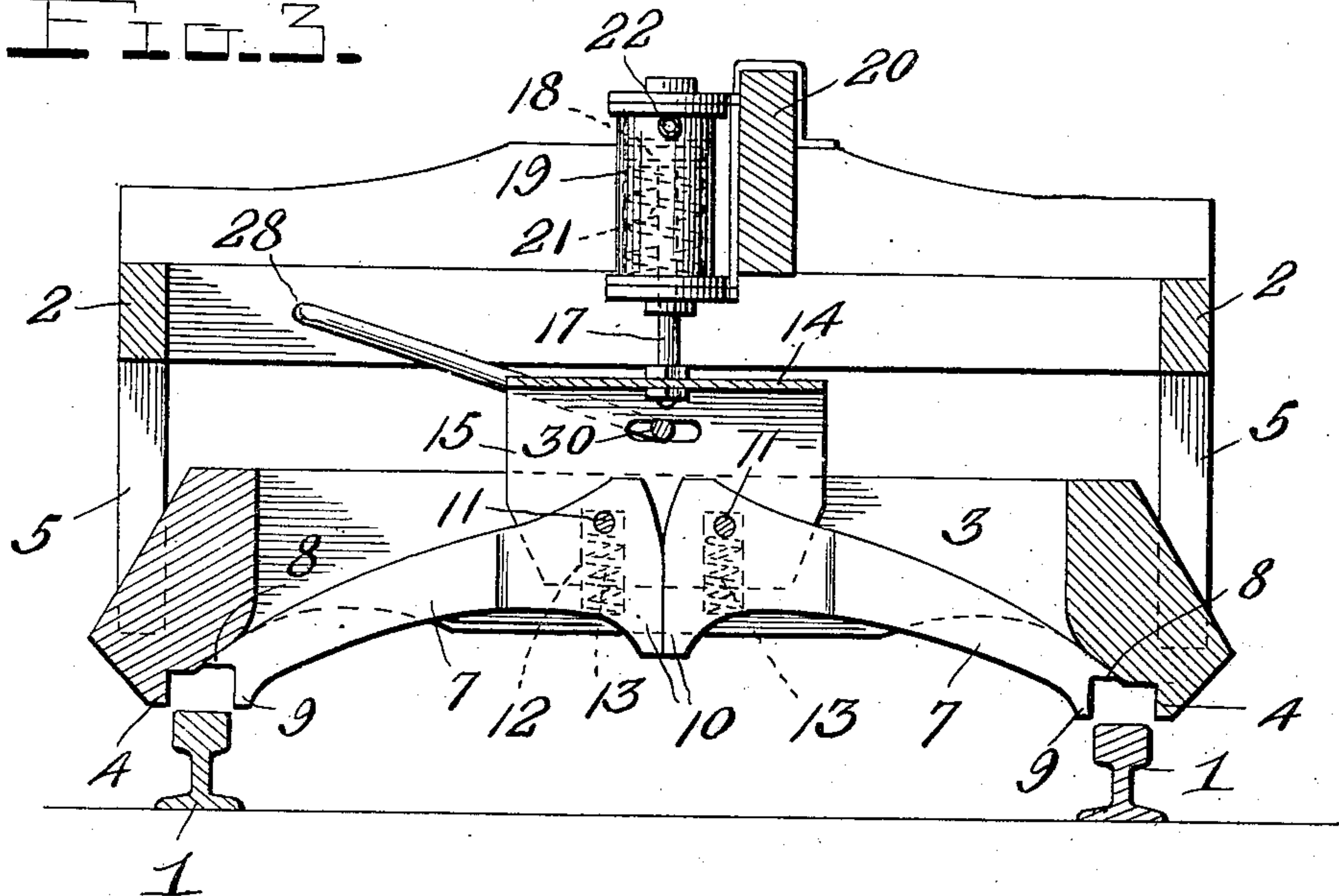


FIG. 4.

