Jan. 4, 1966 R. L. WILSON 3,227,246

CAR RETARDER

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Fig. 1

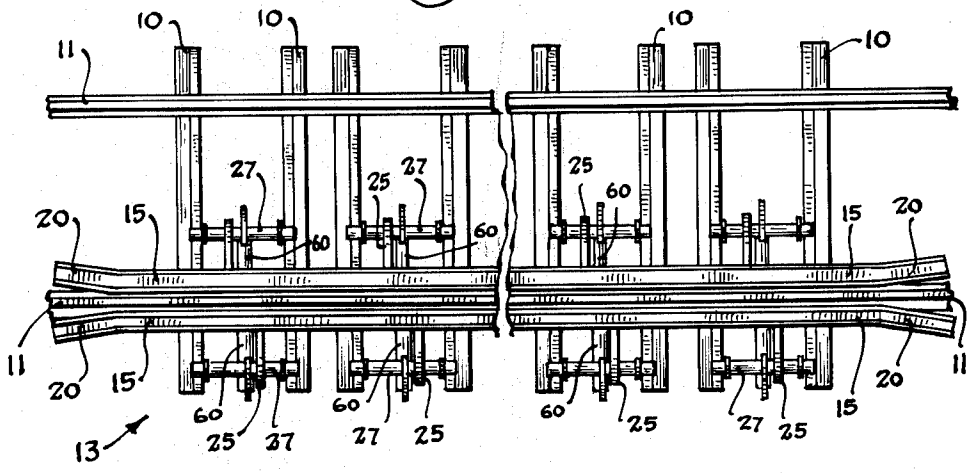
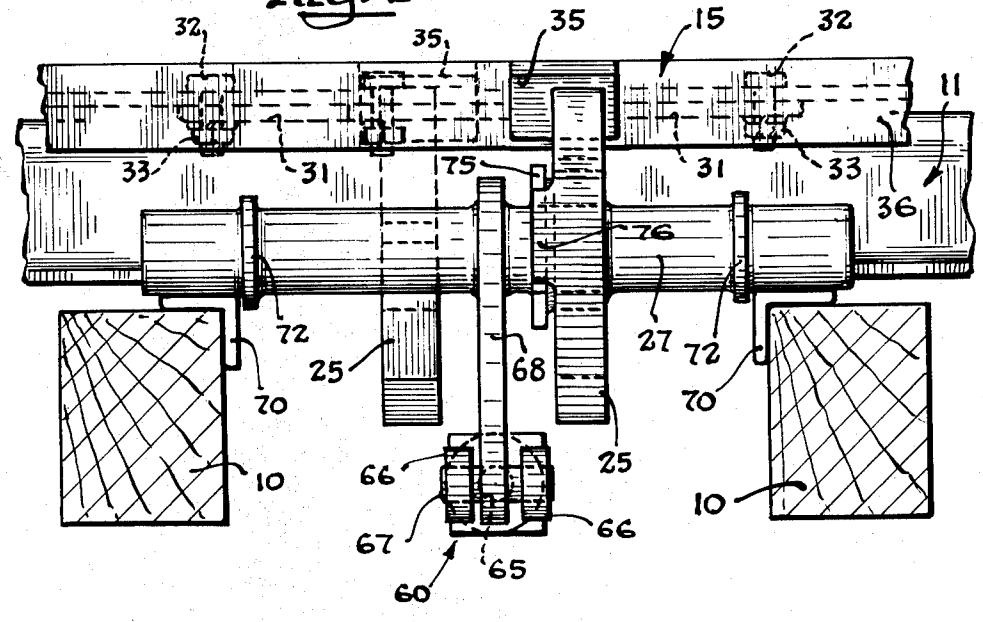


Fig. 2



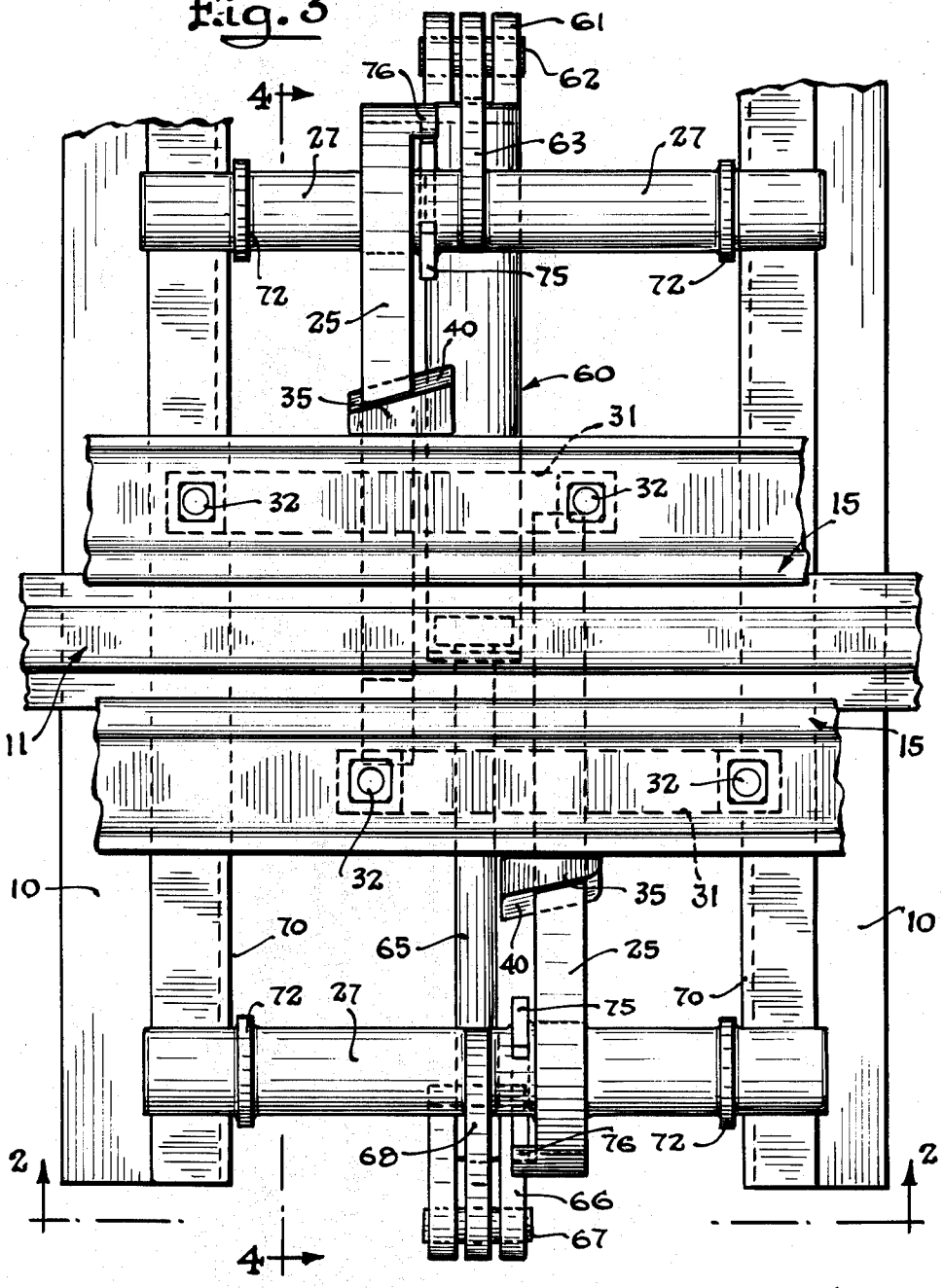
Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

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Fig. 3



Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

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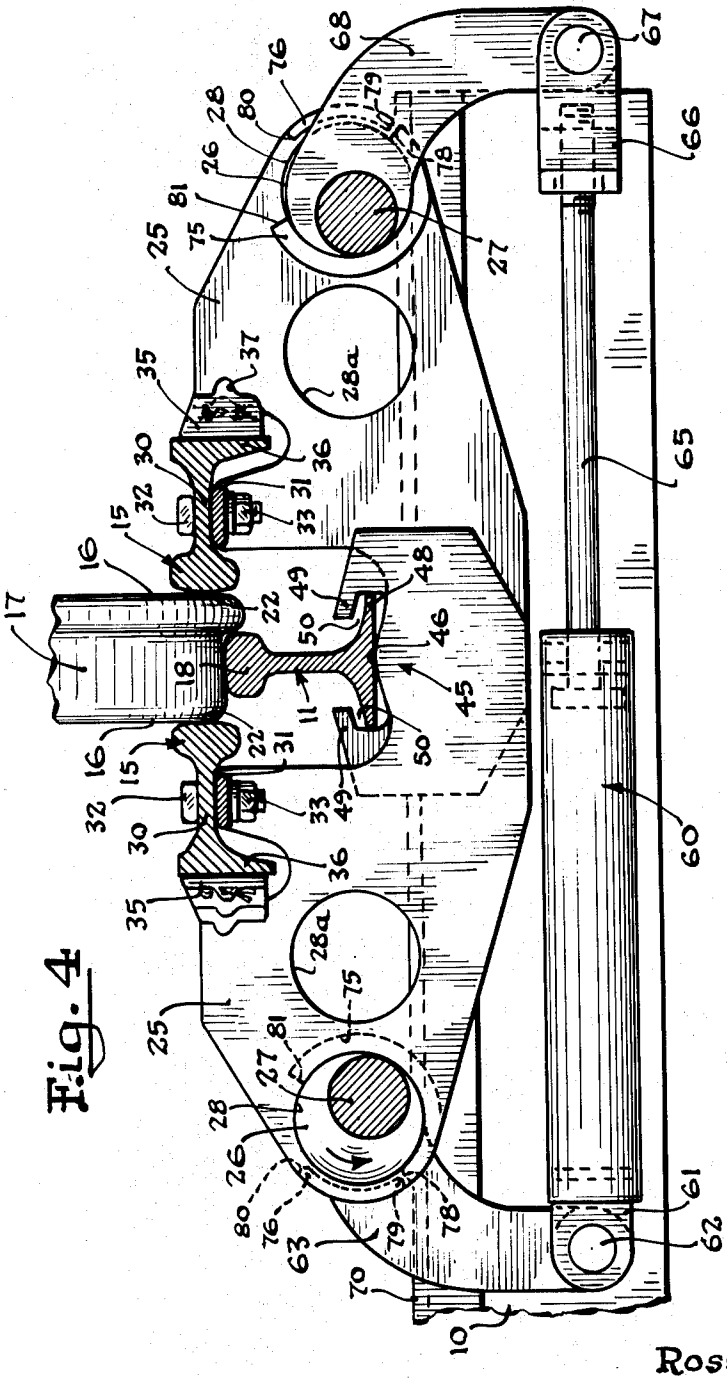


