Nov. 1, 1960 G. K. NEWELL 2,958,398

BRAKE RIGGING FOR RAILWAY CARS

Filed Sept. 5, 1957 4 Sheets-Sheet 1

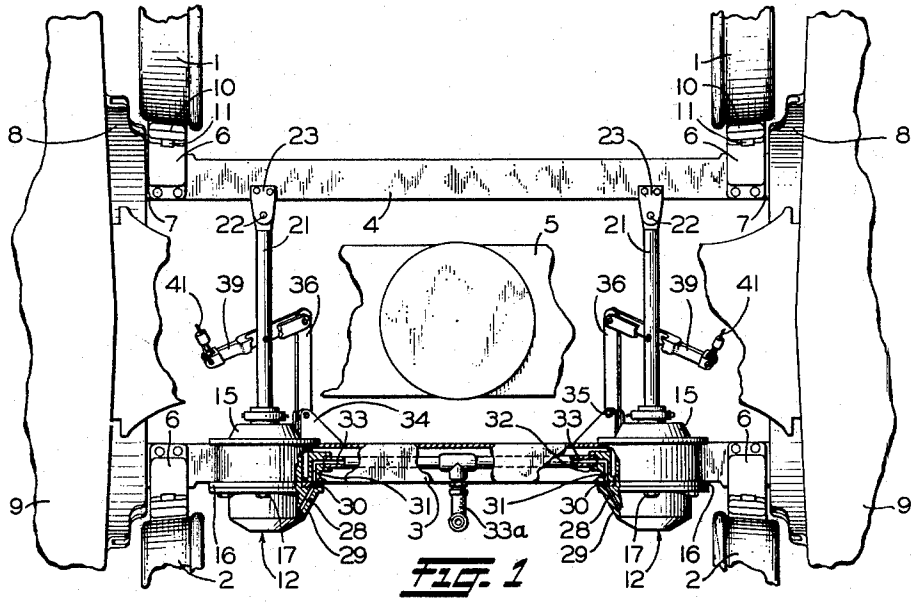


FIG. 1

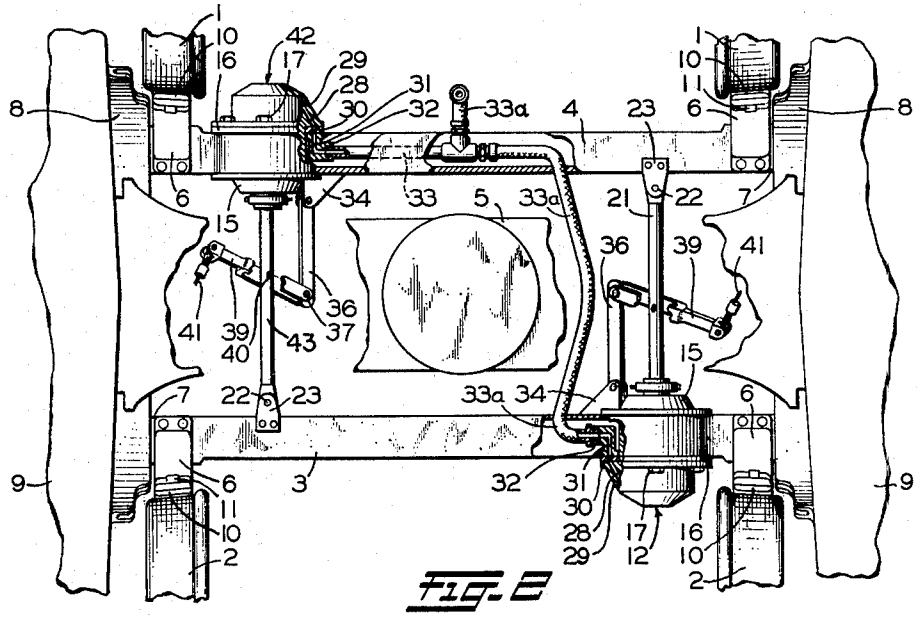


FIG. 2

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BRAKE RIGGING FOR RAILWAY CARS