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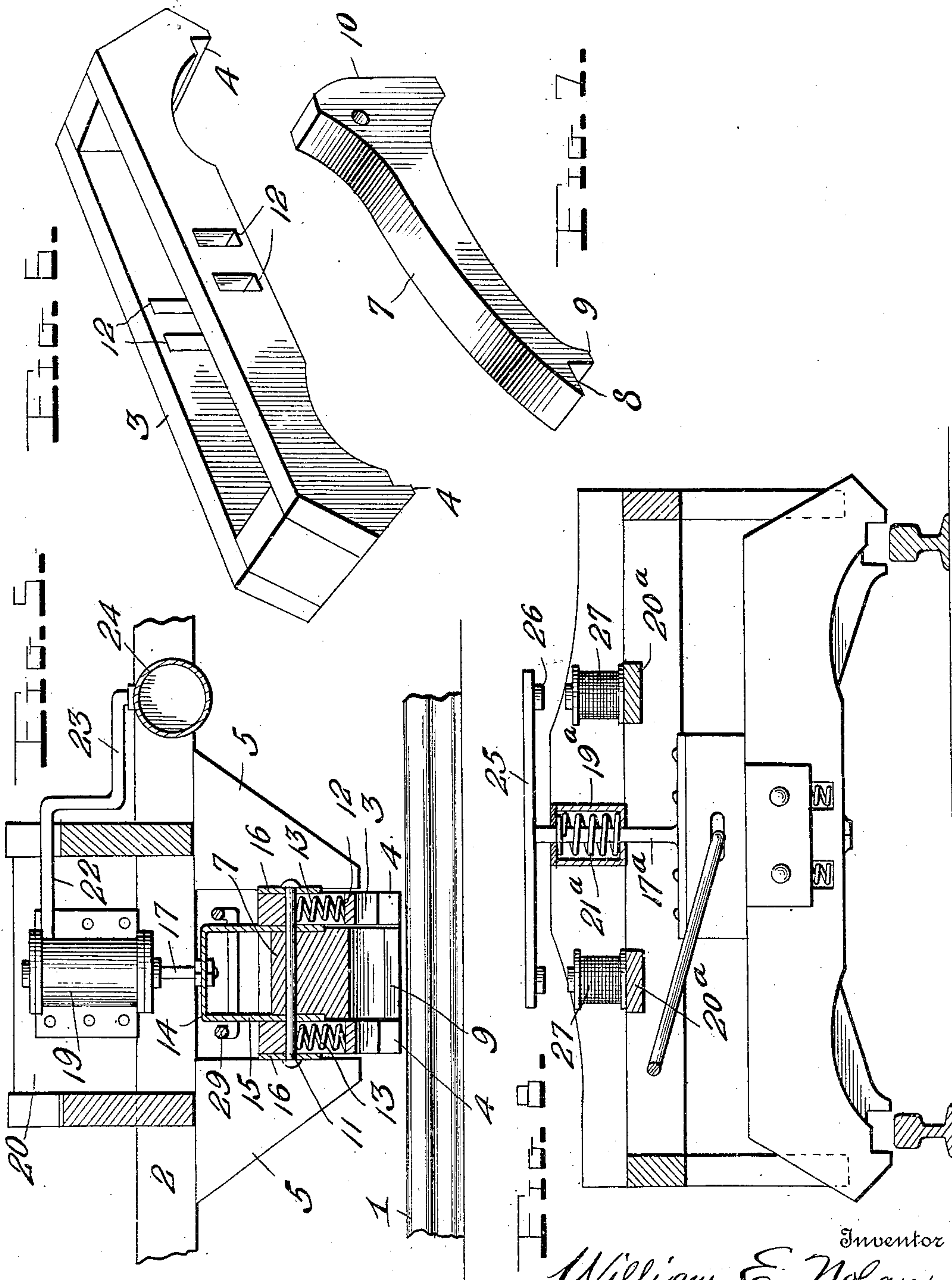
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# UNITED STATES PATENT OFFICE.