Fig. 4

Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

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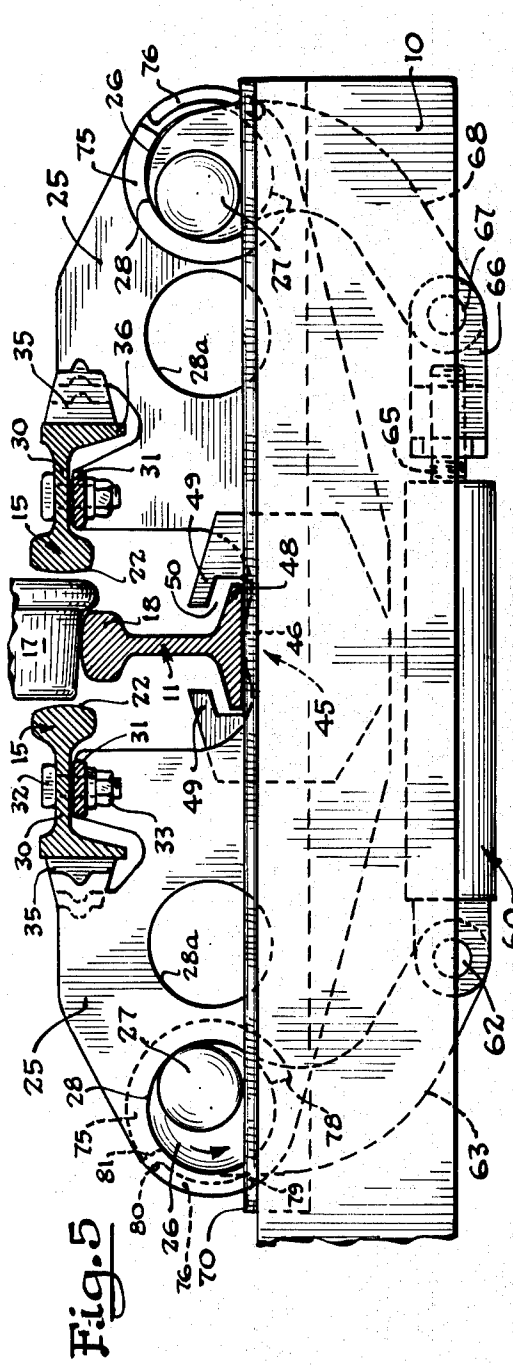


Fig. 5

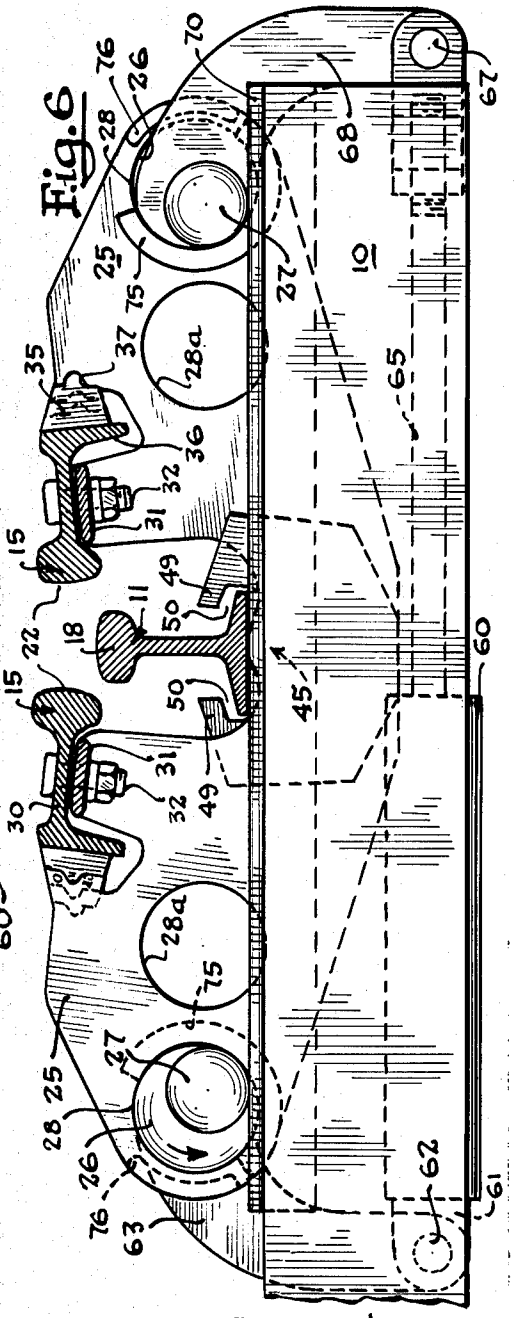


Fig. 6

Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

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Fig.7

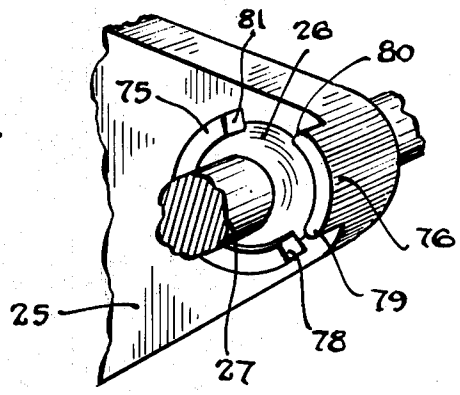


Fig.8

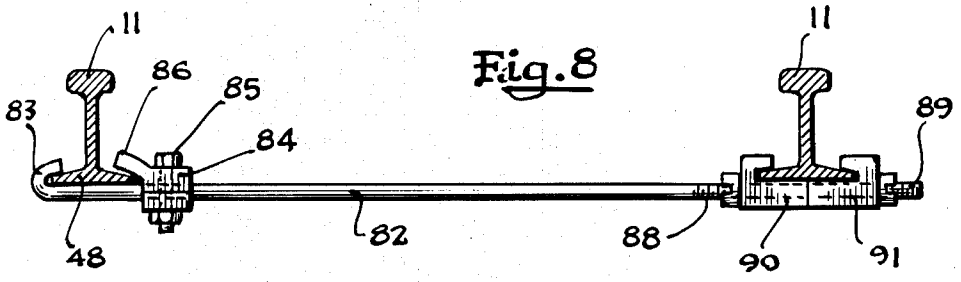
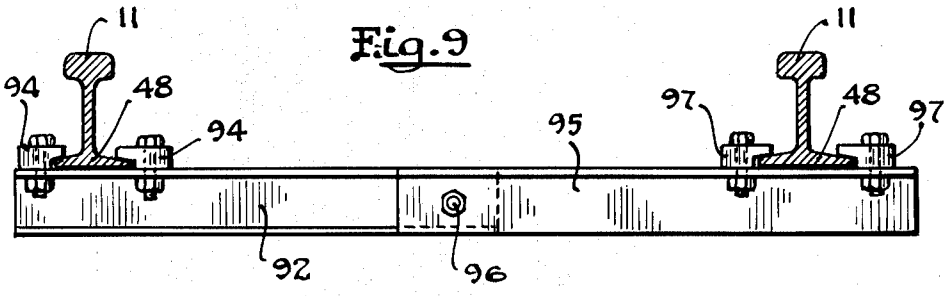


Fig.9



Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

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CAR RETARDER

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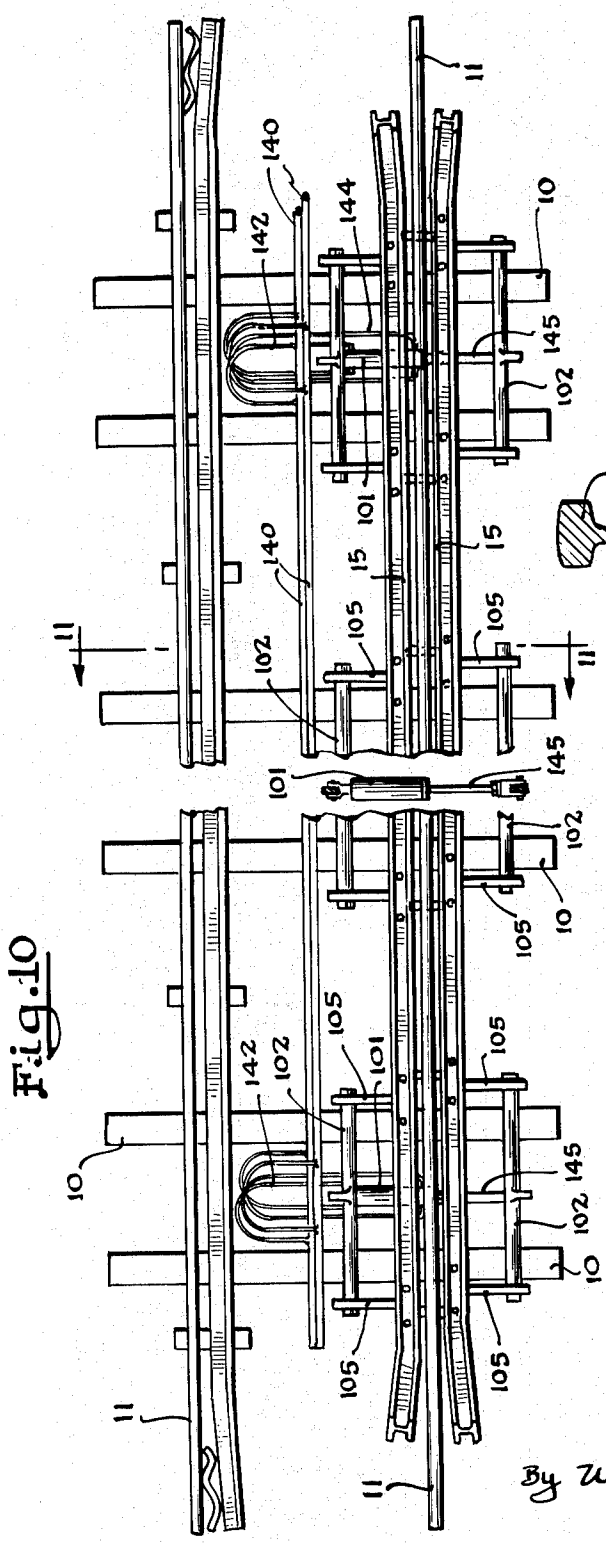


Fig. 10

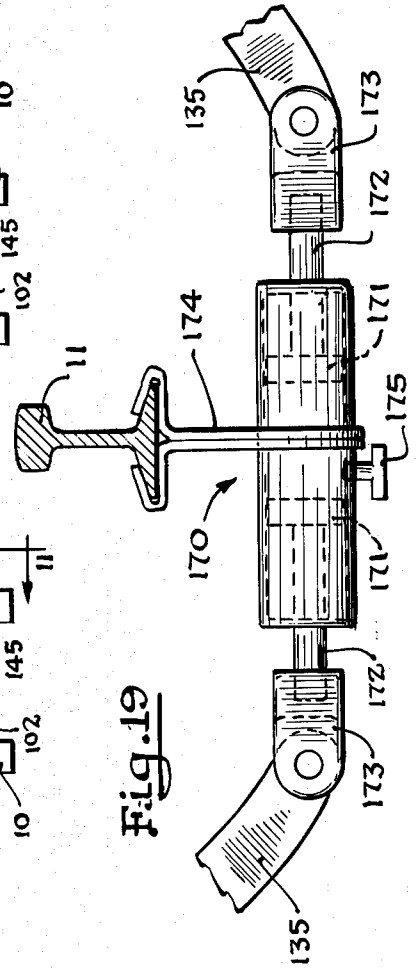


Fig. 19

Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

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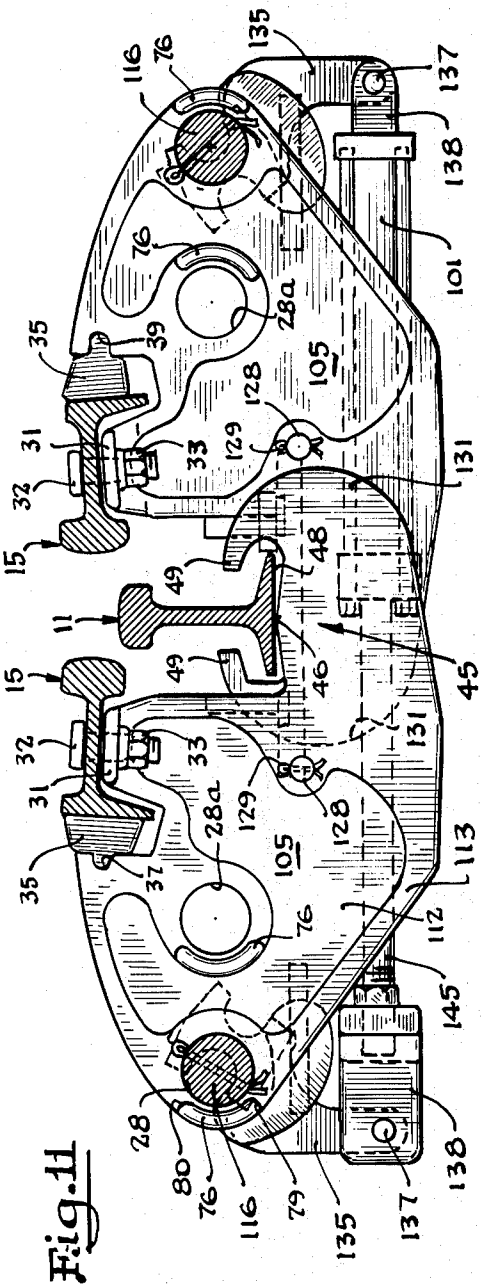