Filed Sept. 5, 1957 4 Sheets-Sheet 2

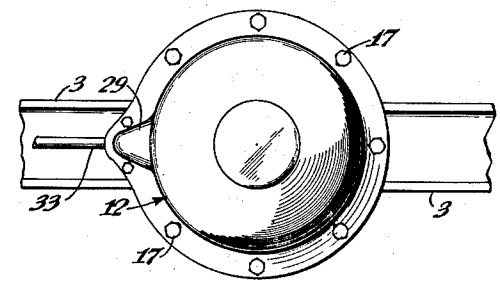


Fig. 4

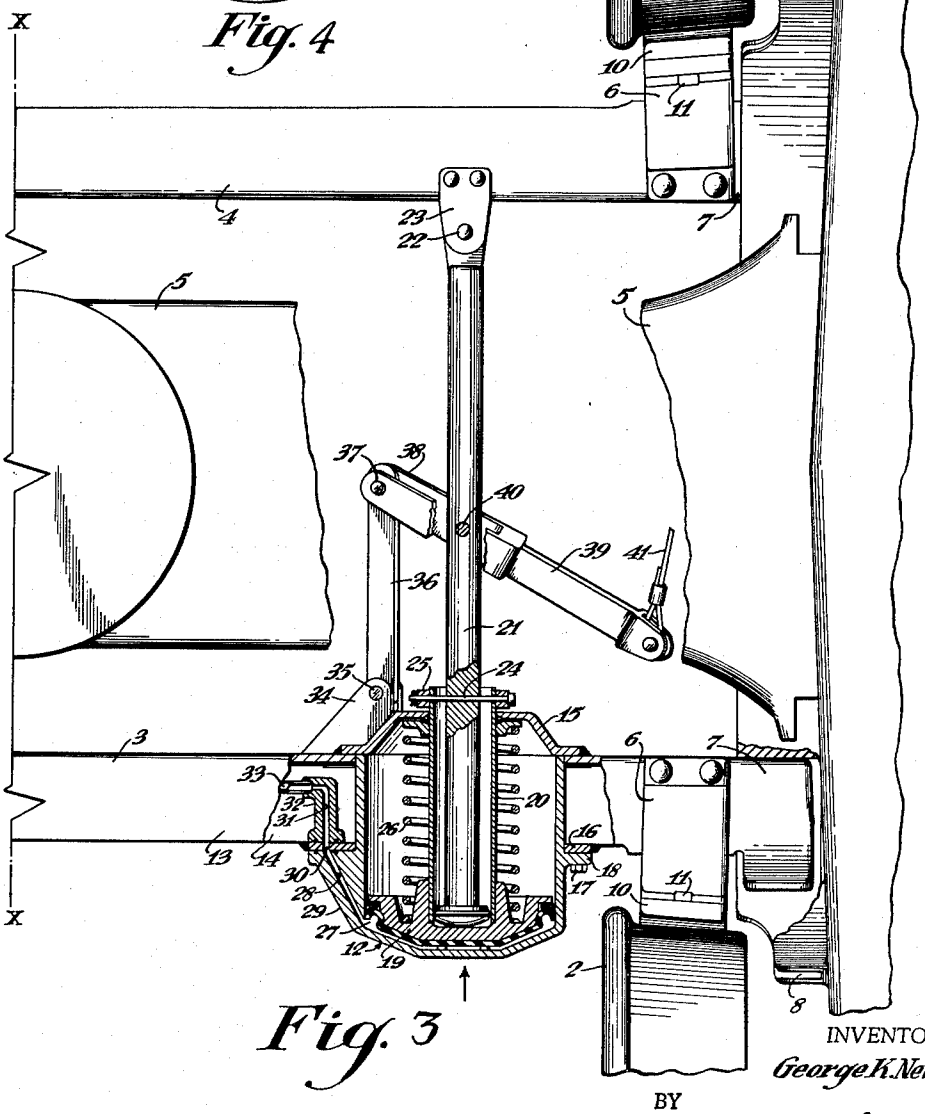


Fig. 3

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BRAKE RIGGING FOR RAILWAY CARS