WILLIAM E. NOLAN, OF SULLIVAN, INDIANA.

SAFETY-BRAKE FOR CARS.

955,536.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed October 5, 1909. Serial No. 521,051.

*To all whom it may concern:*

Be it known that I, WILLIAM E. NOLAN, a citizen of the United States, residing at Sullivan, in the county of Sullivan and State of Indiana, have invented certain new and useful Improvements in Safety-Brakes for Cars, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in brakes for railway cars, and more particularly to that class of brakes which have track engaging members.

The object of the invention is to provide a simple and practical brake mechanism of this character which will act in a powerful and effective manner upon the rails without danger of spreading them, which will be disposed at all times above the track rails so as to be out of the way of switches, guard rails and the like, and which may be operated by any suitable manual or power-actuated means.

With the above and other objects in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings in which—

Figure 1 is a plan view of parts of a railway car and track illustrating the application of my improved track brake; Fig. 2 is a side elevation of the same; Fig. 3 is a vertical cross section taken on the plane indicated by the line 3—3 in Fig. 1; Fig. 4 is a detail bottom plan view of the brake mechanism; Fig. 5 is a detail vertical longitudinal section taken on the plane indicated by the line 5—5 in Fig. 1; Fig. 6 is a perspective view of the track engaging member; Fig. 7 is a similar view of one of the brake shoe members, and Fig. 8 is a detail vertical cross sectional view showing how the brake may be operated by electromagnets.

Referring more particularly to the drawings 1 denotes track rails and 2 the frame or body portion of a car, car-truck or the like.

3 denotes a vertically movable track engaging member or frame which is disposed transversely beneath the car and has at its ends stop shoulders 4 adapted to engage the

outer side faces of the heads of the track rails 1 when said member 3 is lowered. Said member may be of any desired form and construction and mounted for vertical movement in any suitable manner, but as illustrated more clearly in Fig. 6 it is of open rectangular shape and has the stop shoulders 4 formed on its depending end portions. Said end portions of the member 3 move vertically between depending guide lugs 5 upon the side bars or beams of the body 2, although it will be understood that other means may be provided for guiding the member 3.

6 denotes chains or similar connections between the ends of the member 3 and the side beams of the frame or body 2, such chains being provided for the purpose of retaining the member in position should one of the guides 5 break.

The invention also comprises a pair of opposing brake members or shoes 7 which are arranged in the member or frame 3 for downward and outward movement as well as vertical movement with said member 3, and which are adapted to engage the inner side faces of the track rails 1. The brake shoes 7 are in the form of levers pivotally mounted at their upper and inner ends and having angular lower and outer ends which provide outwardly projecting shoulders 8 to rest upon the treads of the track rails, and downwardly projecting portions 9 which form friction brake surfaces to contact with the inner side faces of the rail heads. The opposing inner ends of the two transversely extending brake shoes 7 are engaged to provide contacting cam portions 10, and said ends are hung upon pivot pins 11 arranged for limited vertical movement in the slots 12 formed in the spaced side portions of the member or frame 3. Coil springs 13 are arranged in the slots 12 beneath the pivots 11 to hold the latter normally in the upper ends of said slots and the brake shoes in elevated or retracted position within the member 3. The pivots 11 which it will be noted support both the brake shoes 7 and the member or frame 3, are in turn supported and actuated by a suspending and operating head 14. The latter is preferably of inverted U-shape and



has its depending side portions 15 arranged on opposite sides of the enlarged inner ends of the brake shoes and within the member 3, as clearly shown in Figs. 3 and 5 of the drawings. Said depending side portions 15 of the head or member 14 have the pivots 11 passing through and fixed in them, the projecting ends of the pivots also passing through slide plates 16 arranged on the outer faces of the side portions of the frame 3 to cover or partially cover the slots 12.