Fig. 11

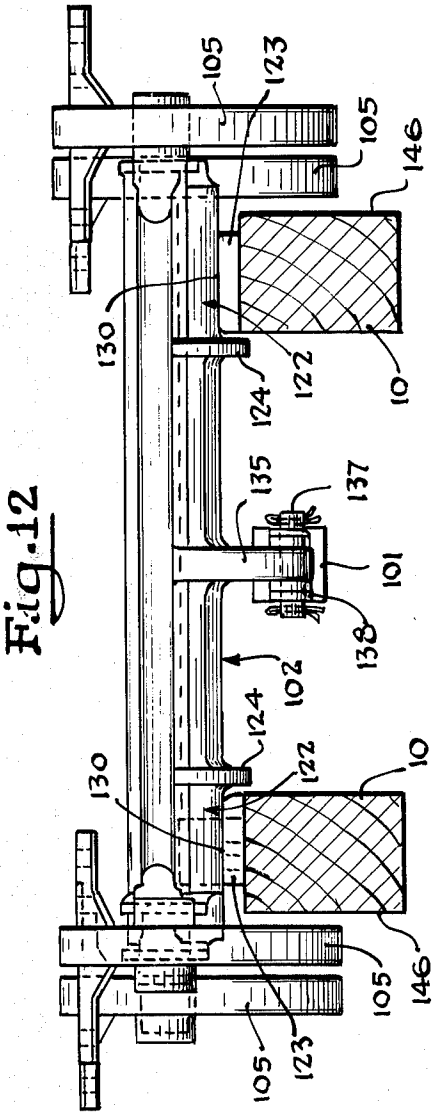


Fig. 12

Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

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CAR RETARDER

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Fig.13

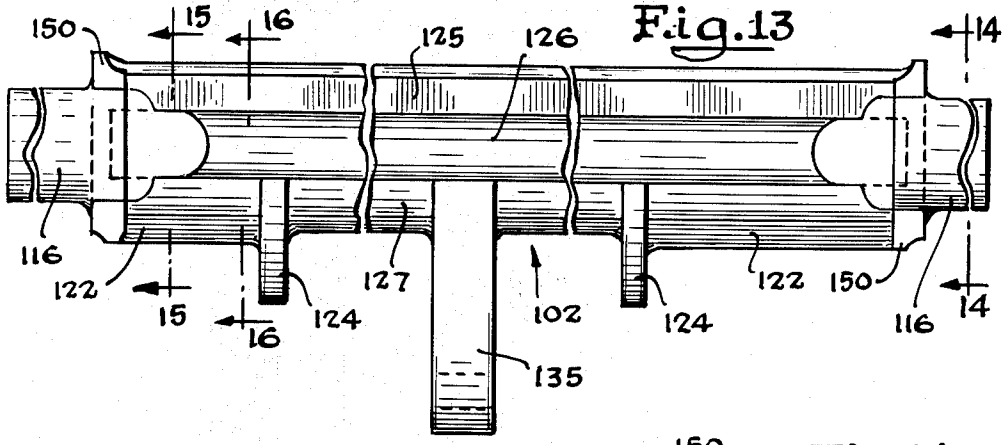


Fig.14

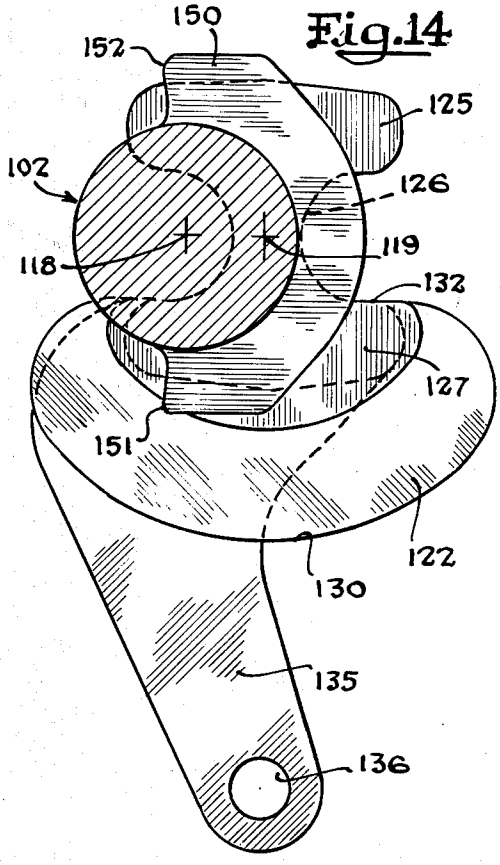


Fig.15

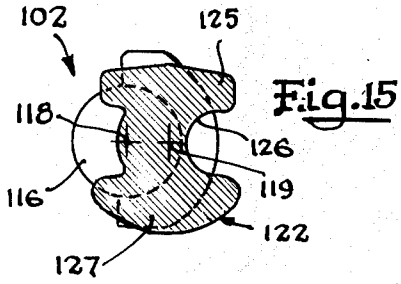


Fig.16

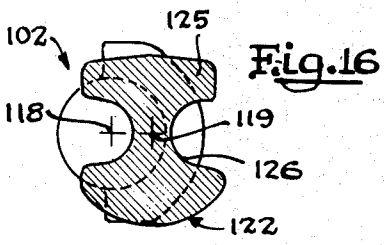


Fig.17

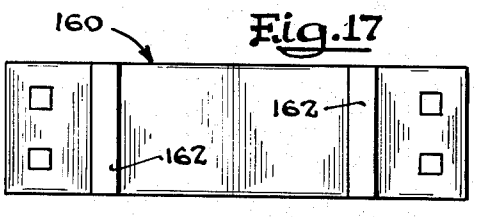
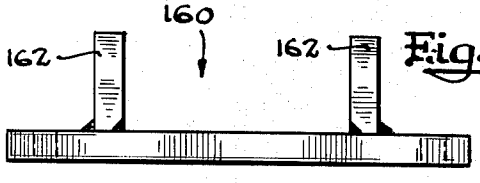


Fig.18



Inventor
Rosser L. Wilson
By Wallace, Kinzer and Dorn
Attorneys

United States Patent Office 3,227,246
Patented Jan. 4, 1966

3,227,246

CAR RETARDER

Rosser L. Wilson, Mahwah, N.J., assignor to American Brake Shoe Company, New York, N.Y., a corporation of Delaware

Filed Feb. 20, 1964, Ser. No. 346,168
23 Claims. (Cl. 188—62)

This invention relates to a retarder system for braking railroad cars, and more particularly to a system wherein the retarding or stopping force is proportional to the weight of the railway car.

In railway classification yards, railroad cars are routed to different positions, and it is often desired to control the rate of movement of a railway car or to stop the railroad car and hold it for a period of time and then release the car in response to a remote signal. Many of the retarding mechanisms heretofore employed have been quite complex in that they embodied a number of operating linkages, compression springs and interconnected levers. Also, many retarder systems require relatively extensive foundations for installation, or alternatively require the retarder to be secured to the ties and thus subjected to becoming misaligned as the ties shift. Accordingly, an object of the present invention is a simplified retarder system wherein a single one-piece lever performs the main operating functions and wherein the operating lever and its operating mechanism neither require a special foundation nor fastening to the railroad ties. An object of the present invention is an improved and simplified retarder system in which compression springs and interconnected levers have been eliminated and replaced by a single, one-piece operating lever of low cost and rugged construction, the lever serving the multiple functions of exerting the braking force by a friction element secured thereto and of proportioning the amount of braking force to the weight of the railway car.

More specifically, the present invention employs a series of independent and identically configured levers for supporting braking or friction rails that engage the sides of a railway wheel and for supporting the traffic or running rail over which the railway wheel moves. These levers also serve to lift the traffic or running rail as the levers pivot due to the outward movement of the braking rails as a railway wheel moves between the brake rails. Thus, an object of the present invention is not only to reduce the number of parts employed for moving an abrasion rail on one side of a railway wheel, but also to reduce the inventory of parts necessary for a retarder system by using identical parts for operating the braking rails on either side of the railway wheel.

Preferably, the retarder system should be selectively rendered operative to retard a car or rendered inoperative either to allow a car to pass through without being retarded, or to release a car that has been stopped within the retarder system. Accordingly, a further object of this invention is to afford a simple hydraulic mechanism and mounting arangement of the levers to facilitate the selective enabling or disabling of the retarder system. More specifically, it is an object of the invention to provide a novel support shaft disposed on the railroad ties and having an eccentric mounting portion for at least one retarder lever and to provide a fluid-operated cylinder mechanism for turning the rock shafts and eccentrics, in response to a remote signal, to pivot the levers bearing the braking rails between an operative braking position and an inoperative or released position.