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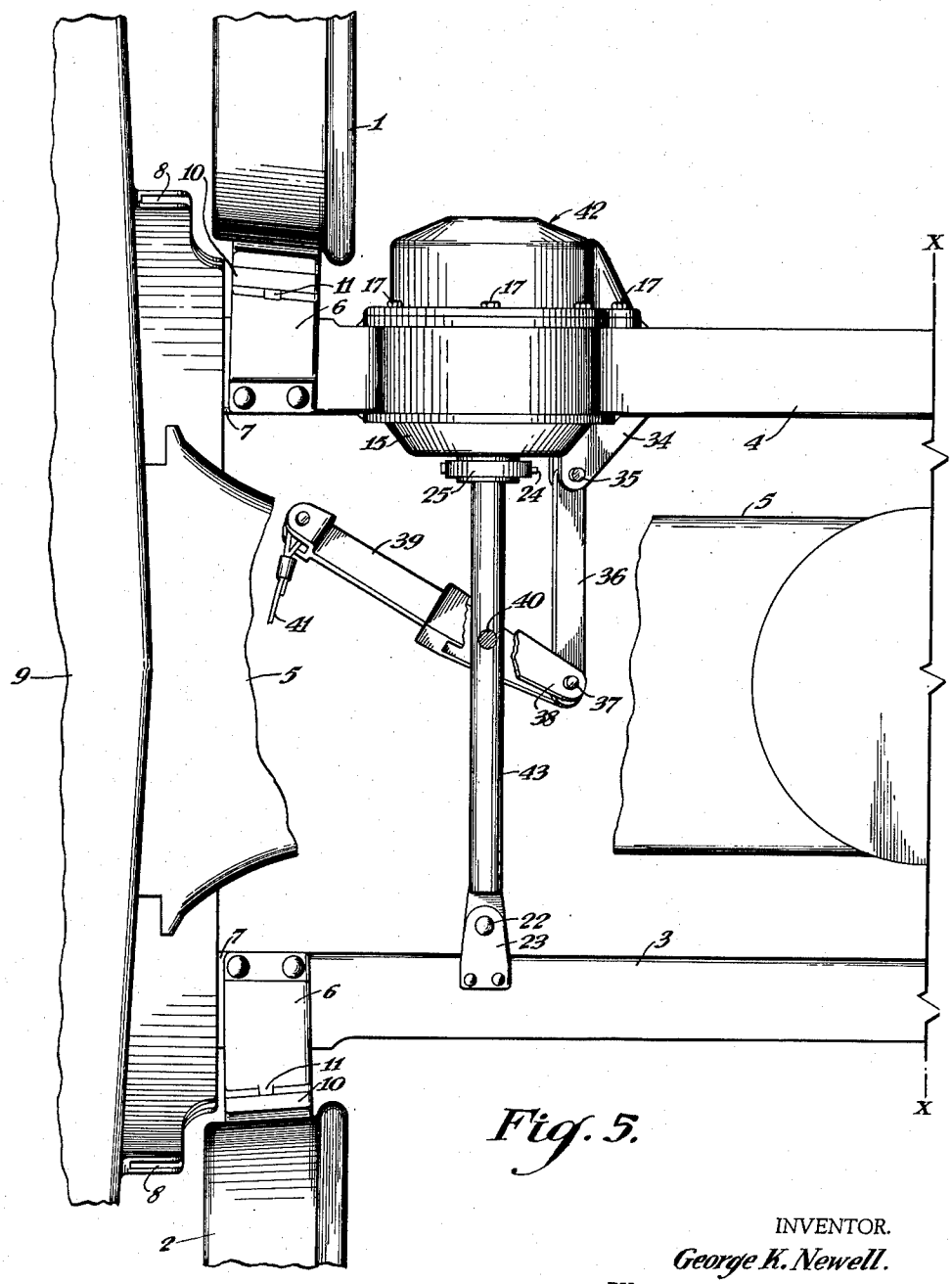


Fig. 5.

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BRAKE RIGGING FOR RAILWAY CARS

Filed Sept. 5, 1957 4 Sheets-Sheet 4

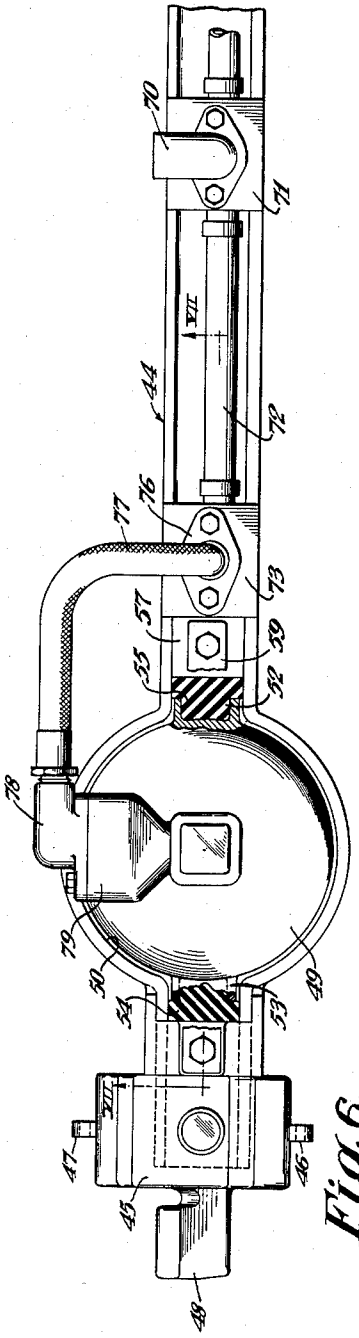


Fig. 6.