The suspending and operating head 14 is fixed at the lower end of a vertical guide rod 17, shown in Fig. 3 as the rod of a piston 18 which works in the vertically disposed cylinder 19, slidably mounted in a supporting structure 20 on the body or frame 2. The cylinder guides the rod 16 in its vertical movement, although it will be understood that other guiding means may be provided. It will also be understood that any suitable means may be provided for actuating the rod 17, but as illustrated in Fig. 3 a coil spring 21 is arranged in the cylinder beneath the piston 18 for elevating said rod, and an inlet 22 is provided at the top of the cylinder for compressed air or other fluid under pressure which when admitted to the cylinder will depress the piston against the tension of said spring. As illustrated in Fig. 1, the inlet 22 is connected by a supply pipe 23 to a fluid pressure cylinder or tank 24.

While the above described actuating means for the head or member 4 is preferable in some uses of the invention, I may substitute for the fluid pressure actuating means the electrical actuating means shown in Fig. 8. In this embodiment of the invention the guide rod or member 17<sup>a</sup> extends through a tubular guide 19<sup>a</sup> and is also actuated upwardly by a coil spring 21<sup>a</sup>. At the upper end of the rod 17<sup>a</sup> is a cross piece 25 carrying the armatures 26 of two electromagnets 27 supported on a suitable structure 20<sup>a</sup>.

In addition to the above described power actuating means for the brake I employ supplemental hand actuating means, the latter being here shown as in the form of a longitudinally extending rock shaft 28 mounted in suitable bearings in the body or frame 2 and having a crank portion 29 which works in horizontal slots 30 formed in the depending side portions or plates 15 of the head 14. At one or both ends of the shaft 28 may be fixed beveled gears 31 which mesh with similar gears 32 on upright shafts 33, which latter are adapted to be actuated by hand cranks or other suitable means.

In operation, assuming the brake to be in elevated or retracted position shown in Fig.

3, when it is desired to apply the brake, fluid under pressure is admitted to the top of the cylinder 19 so that the piston and consequently the head 14 will be lowered. The downward movement of the head 14 lowers the member or frame 3 and the brake shoes 7 vertically until the stop shoulders 4 engage the outer side faces of the rail heads, and said member 3 rests upon the rail, whereupon the continued downward movement of the head 14 against the tension of the springs 13 will cause the brake shoes 7 to be moved laterally in a downward and outward direction, the projections or shoulders 18 resting on the tread surfaces of the rails and the friction surfaces 9 engaging the inner side faces of the rail heads to check the speed of the car.

It will be noted that the stops 4 will effectively prevent the rails from spreading and co-act with the brake shoes in locking the car to the track so that the former will be quickly stopped. It will also be noted that the greater the force used in applying the brake, the greater will be the braking action or effectiveness of the device. When the pressure on the piston is removed the spring 21 will elevate the parts to normal position shown in Fig. 3 so that all parts of the brake will be disposed above the upper surfaces of the track rails, and will consequently not strike guard rails, frogs, switch points etc.

When the brake is applied by hand it is only necessary to rotate the upright shaft 33 in a direction to swing the crank 29 of the rock shaft 28 downwardly.

In the operation of the modified form of the invention shown in Fig. 8, the magnets 27 are energized in any suitable manner and from any source of electrical supply, so that they will attract their armatures 26 and consequently lower the rod or member 17<sup>a</sup>.

While I have shown and described in detail the preferred embodiments of my invention, I wish it understood that changes in the form, proportion and arrangement of parts, and in the details of construction may be resorted to without departing from the spirit and scope of my invention. For example, other operating means than those shown may be employed for controlling and actuating the track engaging member and brake shoes, and the brake shoes instead of acting on the inner side faces of rails such as those illustrated may be made to operate in the well known form of grooved track rails.

Having thus described the invention what is claimed is:

1. The combination of a support, guides thereon, a vertically movable member engaged with said guides, oppositely projecting brake levers arranged in said member



and having brake shoes at their outer ends for engagement with track rails, pivots for the inner ends of said levers and vertically movable in said member, springs for elevating said pivots, a vertically movable supporting and actuating head connected to said pivots, and means for operating said head.