The braking rails, that serve as the brake shoes or friction elements and that rub against the side of the railway wheels, must be securely held within the lever means against the great forces applied thereto by the railway

car; but they also should be readily adjustable so as to be able to compensate for any wear on the braking surfaces. A further object of the present invention is to hold the braking rails positively against movement on the lever means and to afford a simple wedging element capable of moving the braking rails outwardly after they have experienced wear.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show the preferred embodiment of the present invention and the principles thereof and what is now considered to be the best mode contemplated for applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

FIG. 1 is a plan view showing the traffic rail and braking rails carried by the levers in accordance with the present invention;

FIG. 2 is an enlarged side elevational view taken along the line **2—2** of FIG. 3, showing the mounting of a rock shaft on a pair of adjacent railway ties;

FIG. 3 is an enlarged plan view showing a traffic rail and a pair of braking rails mounted on a pair of lever means therefor;

FIG. 4 is a sectional view taken along the line **4—4** of FIG. 3 in the direction of the arrows and showing the traffic rail and braking rails in engagement with a railway car wheel;

FIG. 5 is a sectional view showing the abrasion rails in their released posittion in relationship to a railway wheel passing over said traffic rail;

FIG. 6 is a sectional view showing the braking rails in their cocked, operative, position awaiting entry of a wheel;

FIG. 7 is a sectional view showing stop elements for limiting rotation of the levers;

FIG. 8 is a sectional view showing a stabilizer beam for maintaining the gauge between traffic rails;

FIG. 9 is a sectional view of another stabilizer beam for maintaining the gauge between traffic rails;

FIG. 10 is a plan view showing the traffic rail and braking rails carried by the levers in accordance with another embodiment of the invention;

FIG. 11 is a sectional view taken along the line **11—11** of FIG. 10 and enlarged to illustrate the levers employed in the embodiment of FIG. 10;

FIG. 12 is a side view showing a rock shaft and levers thereon according to the embodiment of FIG. 10;

FIG. 13 is a broken plan view of the rock shaft employed in the embodiment of the invention shown in FIG. 10;

FIG. 14 is an end view taken along the lines **14—14** in the direction of the arrows in FIG. 13 showing the rock shaft;

FIG. 15 is a sectional view of the rock shaft taken along the lines **15—15** in the direction of the arrows in FIG. 13;

FIG. 16 is a sectional view of the rock shaft taken along the lines **16—16** in the direction of the arrows in FIG. 13;

FIG. 17 is a plan view of a traffc rail guide;

FIG. 18 is a side elevational view of the traffic rail guide of FIG. 17; and

FIG. 19 is an elevational view of a double acting cylinder secured by a bracket to the traffic rail.

Referring now to the drawings, and more particularly to FIG. 1, there is shown a plurality of spaced railway ties **10** supporting spaced running or traffic rails **11** which

serve to support the wheels of a railway car in the conventional manner. As shown in FIG. 1, the rail **11**, lowermost in this figure, is associated with a retarding system generally designated by the numeral **13**, while the other rail **11**, uppermost in this figure, is not associated with a retarder.

While a retarding system **13** has been illustrated as being applied to only one traffic rail of a pair of traffic rails **11**, it is understood that each of the traffic rails **11** may be provided with a retarder system **13**, and that for the purposes of illustration, only one retarder **13** is disclosed since a retarder system for the opposite rail **11** would be identical in construction to the one disclosed. The use of a retarder system **13** for each of the traffic rails **11** may be more desirable than a single retarder for one of the rails **11** when conditions might cause high stresses of the braking force where applied to the wheel only on one side of the car. With a retarder system for each of the traffic rails, the lateral forces are minimized in the car wheels and truck parts due to balancing of opposing lateral forces.

The retarder system **13** functions to brake a railway car moving therethrough. In the present instance, the retarder system **13** can be selectively controlled to position a pair of braking rails or retarder elements **15** adapted to engage the side **16**, FIG. 4, of a car wheel **17** riding on the top portion **18** of the traffic rail **11**. The retarder elements **15** function as brake shoe elements in that they are adapted to retard rotation of car wheels **17** by frictionally engaging the sides of the car wheels. The retarder elements **15** are shown in the form of rails and for reasons of economy are often scrap railway rails; but the invention herein is not to be construed as limited to rail type friction retarder elements even though for descriptive purposes they are referred to in this specification as braking rails **15**. Thus, the retarder elements **15** could be rods of a square cross-section or some other cross-section. Also, the retarder elements **15** could be of a series of individual elements rather than the long unitary rails shown herein in the preferred embodiment of the invention.

As shown in FIG. 1, the braking rails **15** have their end portions **20** turned or flared outwardly away from the traffic rail **11**, forming at each end a mouth or opening through which the railway wheels pass into and from the retarding system **13**. The flared portions **20** of the braking rails **15** channel the wheels of the railway car into engagement with the braking rails **15**. When in normal cocked position, the rails **15** are spaced apart a distance less than the width of the car wheel, so that their wheel-engaging surfaces **22** are engaged by the sides **16** of the wheel and are forced outwardly by the car wheel **17** moving between the braking rails **15**. Each of the braking rails **15** is a unitary rail, and each is supported at spaced positions by a plurality of levers **25** that is pivotally mounted on a portion **26** of a rock shaft **27** which spans a pair of adjacent railway ties **10**.

Each of the braking rails **15** has a web **30** overlying a horizontal plate **31** on the levers **25**. The plate **31** is integrally fixed to the lever **25** and extends horizontally outward along the web **30**. Each of the webs **30** is secured to a plurality of the plates **31** on the respective levers **25** along its respective side of the traffic rail **15** by bolts **32** inserted through elongated holes or slots (not shown) in the webs **30** and the plates **31**. Threaded on the bolts **32** are nuts **33** for fastening together the webs **30** and the plates **31**.

The braking rails **15** are subjected to large laterally directed forces as the railroad car wheel moves therebetween and the bolt **32** and the nut **33** do not need to serve as a friction device to hold the rail **15** against lateral movement, but merely to clamp the rail **15** in position, as the lateral forces or thrusts are transmitted by wedges **35** to the levers **25**. The wedges **35** are positioned between an end flange **36** of the braking rail **15** and a curved seat **37** in the lever **25**. As best seen in FIG. 3, each of the wedges **35** has an inclined plane with a face **40** that seats within a complementary seat **37** of a lever **25**. The wedges **35** serve as a solid interconnection between the rails **15** and levers **25** for transmitting the lateral force from the rails **15** to the levers **25** and afford an infinite means of adjustment whereby the rails **15** can be moved laterally towards the railway wheel **17**. For example, when braking rails **15** become worn, the braking rails **15** are moved toward the traffic rail **11** by forcing the wedges **35** deeper into the seats **37** whereupon the inclined planes move across the seats **37** and force the braking rails **15** toward the traffic rail **11** so that the amount of wear is compensated for and the wheel engaging surfaces **22** on the rails **15** are again returned to the positions they occupied prior to becoming worn away. The wedges **35**, thus, provide for infinite adjustment. Of course, the wedges **35** can be moved in the opposite direction to release a braking rail **15** as when it is desired to replace a braking rail **15**.

The levers **25** that support the abrasion rails **15** are identically constructed and hence are interchangeable. They can be used for supporting either a right or a left braking rail for engaging either the right or left side of the car wheel. The levers **25** provide a monolithic structural member which not only supports the abrasion rails **15**, but which also affords cradle portion **45** for supporting the traffic rail **11**.

Additionally, the levers **25** serve as the means whereby a retarding force may be exerted on the car wheel **17** in proportion to the weight of the car being supported by the car wheels **17**. More specifically, the movement of a car wheel **17** through the retarding system **13** causes the braking rails to receive lateral thrusting forces; these lateral forces cause the lever arms **25** to pivot about the portions **26** of the rock shaft **27** to lift the traffic rail **11**. The heavier the weight of the car, the greater will be the force resisting the lifting of the traffic rail **11** and the car wheel **17**, and hence the greater the force attempting to turn the levers **25** in an opposite direction about the rock shaft **27** to bring the abrasion rails **15** into tighter and greater frictional engagement with the sides **16** of the car wheel **17**. Thus, for heavy cars, the amount of frictional force retarding the car will be greater, since the downward force on the traffic rail **11** will be greater than that for a lighter railway car, holding the braking rails **15** in tighter engagement with the sides **16** of the car wheel **17**.

The force applied locally to a braking rail **15** may be changed by placing the eccentric **26** of the rock shaft **27** in either one of two alternative openings **28** or **28A** in a lever **25**. Should it be found to be advantageous, it is possible to place the eccentrics **26** of the opposed rock shafts **27** in the inward openings **28A** of the retarder system **13** so as not to exert as great a braking force as generated by the levers **25** pivoted about a rock shaft mounted in the opening **28**. Thus, for example, the reduction in braking force applied to the wheels as they enter the retarder system facilitates movement of the wheels into the retarder before the full squeezing or braking force is applied on the sides of the wheel. The wheels **17** exhibit a tendency to rise upwardly over the traffic rail **11** and ride on top of the braking rails **15** if the wheels encounter an excessive amount of braking pressure as the wheels enter the mouth of the retarder system.

The cradle portion **45** of each lever **25** has a central hump or rounded projection with a surface **46** in engagement with the under surface of a flange **48** of the rail **11**. In addition to the suporting surface **46** of the flange **48** of a rail **11**, the cradle **45** for the rail **11** has an overhanging lip or flange **49** forming a pocket **50** with surface **46**. Positioned in the pocket **50** is that portion of the flange **48** remote from the abrasion rail **15** carried by the lever **25**. Since the opposed levers **25** both have these overhanging flanges **49** on opposite sides of the

traffic rail **11**, the pockets **50** serve in the aggregate to hold the traffic rail **11** against both lateral movements and rotational movements on the rounded surfaces **46** of their respective cradles **45**. The flanges **49** also are important from the standpoint that when the retarder system **13** is actuated to an ineffective position, the flanges **49** assure that the railway rail **11** is held on the surface of the railway ties **10** when the car wheels **17** pass thereover. That is, the flanges **49** secure the traffic rail **11** against lateral or rotational movement when the braking rails **15** are no longer in position to giude the railway wheel **17**.

It will be remembered that the levers **25** are positioned on portions **26** of the rock shafts **27** and that portions **26** of the shafts **27** are eccentric to the turning axis of the rock shaft **27**. Thus, when the rock shafts **27** are rotated, the eccentrics **26** turn and rotate levers **25** from the "cocked" or actuated rail-engaging position shown in FIGS. 4 and 6 to the "released" position shown in FIG. 5 wherein the braking rails **15** are spaced apart a distance greater than the width of the railway wheel thereby rendering the retarder system **13** inoperative.

For the purpose of turning the eccentrics **26**, a hydraulic cylinder **60** is slung beneath the levers **25**. One end of the cylinder **60** is provided with a bifurcated portion **61** fastened by a pin **62** to a crank arm **63** on one of the rock shafts **27**. The piston rod **65** of the cylinder is connected by a pin **67** to a bifurcated link **66** on a crank arm **68** fastened to the opposite rock shaft **27**. As best seen in FIGS. 2 and 3, the crank arms **63** and **68** are rigidly secured to the rock shafts **27**. Upon being moved by expansion or contraction of the hydraulic cylinder **60**, arms **63** and **68** cause the rock shafts **27** to rotate on the angles **70** capping and protecting the edges of a pair of adjacent ties **10**. The rock shafts **27** are provided with a pair of enlarged diameter ring portions **72** for engagement with a vertical portion of an angle **70** to prevent lateral movement of the rock shafts **27** and thereby maintain the rock shafts in alignment and prevent their being canted under the forces being exerted on the rock shafts **27** by the hydraulic cylinder **60** and by the levers **25**.

It should be noted that each of the levers **25** is independent of the other levers except that opposed levers **25** are joined in a esnse by a common hydraulic cylinder **60**. Where the levers **25** are not to be remotely controlled, the cylinders **60** could be eliminated and the levers made more independent of one another.

When the retarder system **13** is in an operative position for slowing down or stopping a car, each of the hydraulic cylinders **60** will have been actuated to its expanded position shown in FIG. 4. The respective crank arms **63** and **68** prevent any outward rolling of the rock shafts **27** along the ties **10** under the lateral forces or being exerted thereon through the braking rails **15** as the car wheel **17** passes through the abrasion rails **15**. Thus, the hydraulic cylinders **60** not only function to expand or contract the abrasion rails **15**, but also serve as a means to inter-connect the opposed pair or levers **25** and rock shafts **27** to prevent their outward movement relative to one another.

As described hereinbefore, rotation of the crank arms **63** and **68** in response to actuating the hydraulic cylinder **60** to its expanded position, shown in FIG. 4, causes the eccentrics **26** to turn and rotate the levers **25** to move the opposed braking rails **15** toward one another. The amount of the rotation of the levers **25** and thereby the movement of the braking rails **15** toward or away from each other is limited to a predetermined amount of movement by individual stop elements **75** on each of the eccentrics **26** rotating into engagement with an aligned stop element **76** on an associated lever arm **25**. The stop elements **75** are arcuate rings secured to the circumferential surface of an eccentric **26** and are spaced from the flat, vertical side wall of the associated lever **25**. The stop elements **76** on each of the levers **25** is an arcuate ringlike segment, FIG. 7, secured at the outer rounded portion of the lever arm **25** by welding or the like and extending axially into alignment with and for engagement with the stop element **75** on its respectively associated eccentric **26**. It should be noted that arcuate stop elements **75** may also be secured about the opening **28A** so as to limit the movement of the eccentric **26** when the eccentric is disposed in opening **28A** rather than in an opening **28**.

When a brake rail **15** is moved to its maximum retarding position, its associated cylinder rod **65** is completely extended and the rock shaft **27** is rotated to move its stop surface **78** into engagement with an aligned stop surface **79** on the stop element **76** on associated lever **25**. Conversely when the retarder is opened fully to its released position of FIG. 5, opposed stop surfaces **81** on the rock shafts **27** are in engagement with aligned stop surfaces **80** on the stop elements **76** of the levers **25**. Therefore, it will be seen that the stop elements **75** and **76** limit the amount of rotation of the rock shafts **27** and lever arms **25** and thereby limit the retarder rails **15** to predetermine amounts of opening and closing movements.

Limiting the amount of the rotation of the levers **25** is advantageous in that if one of the levers **25** is reluctant to rotate, all of the force being generated by the hydraulic cylinder **60** is directed to rotating this unwilling to move lever **25**, since the other lever is being prevented from further rotation by engagement of the stops **75** and **76**. Thus, rather than having one braking rail **15** move too far in one direction, with little or no movement of the other braking rail **15**, the one rail is limited in its movement and all of the hydraulic force is concentrated to move the other rail to its proper position. Additionally, since the stop elements **75** and **76** limit the amount of the rotation of levers **25**, this serves to stabilize and lock in position the traffic rail **11** disposed on the supporting surfaces **46** of the levers **25**.

While the opposed flanges **49** on the respective cradles **45** of the opposed levers **25** generally confine the traffic rail **11** against unlimited lateral movement, it is preferred to further restrict lateral movement of the traffic rail **11** and to maintain the traffic rails **11** at a proper gauge by a stabilizer or gauging means such as shown in FIGS. 8 and 9. For this purpose, the gauging means may employ, as shown in FIG. 8, a stabilizer rod **82** which has a first end **83** formed into a hook and hooked onto the outer or field side of a traffic rail flange **48**. A clamp **84** has a flange **86** overlying the inner flange of the rail **11** and a fastener **85** secures the clamp **84** to the rod **82**. At the opposie end of the stabilizer rod **82** is a pair of oppositely facing, hooked shaped blocks **90** and **91**. The blocks **90** and **91** have their hooked shaped portions hooked on the opposite sides of the rail flange of the traffic rail **11**. Threaded lock nuts are turned on oppositely threaded portions **88** and on the stabilizer rod to secure the blocks **90** and **91** against outward movement from the flange. Thus, the spaced traffic rails **11** are secured to the stabilizer rod **82** to maintain the proper gauge distance between the rails **11**.

Alternatively in FIG. 9, there is shown a beam type of gauging means, which has a pair of opposed clamps **94** clamped on opposite sides of the web portion **48** of a first rail **11**. A pair of angles **95** are disposed on opposite sides of a beam **92** and are pivotally connected to the beam **92** by a threaded bolt and nut assembly **96**. The pair of angles **95** carry at their opposite ends a pair of clamps **97** for securing the bottom flange **48** of the second traffic rail **11** against lateral movement. The pivotal connection between the beam **92** and the angles **95** permits the traffic rails **11** to rise vertically with respect to one another while maintaining the proper distance between center lines of the traffic rails. Thus, the

gauge is maintained, even though the traffic rails **11** are not secured to the railroad ties **10** in the normal fashion. Similarly the rod **82** flexes to permit relative vertical movement of either or both of the traffic rails **11** by a lever **25** while maintaining the gauge between traffic rails **11**.

In the embodiment of the invention illustrated in FIGS. 1–7 and described herein above, each rock shaft **27** supports only a single lever **25**, and each hydraulic cylinder **60** is employed to actuate only one pair of opposed levers **25**. In the embodiment of the invention of FIGS. 10–16 inclusive, and as best seen in FIG. 10, a single hydraulic cylinder **101** is operable to rotate a pair of opposed rock shafts **102**, each of which has journaled on its outer ends a pair of operating levers **105** so that a single cylinder **101** operates two pairs of operating levers, that is four operating levers **105**, rather than only two operating levers **25** as in the embodiment of the invention of FIGS. 1–7, inclusive.

In the embodiment of the invention hereinafter described, a pair of opposed traffic rails **11** is disposed on the conventional railroad ties **10**, and on opposite sides of at least one of the traffic rails **11** is disposed a pair of spaced retarder or braking rails **15**. The retarder rails **15** are secured to the operating levers **105** by bolts **32**, and nuts **33**, FIG. 11 to the respective flanges **31** of a series of levers **105** in the same manner as the retarding rails **15** are secured to the operating levers **25** of the previously described embodiment of the invention.

As can be readily seen from FIG. 11, the operating levers **105** are very similar to the operating levers **25** in appearance and perform the same functions as the operating levers **25**. Thus, each of the operating levers **105** has a first opening **28** for receiving a portion of the rock shaft **102**, and a second inner opening **28A** as an alternative opening for receiving a portion of the rock shaft **102**. Also, the operating levers **105** have rail supporting portions or cradles **45** having opposed flanges **49** overlying the lower flange **48** of the traffic rail **11**. Additionally, each of the operating levers **105** has a seat **37** for receiving a wedge **35** for adjustably positioning its respective retarder rail **15**.

However, the operating levers **105** differ from the operating levers **25** is that each of the operating levers **105** is a cast member of non-uniform cross-section. More specifically, the operating levers **105** have a narrow interior, web portion **112** and a circumscribing outer, thicker cross-sectional, rib portion **113**, this being in contrast to the uniform cross-sectional plate from which the operating levers **25** are formed. Also, the limiting stop elements **76** for limiting rotation are integrally cast on the operating levers **105** about the openings **28** and **28A** for engagement by arcuate stop elements on the rock shafts **102**, as will be described in detail hereinafter.

In contrast to the relatively simple shape of the rock shaft **27** employed in the embodiment of the invention in the FIGS. 1–7, which shape is basically that of a circular shaft with a single eccentric portion **26** and an integral crank arm **68** or **63**, the rock shaft **102** is of a more complex configuration, as will be seen by examination of FIGS. 13–16, inclusive. Each of the rock shafts **102** has at its opposed extremities, cylindrical portion or ends **116** for insertion in either of the openings **28** or **28A** in a lever **105** to rotatably mount the operating levers **105**. As best seen in FIGS. 14, 15 and 16, the center line **118** of the cylindrical portions **116** is displaced, that is, offset leftwardly of rotational center line **119** of the remainder of the rock shaft **102**. Since a rock shaft **102** rotates about its axis **119** and since the cylindrical portions **116** are offset from the rotational axis **119** of the rock shafts **102**, the cylindrical portions **116** function in the manner of the eccentrics with rotation of the rock shaft **102**.

Each of the rock shafts **102** is supported by a pair of spaced ties **10**, FIG. 12, and has a lower rounded lobe or portion **122** having its outer peripheral surface **130** disposed in rolling contact with a metallic support plate **123** disposed on the upper side of an associated supporting railroad tie **10**. The rock shafts **102** are prevented from moving axially of the ties **10** by dependent arcuate members **124** disposed to fit between and in close proximity to the inwardly facing vertical faces of a pair of ties **10** and supporting plates **123**.

Throughout most of its length the rock shaft **102** has a generally "I" cross section like that of an "I" beam rather than the circular cross section of the rock shaft **27**. The "I" cross section is constituted by an upper horizontal flange **125**, a vertical web portion **126**, and a lower lateral or horizontal flange portion **127**, FIGS. 13–16, inclusive.

As best seen in FIG. 14, both the rounded portion **122** and lower flange **127** are similar in shape in that each has a lower arcuate surface rounded into flat horizontal walls **132** flaring to the central and vertical web **126**.

For the purpose of receiving a rocking force to rotate the rock shaft **102**, the rock shaft **102** has at the center thereof a downwardly extending crank arm **135**, the crank arm **135** being intergrally formed with the shaft **102**. The crank arm **135** has an aperture **136** in its lower end to receive a clevis pin **137**, FIGS. 11 and 12, of a clevis **138** on the hydraulic cylinder **101** or cylinder rod **145**.

As seen in FIG. 10, a pair of common supply and return hydraulic lines **140** extends longitudinally of the series of hydraulic cylinders **101** and is connected thereto by individual supply and return lines **142** and **144** whereby the hydraulic cylinders **101** can be actuated by fluid to move their respective piston rods **145** to either an extended or returned positions relative to the cylinder. While the hydraulic cylinders **60** and **101** employing only a single rod **65** or **145** have proved eminently satisfactory, a double acting cylinder **170**, FIG. 19, can be employed in lieu of the single acting cylinder **145** or **60**. The hydraulic cylinder **170** has a pair of opposed pistons **171** and piston rod **172** secured by clevises **173** to crank arms **135**. The hydraulic cylinders **170** are secured by a strap or bracket **174** to the traffic rail **11** for the purpose of limiting the movement of the flexible hose lines **142** and **144** have a noticeable amount of movement with a single acting hydraulic cylinder **60** or **145**, as the hydraulic cylinder moves transversely to move the retarding elements **15** between "cocked" and "released" positions. The hydraulic cylinders **60**, **145** and **170** can be provided with a pressure relief valve **175**, FIG. 19, for the purpose or releasing the hydraulic fluid to permit the wheels of an extremely heavy car to pass through the retarder without causing damage thereto. More specifically, when a car having a weight exceeding the nominal capacity of the retarder enters between the retarding rails **15**, the car may be of sufficient weight to prevent the traffic rail **11** from raising and the braking rails **15** moving apart. The force exerted on the levers by such a heavy car will be transmitted to the piston rods and the hydraulic fluid between the pistons causing the hydraulic pressure to rise above the pressure at which the relief valve **175** is effective to prevent escape of hydraulic fluid. The relief valve **175** releases and permits the piston rod or rods to move inwardly and the rock shafts to rotate on the ties thereby moving the retarding rails **15** apart and preventing damage to the retarder system.

As best seen in FIGS. 10 and 12, the operating levers **105** are preferably disposed in pairs opposite each other and on opposite sides of the traffic rail **11**; and the operating levers **105** are staggered longitudinally of one another, that is, one of the levers **105** is positioned closer to the outer edge **146** of an associated railroad tie **10** than is the other lever **105**. To permit this staggered relationship, the end portions of the rock shafts are asymmetrical. Thus, as best seen in FIG. 13, the portion of the shaft **102** extending rightwardly of the right dependent

member **124** is longer in length than the corresponding portion of the shaft **102** extending leftwardly of the left dependent member **24**. A comparison of the respective lengths of the segments **122** in FIG. 13 will disclose that the rightmost segment **122** is longer than the leftmost segment **122**.