2. The combination of a support, guides thereon, a vertically movable member engaged with said guides, oppositely projecting brake levers arranged in said member and having brake shoes at their outer ends for engagement with track rails, pivots for the inner ends of said levers and vertically movable in said member, said inner ends of the levers having contacting portions, an inverted U-shaped head having depending portions engaged with said pivots and receiving the inner ends of the levers between them, and means for supporting and raising and lowering said head.

3. The combination of a support, transversely disposed opposing brake shoes adapted to have their outer ends engage track rails and having their inner ends pivoted and provided with contact portions, a vertically movable head having guides in which the pivots of said shoes are arranged for movement, springs for actuating said pivots in their guides, and means for actuating said head.

4. The combination of a support, a movable track engaging member having stops to engage the outer side faces of track rails, and brake shoes to engage the inner side faces of track rails, and means for actuating said member and said shoes.

5. The combination of a support, a movable track-engaging member having stops to engage the outer side faces of track rails, brake shoes to engage the inner side faces of track rails, a vertically movable head for suspending and operating said member and moving said brake shoes outwardly into frictional engagement with track rails.

6. The combination of a support, a movable track engaging member having stops to engage the outer side faces of track rails, brake shoes to engage the inner side faces of track rails, a suspending and actuating means for said member and said brake shoes, and manually actuated operating means for the last mentioned means.

7. The combination of a support, a movable track engaging member having stops to engage the outer side faces of track rails, brake shoes to engage the inner side faces of track rails, a suspending and operating means for said member and said shoes, a power actuated operating means for the last mentioned means.

8. The combination of a support, a movable track engaging member having stops to

engage the outer side faces of track rails, brake shoes to engage the inner side faces of track rails, a suspending and operating head connected to said member and said brake shoes, means for guiding said head for vertical movement, a spring for elevating said head, and means for depressing said head.

9. The combination of a support, a movable track engaging member having stops to engage the outer side faces of track rails, brake shoes to engage the inner side faces of track rails, a suspending and operating head connected to said member and said brake shoes, means for guiding said head for vertical movement, a spring for elevating said head, and fluid pressure operating means for said head.

10. The combination of a support, a movable track engaging member having stops to engage the outer side faces of track rails, brake shoes to engage the inner side faces of track rails, a suspending and operating means for said member and said brake shoe, and fluid pressure means for actuating the last mentioned means.

11. The combination of a supporting frame, guides thereon, a transverse track engaging member vertically movable in said guide and having depending stops to engage the outer side faces of track rails, transversely disposed opposing brake shoes arranged in said member for swinging movement and having angular outer ends to engage the top and inner side faces of track rails, a vertically movable suspending and operating head for said member and said brake shoes, and means for actuating said head.

12. In a brake of the character described, the combination of movable means to engage track rails and prevent the same from spreading, opposing friction brake members to engage the inner portions of track rails, a means for simultaneously actuating said means and said brake members.

13. In a brake of the character described, the combination of movable means to engage track rails and prevent the same from spreading, opposing friction brake members to engage the inner portions of track rails, means for raising and lowering said means and said brake members, and means whereby said brake members will be moved into frictional contact with track rails after the first mentioned means have been lowered into engagement with the track rails.

14. In a brake of the character described, the combination of a support, a vertically movable member thereon to engage the outer side of a track rail to prevent the same from spreading away from an opposing track rail, a brake shoe movable laterally with respect to said member and adapt-



ed to engage the inner edge of a track rail and press the same outwardly against said member, and actuating means for said member and brake shoe.

- 5 15. In a brake of the character described, the combination of movable means to engage track rails and prevent the same from spreading, opposing friction brake members to engage the inner portions of track rails,

means for actuating said movable means 10 into engagement with track rails, and means for actuating said brake members.

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

WILLIAM E. NOLAN.

Witnesses:

JOHN T. WATSON,

WILLIAM J. NOLAN.