Each of the levers **105** has a retaining pin **128**, FIG. 11, therein which extends from the lever **105** towards the adjacent rounded portion **131** of the adjacent lever **105**. The retaining pins **128** thus prevent the movement of the levers **105** to disengage their respective hooked portions **49** from the flange of the rail **48** until the retaining pin **128** in the adjacent lever **105** is removed.

For the purpose of limiting rotation of the rock shaft **102**, each of the segments **122** terminates in an integral stop segment **150**, FIG. 13, which is adapted to be aligned for coacting with the stop segments **76** on the levers **105** in the same manner that the stop segments **75** on the eccentrics **26** cooperated with the stop elements **76** on the lever **25**. As best seen in FIG. 14, each of the stop segments **150** on the shaft **102** has a lower stop surface **151** and an upper stop surface **152**, which are vertically oriented when the rock shaft **102** is in the position of FIG. 14. Rotation of the rock shaft to a "cocked" position rotates the stop segment **150** to bring its lower stop surface **151** into engagement with the stop surface **79** of the stop element **76** on the operating lever **105**, FIG. 11. Conversely, the upper stop surface **152** rotates into engagement with the upper end of the upper stop surface **80** of the stop element **76** on the lever **105** when the retarder is in its "open" or "retracted" position.

The traffic rail **11** is not secured to the ties **10**, as is the usual case, but is free floating and is adapted to be lifted by the cradle portions **45** as the retarding rails **15** are moved further apart by a car wheel. While the cradle portions **45** of the levers **25** and **105** confine lateral movement of the traffic rail **11** to a limited degree, it is nonetheless preferable to afford a separate gauge or rail guide **160**, FIGS. 17 and 18 to limit lateral movement of the traffic rail **11** and thereby maintain the proper distance between traffic rails **11** even as one or both of the traffic rails move vertically.

The rail guide **160** for the traffic rail **11** has vertically rising guide walls **162** for engaging and guiding the side edges of the lower flange **48** of the traffic rail **11**. Thus, as the traffic rail **11** is moved vertically, the flange **48** slides vertically along the upstanding walls **162**, and the traffic rail **11** is prevented from moving laterally so as to disrupt the gauge, that is, the distance between the pair of traffic rails **11**. The rail guide **160** has openings therein to receive spikes for fastening the rail guide **160** to a tie **10** and a plurality of these rail guides **160** are provided at spaced intervals along each of the traffic rails **11**. The rail guides **160** function to maintain the gauge between the traffic rails **11** as do the gauging means shown in FIGS. 8 and 9.

The operation of the retarder system (shown in FIG. 10) is briefly recapitulated hereinafter. With the piston rods **145** of the cylinders **101** extended outwardly of the cylinders **101** in the manner shown in FIGS. 10 and 11, the opposed crank arms **135** on the opposed rock shafts **102** are rotated outwardly away from each other, and rotate the rounded portions **122** of the rock shaft **102** about their respective rotational axes **119** so that the eccentrically positioned end portions **116** carrying the levers **105** rotate about this axis **119** to bring the respective retarding rails **15** closer to one another and into the "cocked" position of FIG. 11. The fluid in cylinder **101** holds the rock shaft **102** and levers **105** in this position so long as a retarding operation is desired.

When a wheel of a railroad car enters between the retarding rails **15** of the retarder system of FIG. 10, the sides of the wheel force the retarding rails **15** apart, and in so doing rotate the levers **105** about the eccentrics **116** and the rotational axis **118** to cause their respective cradle portions **45** to lift the traffic rail vertically. The retarder system applies a braking force proportional to the weight of the load of the railroad car, since a heavily loaded car will resist the upward movement of the traffic rail **11** with a greater force than would a railroad car carrying a lighter load. Thus, the heavier car, by resisting upward movement of the traffic rail **11**, causes the levers **105** and braking rails **15** to exert a greater frictional force on the sides of the car wheel than the frictional force applied to the wheels of a lightly loaded car.

When fluid is admitted into the cylinder **101** to drive the piston rod **145** rightwardly, as viewed in FIG. 11, the crank arms **135** have their end portions **116** rotated downwardly and towards each other about the rotational axis **119** of their respective rock shafts **102**. Thus, the eccentrics **116** move the operating levers **105** about the rotational axis **119** so as to move the retarding rails **15** away from each other to a "released position" at which the braking rails **15** are spaced so as not to engage the sides of a car wheel passing therebetween. Rotation of the rock shafts **102** is stopped when a stop surface **152** of the stops **150** on the rock shafts **102** engage the stop surfaces on the stops **76** to prevent further opening of the retarder system and movement of the retarding rails **15** away from each other.

From the foregoing, it will be seen that the present invention employs a plurality of one-piece, ruggedly constructed, and independent operating levers **25** or **105**, which serves both to carry the braking rails **15** and to afford a means for affording a proportional braking force for the freight car. That is, the operating levers afford a proportioning device whereby the amount of frictional retarding force employed against the railway wheel **17** is made dependent upon the weight of the car being supported by the traffic rail **11**.

The ruggedness and simplicity of the supporting seat **37** and wedge **35** for the braking rails **15** provides a positive means for transmitting the lateral thrust to the levers. The rock shafts afford a simple and readily installable support which does not require precise positioning on the ties or track bed relative to the traffic rail **11**. Also, neither the rock shafts nor the operating levers are secured to the ties so as to move therewith and hence be subject to becoming misaligned with a shift in position of the ties. The hydraulic cylinder **60** and eccentrics on the rock shafts provide a simple and readily effective mechanism for moving the braking rails to and from operative and inoperative positions. The hydraulic cylinder **60** also performs an additional function of preventing the outward movement of the opposed rock shafts under the outward forces exerted by the braking rails **15** when a railway car wheel **17** is passing therebetween.

In view of the relatively few number of elements employed herein and their rugged construction, the present retarder system is a low-cost and efficient retarder system requiring a minimum of maintenance or up-keep.

Hence, while I have illustrated and described preferred embodiments of my invention, it is to be understood that these are capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A traffic retarder system for retarding the movement of railroad cars therethrough and for applying a retarding force proportional to the weight of the railroad car moving therethrough, said system including a traffic rail for supporting at least one wheel of the railway car passing through said system and for bearing the weight of the wheel and railway car supported thereby; a series of independent levers spaced along said traffic rail and on opposite sides of said traffic rail, each of said levers being independent of every other lever, a first integral, arcuate portion on each of said levers disposed beneath

said rail for engagement therewith to lift said rail, a plurality of shaft means each supported on railroad ties and pivotally mounting at least one of said levers, a second integral portion of each of said levers extending to the side of said traffic rail opposite its pivotal mounting on said shaft means, and means on said second integral portion adapted to overlie the flange of said traffic rail to limit downward movement of said lever; a first retarder rail carried by the series of levers on one side of the traffic rail, said first retarder rail being positioned adjacent said traffic rail to engage a side of the wheel of the railway car passing over said traffic rail and to cause said series of levers to lift said traffic rail as said railway wheel attempts to move said retarder rail, a second retarder rail carried by the series of levers on the other side of said traffic rail, said second retarder rail being positioned adjacent said traffic rail to engage and to engaged by a side of the wheel of the railway car, said first and second retarder rails being spaced apart a distance less than the width of a railway wheel when there is no railway wheel forcing said retarder rails to move apart and pivot said series of independent levers to lift the traffic rail as said railway wheel passes over the traffic rail in said system.

2. A traffic retarder system for retarding the movement of railroad cars therethrough and for applying a retarding force proportional to the weight of the railroad car moving therethrough, said system including a traffic rail for supporting at least one wheel of the railway car passing through said system and for bearing the weight of the wheel and railway car supported thereby; a series of independent lever means spaced along said traffic rail and on opposite sides of said traffic rail, each of said lever means being independent of every other lever means and having a portion thereof supporting said traffic rail, each of said lever means being pivotally mounted and adapted to raise and lower said traffic rail; a first retarder rail carried by the series of lever means on one side of the traffic rail, said first retarder rail being positioned adjacent said traffic rail to engage a side of the wheel of the railway car passing over said traffic rail and to cause said series of lever means to lift said traffic rail as said railway wheel attempts to move said retarder rail, a second retarder rail carried by the series of lever means on the other side of said traffic rail, said second retarder rail being positioned adjacent said traffic rail to engage and to be engaged by a side of the wheel of the railway car, said first and second retarder rails being spaced apart a distance less than the width of a railway wheel when there is no railway wheel forcing said retarder rails to move apart and pivot said series of independent lever means to lift the traffic rail as said railway wheel passes over the traffic rail in said system, a plurality of rock shafts for pivotally mounting said lever means, each of said rock shafts being supported by the adjacent railway ties, said rock shafts having eccentric portions thereon for pivotally supporting said lever means whereby rotation of said shafts and said eccentrics thereon causes said lever means to move its corresponding retarder rail.

3. A traffic retarder system for retarding the movement of railroad cars therethrough and for applying a retarding force proportional to the weight of the railroad car moving therethrough, said system including a traffic rail for supporting at least one wheel of the railway car passing through said system and for bearing the weight of the wheel and railway car supported thereby; a series of independent lever means spaced along said traffic rail and on opposite sides of said traffic rail, each of said lever means being independent of every other lever means and having a portion thereof supporting said traffic rail, each of said lever means being pivotally mounted and adapted to raise and lower said traffic rail; a first retarder rail carried by the series of lever means on one side of the traffic rail, said first retarder rail being positioned adjacent said traffic rail to engage a side of the wheel of the railway car passing over said traffic rail and to cause said series of lever means to lift said traffic rail as said railway wheel attempts to move said retarder rail, a second retarder rail carried by the series of lever means on the other side of said traffic rail, said second retarder rail being positioned adjacent said traffic rail to engage and to be engaged by a side of the wheel of the railway car, said first and second retarder rails being spaced apart a distance less than the width of a railway wheel when there is no railway wheel forcing said retarder rails to move apart and pivot said series of independent lever means to lift the traffic rail as said railway wheel passes over the traffic rail in said system, a plurality of rock shafts for pivotally mounting said lever means, each of said rock shafts being supported by the adjacent railway ties, said rock shafts having eccentric portions thereof for pivotally supporting said lever means whereby rotation of said shafts and said eccentrics thereon causes said lever means to move its corresponding retarder rail, and means for rotating said rock shafts and causing said eccentrics to rotate said lever means to move said retarder rails to effective and ineffective positions.

4. In combination with a traffic rail for supporting a wheel of a railway car, a retarder means for slowing down the movement of said railway car, a pair of spaced retarding rails positioned on each side of said railway wheel and of said traffic rail, said retarding rails being positioned for engagement with the sides of the railway wheel passing over said traffic rail, at least one pair of independent unitary levers spaced on each side of said traffic rail, each of said levers supporting a retarding rail, a plurality of shaft means each pivotally mounting at least one of said levers, said levers each being pivotable when said retarding rails are moved laterally outwardly from said traffic rail, each of said levers having an arcuate and integral portion on each of said levers extending beneath the traffic rail and for lifting said traffic rail as said levers pivot in response to outward movement of said retarding rails, and flange means integrally formed on each of said levers and overlying a top flange of said traffic rail on the side opposite from respectively associated retarder rail.

5. In a car retarder system having a center traffic rail disposed on railroad ties for supporting the car wheel of a railroad car and having a pair of opposed retarder rails positioned for spreading apart by the movement of the car wheel therebetween and for retarding the movement of the railway car therebetween by frictionally engaging the sides of the car wheel with a force proportional to the weight of the railroad car, said retarder system employing a series of one-piece, identically-shaped lever means pivotally mounted on shafts carried by adjacent railroad ties on opposite sides of the traffic rail, said lever means each having an upper and integral portion for securing and for supporting a retarder rail, a central portion for pivotally mounting on said shafts and about which said lever means rotates in a first direction in response to movement of said lever means by outward movement of a secured retarder rail by said railway wheel, and an integral lower portion having an arcuate surface for supporting said traffic rail and for lifting said traffic rail in response to rotation of said lever means in said first direction, said lower portion extending beneath the rail to the opposite side of the traffic rail from its pivotal mounting and having an integrally formed flange adapted to overlie the flange of the traffic rail and to limit the downward movement of its lever, said lower portion being urged downwardly by the weight of the railway wheel to pivot about its center portion and urge a retarder rail against the side of the car wheel.

6. In a car retarder system having a center traffic rail disposed on railroad ties for supporting the car wheel of a railroad car and having a pair of opposed retarder rails positioned for spreading apart by the movement of the car wheel therebetween and for retarding the move-

ment of the railway car therebetween by frictionally engaging the sides of the car wheel with a force proportional to the weight of the railroad car, said retarder system employing a series of monolithic, identically-shaped lever means pivotally mounted on shafts carried by adjacent railroad ties on opposite sides of the traffic rail, said lever means having an upper portion for securing and for supporting a retarder rail, a central portion for pivotally mounting on said shaft means and about which said lever means rotates in a first direction in response to movement of said lever means by outward movement of a secured retarder rail by said railway wheel, and a lower portion for supporting said traffic rail and for lifting said traffic rail in response to rotation of said lever means in said first direction, said lower portion being urged downwardly by the weight of the railway wheel to pivot about its center portion and urge a retarder rail against the side of the car wheel, said lever means having a seat for a wedge means having one surface engaged with said seat in engagement with said retarder rail secured to said lever means so that the retarder rail can be forced to move closer to the traffic rail by movement of said wedge means in said seat to compensate for reduced thickness of a retarder rail due to wear, and a clamping means to clamp said retarder rail to said lever means.

7. In a car retarder system having a center traffic rail disposed on railroad ties for supporting the car wheel of a railroad car and having a pair of opposed retarder rails positioned for spreading apart by the movement of the car wheel therebetween and for retarding the movement of the railway car therebetween by frictionally engaging the sides of the car wheel with a force proportional to the weight of the railroad car, said retarder system employing a series of monolithic, identically-shaped lever means pivotally mounted on shafts carried by adjacent railroad ties on opposite sides of the traffic rail, said lever means having an upper portion for securing and for supporting a retarder rail, a central portion for pivotally mounting on said shaft means and about which said lever means rotates in a first direction in response to movement of said lever means by outward movement of a secured retarder rail by said railway wheel, and a lower portion for supporting said traffic rail and for lifting said traffic rail in response to rotation of said lever means in said first direction, said lower portion being urged downwardly by the weight of the railway wheel to pivot about its center portion and urge a retarder rail against the side of the car wheel, said lever means having a seat, a wedge means having one surface engaged with said seat and another surface in engagement with said retarder rail secured to said lever means so that the retarder rail can be forced to move closer to the traffic rail by movement of said wedge means in said seat to compensate for reduced thickness of a retarder rail due to wear, a clamping means to clamp said retarder rail to said lever means, said lever means being adapted to be remotely moved to an open position whereby the retarder rails are not effective to engage the sides of the railway wheel passing over said traffic rail and to be moved to an effective position where said retarder rails are positioned for engagement with the sides of the railway wheels, said lever means including an overhanging portion adapted to engage the upper side of the traffic rail opposite the side on which its respective retarder rail is being supported.

8. In a car retarder system having a center traffic rail disposed on railroad ties for supporting the car wheel of a railroad car and having a pair of opposed retarder rails positioned for spreading apart by the movement of the car wheel therebetween and for retarding the movement of the railway car therebetween by frictionally engaging the sides of the car wheel with a force proportional to the weight of the railroad car, said retarder system employing a series of monolithic, identically-shaped lever means pivotally mounted on shafts carried by adjacent railroad ties on opposite sides of the traffic rail, said lever means having an upper portion for securing and for supporting a retarder rail, a central portion for pivotally mounting on said shaft means and about which said lever means rotates in a first direction in response to movement of said lever means by outward movement of a secured retarder rail by said railway wheel, and a lower portion for supporting said traffic rail and for lifting said traffic rail in response to rotation of said lever means in said first direction, said lower portion being urged downwardly by the weight of the railway wheel to pivot about its center portion and urge a retarder rail against the side of the car wheel, said lever means having a seat, a wedge means having one surface engaged with said seat and another surface in engagement with said retarder rail secured to said lever means so that the retarder rail can be forced to move closer to the traffic rail by movement of said wedge means in said seat to compensate for reduced thickness of a retarder rail due to wear, a clamping means to clamp said retarder rail to said lever means, said lever means adapted to be remotely moved to an open position whereby the retarder rails are not effective to engage the sides of the railway wheel passing over said traffic rail and to be moved to an effective position where said retarder rails are positioned for engagement with the sides of the railway wheels, said lever means including an overhanging portion adapted to engage the upper side of the traffic rail opposite the side on which its respective retarder rail is being supported, rock shafts positioned on adjacent ties and having eccentric portions thereon for mounting one of said lever means, and operable means connected to rotate said rock shafts to rotate said eccentric portions and thereby to rotate said lever means to an effective or ineffective position.

9. In a car retarder system having a center traffic rail disposed on railroad ties for supporting the car wheel of a railroad car and having a pair of opposed retarder rails positioned for spreading apart by the movement of the car wheel therebetween and for retarding the movement of the railway car therebetween by frictionally engaging the sides of the car wheel with a force proportional to the weight of the railroad car, said retarder system employing a series of monolithic, identically-shaped lever means pivotally mounted on shafts carried by adjacent railroad ties on opposite sides of the traffic rail, said lever means having an upper portion for securing and for supporting a retarder rail, a central portion for pivotally mounting on said shaft means and about which said lever means rotates in a first direction in response to movement of said lever means by outward movement of a secured retarder rail by said railway wheel, and a lower portion for supporting said traffic rail and for lifting said traffic rail in response to rotation of said lever means in said first direction, said lower portion being urged downwardly by the weight of the railway wheel to pivot about its center portion and urge a retarder rail against the side of the car wheel, said lever means having a seat, a wedge means having one surface engaged with said seat and another surface in engagement with said retarder rail secured to said lever means so that the retarder rail can be forced to move closer to the traffic rail by movement of said wedge means in said seat to compensate for reduced thickness of a retarder rail due to wear, a clamping means to clamp said retarder rail to said lever means, said lever means adapted to be remotely moved to an open position whereby the retarder rails are not effective to engage the sides of the railway wheel passing over said traffic rail and to be moved to an effective position where said retarder rails are positioned for engagement with the sides of the railway wheels, said lever means including an overhanging portion adapted to engage the upper side of the traffic rail opposite the side on which its respective retarder rail is being supported, rock shafts positioned on adjacent ties and having eccentric por-

tions thereon for mounting one of said lever means, operable means connected to rotate said rock shafts to rotate said eccentric portions and thereby to rotate said lever means to an effective or ineffective position, said rock shafts having end portions guided for lateral movement across the upper surface of the adjacent railway ties, said rock shafts being held against movement by said remotely operable means when said retarder rails are in the effective position to frictionally engage the sides of the railway wheel.

10. In a car retarder system for retarding the movement of railroad cars moving therethrough, and for applying a retarding force proportional to the weight of the railroad car; said system including a pair of spaced shaft means disposed on opposite sides of a traffic rail over which the railroad car passes, said spaced shaft means each having a spaced eccentric portion; one-piece lever means rotatably supported on one of said eccentric portions of said shaft means; friction retarding elements secured to each of said lever means, said lever means being operable to rotate to a position to engage said retarding elements against a wheel of a railroad car passing over said traffic rail and operable to apply a frictional retarding force thereto; means on each of said lever means adapted to underlie the traffic rail and in response to outward movement of said friction elements to lift said traffic rail; and an operating means for rotating said shaft means and the eccentrics thereon to pivot said lever means between positions where said friction retarding elements are spaced apart a distance less than the width of a railroad wheel and to a distance spaced apart greater than the width of a railroad wheel.

11. The car retarder of claim **10** wherein said friction element is adjustable relative to said lever means, said car retarder including clamping means for clamping said friction retarding element to said lever means to hold said friction retarding element associated therewith in an adjusted position, and means disposed between said friction element and a portion of said lever means to transmit a portion of the force exerted by a car wheel on a friction element to the lever means.

12. The car retarder of claim **11** wherein said lever means and said friction retarder element have openings adapted to be aligned with each other, said clamping means including bolt means inserted in said openings to clamp said retarder friction element in an adjusted position, said means for holding the friction retarder element being disposed in a seat formed in said lever means.

13. In the car retarder system of claim **10**, said shaft means having a stop thereon, said lever means having a stop thereon engageable with said stop of said shaft means to limit the amount of rotation of said shaft means to a predetermined amount of rotation.

14. In a traffic retarder apparatus disposed on railroad ties for applying a retarding force to the wheels of a railroad car, said retarder force being proportional to the weight of the car, said apparatus including a traffic rail for supporting at least one wheel of the railroad car, and said traffic rail resting on railroad ties and being free for movement; a pair of opposed shafts, each of said shafts being disposed on opposite sides of the traffic rail and being disposed on said railroad ties for rotational movement on said ties; a plurality of independent operating levers, at least one of said independent operating levers pivotally mounted on each of said shafts for rotation about said shaft, each of said independent levers having an integral and arcuate portion thereon disposed in engagement with said traffic rail to lift said traffic rail when said lever is rotated in a first direction, each of said levers extending beneath the traffic rail and to the opposite side of the traffic rail from its pivotal mounting, hook means on each of said levers at said opposite side of the traffic rail for engagement with a flange of the traffic rail to limit downward pivotal movement of its respective lever when said traffic rail is resting on said ties; wheel engaging means for applying the retarding force to wheels of a railroad car, said wheel engaging means secured individually to said levers on opposite sides of said traffic rail and adapted to be spaced apart a distance less than the width of a railroad car wheel so that a car wheel entering the space between said opposed wheel engaging means causes said wheel engaging means to exert a force tending to rotate the independent levers in said first direction to lift the traffic rail, the lifting of the traffic rail being resisted by the weight of the railroad car on said traffic rail.

15. In a traffic retarder apparatus for applying a retarding force to the wheels of a railroad car: a pair of opposed shaft means; a shaft means being disposed on opposite sides of the traffic rail and disposed for rocking movement on said railroad ties about a first axis; a plurality of independent operating levers, at least one of said independent operating levers pivotally mounted on each of said shaft means for rotation about a second axis on said shaft means, wheel engaging means for applying the retarding force to wheels of a railroad car, said wheel engaging means secured individually to said operating levers on opposite sides of said traffic rail, said wheel engaging means adapted to be spaced apart a distance less than the width of a railroad car wheel so that a car wheel entering the space between said opposed wheel engaging means causes said wheel engaging means to exert a force tending to rotate the operating levers to move the wheel engaging means farther apart, and to lift the traffic rail, the weight of the railroad car on said wheel resisting the lifting of said traffic rail; a rounded portion on each of said shaft means in engagement with said ties and adapted to be rocked on said ties so as to rotate said shaft means about said first axis on each of said shaft means; and an actuating means disposed between the opposed shaft means so as to rotate said shaft means about their respective rounded portions and first axes of rotation and moving said axes of rotation for said operating levers toward said traffic rail to bring said wheel engaging means to an operative wheel engaging position, said actuating means operable to rotate said shaft means in an opposite direction about their respective rounded portions and said first axes to move said axes of rotation for said levers away from the traffic rail so that the opposed wheel engaging means on said levers move apart to inoperative, non-wheel engaging positions.

16. In a traffic retarder apparatus for applying a retarding force to the wheels of a railroad car, said apparatus including a traffic rail for supporting at least one wheel of the railroad car, and said traffic rail being adapted to move vertically wtih respect to the railroad ties, a pair of opposed shafts, each of said shafts disposed on opposite sides of the traffic rail and disposed for rocking movement on said railroad ties; a plurality of independent levers, at least one of said independent levers pivotally mounted on each of said shafts for rotation about said shaft, each of said levers having a portion thereon disposed in engagement with said traffic rail to lift said traffic rail when said lever is rotated in a first direction and to permit said traffic rail to move downwardly when said levers rotate in the opposite direction; a pair of spaced retarding rails, each of said retarding rails secured to those independent levers on the same side of the traffic rail as the levers; said traffic rails movable to a first position for applying a retarding force to the wheels of a railroad car wherein the retarding rails are spaced apart a distance less than the width of a railroad car wheel so that a car wheel entering the space between said opposed wheel engaging means causes said wheel engaging means to exert a force tending to rotate the levers to move the wheel engaging means further apart and concomitantly to lift the traffic rail, the lifting of the traffic rail being resisted by the weight of the railroad car; an actuating arm for each of said shafts and disposed downwardly between a pair of adjacent railroad ties; an

operating means secured between a pair of opposed actuating arms, said operating means adapted to rotate said actuating arms and their associated shafts to move the first pivotal axis of said independent levers closer to said traffic rail and thereby to move said retarding rails to the operative wheel engaging position; said operating means being operative to rotate said opposed acuating arms to rotate said shafts on said ties and thereby to rotate the axes for said independent levers on the opposed shafts farther apart so that said retarder rails are disposed in an inoperative position.

17. The apparatus of claim **16** wherein each of said shafts has a stop element thereon and rotatable therewith, and wherein each of said levers has a stop surface thereon adapted to contact a stop element on its associated shaft to limit rotation between an associated shaft and stop element.

18. A retarder apparatus for applying a frictional force to a wheel of a railroad car moving over a traffic rail, said traffic rail being adapted to move vertically with respect to the railroad ties, said retarder apparatus being unsecured to said ties and unsecured to said traffic rail, said retarder apparatus including a pair of opposed shaft means disposed on said ties on opposite sides of said traffic rail and adapted for rotation on said ties; a pair of levers pivoted on the end portions of each of the opposed shaft means for movement about an axis differing from the axis of rotation of said shaft means; a portion of each of said levers disposed beneath said traffic rail and adapted to lift said traffic rail against the weight of the railroad car; braking means disposed on opposite sides of said traffic rail, each of said braking means being secured to levers on its side of the traffic rail and adapted to be rotated about said shaft means as a car wheel moves between said braking means and lifts said traffic rail; and an operating means disposed between a pair of adjacent ties and disposed underneath the traffic rail and operatively connected to each of said shaft means to rotate said shaft means about their respective axes of rotation to move said end portions of said levers closer together to bring said braking means to a position wherein said braking means are spaced apart a distance less than the thickness of a car wheel, said operating means operable to rotate said shaft means and levers to move said brake means apart to a position where the brake means do not engage the sides of the car wheels.

19. In a traffic retarder apparatus for applying a retarding force to the wheels of a railroad car, said retarder force being proportional to the weight of the car, said apparatus including a traffic rail for supporting at least one wheel of the railroad car, and said traffic rail being free to move vertically with respect to the railroad ties; a pair of opposed shafts, each of said shafts being disposed on opposite sides of the traffic rail and being disposed for rotation on said railroad ties; a plurality of independent levers, at least one of said independent levers pivotally mounted on each of said shafts for rotation about said shaft, each of said independent levers having a portion thereon disposed for engagement with said traffic rail to lift said traffic rail when said lever is rotated in a first direction and to permit said traffic rail to move downwardly when said levers rotate in the opposite direction; wheel engaging means for applying the retarding force to wheels of the railroad car, said wheel engaging means secured individually to said levers on opposite sides of said traffic rail and adapted to be spaced apart a distance less than the width of a railroad car wheel so that a car wheel entering the space between said opposed wheel engaging means causes said wheel engaging means to exert a force tending to rotate the independent levers to move the wheel engaging means further apart and concomitantly to lift the traffic rail, the lifting of the traffic rail being resisted by the weight of the railroad car; a fluid operating means disposed beneath said traffic rail and connected to opposite ones of said shafts and being operable to rotate said shafts in a first direction to move said wheel engaging means to a position for applying the retarding force and being operable to rotate the shafts to move said wheel engaging means to a position where the wheel engaging means do not engage the sides of the wheel; and a pressure relief valve connected to said fluid operating means and operable to reduce the fluid pressure when said force being exerted by said levers on said fluid means exceeds a predetermined amount of force because of the weight of the railroad car moving over said traffic rail.

20. In a traffic retarder apparatus for applying a retarding force to the wheels of a railroad car, said retarder force being proportional to the weight of the car, said apparatus including a traffic rail for supporting at least one wheel of the railroad car, and said traffic rail being adapted to move vertically with respect to the railroad ties, a pair of opposed shafts, each of said shafts being disposed on opposite sides of the traffic rail and being disposed for rotation on said railroad ties; a plurality of independent levers, at least one of said independent levers pivotally mounted on each of said shafts for rotation about said shaft, each of said independent levers having a portion thereon disposed for engagement with said traffic rail to lift said traffic rail when said lever is rotated in a first direction and to permit said traffic rail to move downwardly when said levers rotate in the opposite direction; wheel engaging means for applying the retarding force to wheels of the railroad car, said wheel engaging means secured individually to said levers on opposite sides of said traffic rail and adapted to be spaced apart a distance less than the width of a railroad car wheel so that a car wheel entering the space between said opposed wheel engaging means causes said wheel engaging means to exert a force tending to rotate the independent levers to move the wheel engaging means further apart and concomitantly to lift the traffic rail, the lifting of the traffic rail being resisted by the weight of the railroad car, and a fluid operating means including a cylinder having a pair of opposed pistons therein operably connected to opposed ones of said shafts for rotating said shafts and the levers thereon to move said wheel engaging means between an operative retarding position and an inoperative, open position at which said wheel engaging means are spaced apart a distance greater than the width of a railroad car wheel.

21. In a traffic retarder apparatus for applying a retarding force to the wheels of a railroad car, said retarder force being proportional to the weight of the car, said apparatus including a traffic rail for supporting at least one wheel of the railroad car, and said traffic rail being adapted to move vertically with respect to the railroad ties, a pair of opposed shafts, each of said shafts being disposed on opposite sides of the traffic rail and being disposed for rotation on said railroad ties; a plurality of independent levers, at least one of said independent levers pivotally mounted on each of said shafts for rotation about said shaft, each of said independent levers having a portion thereon disposed for engagement with said traffic rail to lift said traffic rail when said lever is rotated in a first direction and to permit said traffic rail to move downwardly when said levers rotate in the opposite direction; wheel engaging means for applying the retarding force to wheels of the railroad car, said wheel engaging means secured individually to said levers on opposite sides of said traffic rail and adapted to be spaced apart a distance less than the width of a railroad car wheel so that a car wheel entering the space between said opposed wheel engaging means causes said wheel engaging means to exert a force tending to rotate the independent levers to move the wheel engaging means further apart and concomitantly to lift the traffic rail, the lifting of the traffic rail being resisted by the weight of the railroad car; a hydraulic means disposed beneath said traffic rail and operatively connected to said shafts to rotate said shafts about a first axis different from the axis of rotation for said independ-

ent levers on said shafts so that rotation of said shafts in one direction moves the respective axes of rotation for said levers closer to the traffic rail, and rotation of said shafts in the opposite direction moves said respective axes of rotation for said levers farther from said traffic rail; and means depending from said traffic rail for securing said hydraulic means to limit the movement of said hydraulic cylinder in the direction of fluid movement in response to changes of fluid pressure within said hydraulic means.

22. A retarder apparatus for applying a frictional force to a wheel of railroad car moving over a traffic rail, said traffic rail being adapted to move vertically with respect to the railroad ties, said retarder apparatus being unsecured to said ties and unsecured to said traffic rail, said retarder apparatus including a pair of opposed shaft means disposed on said ties on opposite sides of said traffic rail and adapted for rotation on said ties and about a first axis; a pair of levers pivoted on the end portions of each of the opposed shaft means for movement about a second axis differing from the axis of rotation of said shaft means; a portion of each of said levers disposed beneath said traffic rail and adapted to lift said traffic rail against the weight of the railroad car; braking rails disposed on opposite sides of said traffic rail, each of said braking rails being secured to said levers on its side of the traffic rail and adapted to be rotated about said shaft means as a car wheel moves between said braking means and thereby lift said traffic rail; and an operating means disposed between a pair of adjacent ties and disposed underneath the traffic rail and operatively connected to each of said shaft means to rotate said shaft means about their respective first axes of rotation to move said axes of rotation for said levers closer together to bring said braking rails to a position wherein said braking rails are spaced apart a distance less than the thickness of a car wheel, said operating means operable to rotate said shaft means and said levers to move said braking rails apart to a position where the braking rails do not engage the sides of the car wheels; and integrally formed stop means disposed on opposed portions of each of said shaft means adapted to rotate into engagement with a portion of an associated lever pivotally mounted adjacent to said stop means to limit the amount of rotation of said shaft means and thereby said braking means to predetermined amounts of rotation.

23. In a car retarder system for retarding the movement of railroad cars moving therethrough, and for applying a retarding force proportional to the weight of the railroad car; said system including a pair of spaced shaft means disposed on opposite sides of a traffic rail over which the railroad car passes, said spaced shaft means each having a spaced eccentric portion; a one-piece lever means rotatably supported on one of said eccentric portions of said rock shafts; friction retarding elements secured to a first end of each of said lever means, said lever means being operable to rotate to a position to engage said retarding elements against a wheel of a railroad car passing over said traffic rail and operable to apply a frictional retarding force thereto; means on each of said lever means adapted to underlie the traffic rail and in response to outward movement of said friction elements to lift said traffic rail; and an operating means for rotating said shaft means and the eccentrics thereon to pivot said lever means between positions where said friction retarding elements are spaced apart a distance less than the width of a railroad wheel and to a distance spaced apart greater than the width of a railroad wheel, said lever means having a plurality of seats for receiving the eccentric portions of said shaft means so that the effective length of the lever arm may be varied by disposing the eccentric portion in different ones of said plurality of seats.

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MILTON BUCHLER, *Primary Examiner.*

DUANE A. REGER, *Examiner.*