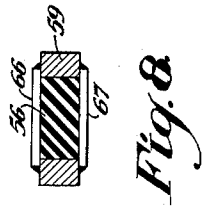


Fig. 8

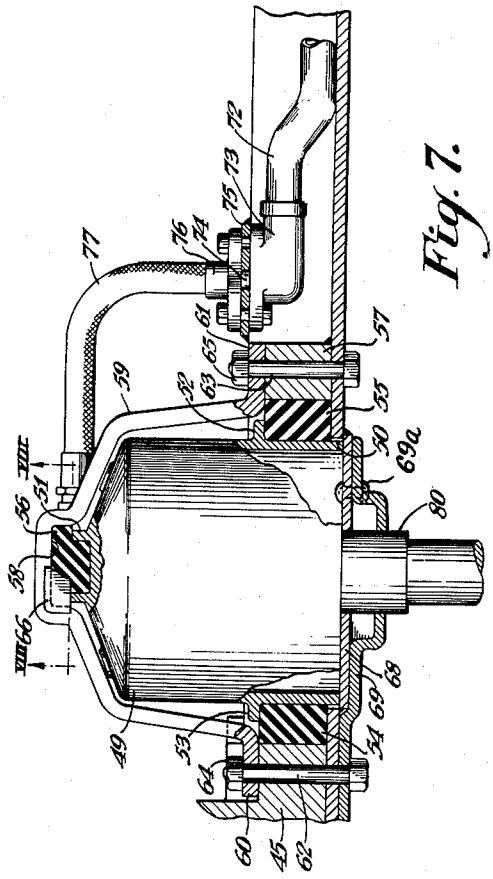


Fig. 7.

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BRAKE RIGGING FOR RAILWAY CARS

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Filed Sept. 5, 1957, Ser. No. 682,181

13 Claims. (Cl. 188—52)

This invention relates to brake rigging for railway rolling stock and more particularly to brake rigging for freight cars.

One of the present day conventional brake riggings for freight cars consists of one or more brake cylinders carried on the underside of the car body and having the piston rods thereof connected through rods and levers to the brake shoes, independently hung on the brake shoe hangers from the truck frame, to effect movement of the brake shoes into and out of engagement with the tread of the car truck wheels.

Due to wear at the number of pivotal connections between the rods and levers of the conventional brake rigging, and due to wear of the conventional cast iron brake shoes, automatic slack adjusters are desirable to take up slack in the rigging as it occurs.

The comparatively recent commercial adoption and increasing use by the railroads of composition brake shoes for railway rolling stock has made it desirable to devise new and different types of brake rigging to utilize the benefits to be gained from the desirable characteristics of the composition brake shoe compared to the old conventional cast iron type of brake shoe.

Composition brake shoes have a considerably higher friction coefficient as compared to that of cast iron shoes. Therefore, the composition brake shoes require a lesser brake applying force than do conventional cast iron shoes for an equivalent braking effect.

In the copending application Serial No. 642,167, filed February 25, 1957, and assigned to the assignee of the present application, there is shown and described a simple and lightweight brake rigging, especially for freight cars, comprising a brake beam, similar in construction to a present day standard brake beam, modified in a novel manner however, by the inclusion of one or more brake cylinders directly in the structural framework thereof and reacting with the truck transom or bolster to cause application of braking force to the brake beam and consequently to the brake shoes carried by the brake beam.

In the type of brake rigging disclosed in the foregoing copending application, the fluid pressure force acting on the pressure head of the brake cylinder or cylinders is effective to move the cylinder or cylinders and consequently the brake beam to which the cylinder or cylinders are secured to bring the brake shoes carried by the brake beam into braking contact with the treads of the wheels of the truck whereas the reacting force acting on the piston disposed within the cylinder or cylinders is transmitted to the truck transom or bolster where it is ineffective to produce a braking force on the treads of the wheels of the truck.

The present invention is a novel brake rigging in which one or more brake cylinders are secured to one brake beam and are each provided with a piston having a piston rod which is operatively connected to another brake beam substantially parallel to the one brake beam, each brake beam being moved in a direction opposite to the other by

the fluid pressure forces acting in opposite directions on the cylinders and their respective pistons.

Since the fluid pressure forces acting on both the brake cylinder and its respective piston are respectively utilized to move two different brake beams and brake shoes carried thereby in corresponding opposite directions to effect a brake application of a given braking force, the same number of brake cylinders may be used with the instant brake rigging to effect an equivalent braking force on a four-wheel type truck with the added advantage that the cylinders may be substantially smaller and consequently lighter in weight than the brake cylinders used with the brake rigging described in the hereinbefore mentioned copending application.

The invention further includes a novel lightweight brake beam structure, especially useful in the hereinbefore-described brake rigging arrangement, for enabling the attachment to and removal from the brake beam of a brake cylinder or cylinders in a simple manner and with a minimum expenditure of effort and time. Additional features of the brake beam structure provide for rigid or resilient mounting of the cylinders and automatic establishment and disestablishment of pneumatic connections to the cylinder incidental to the attachment and removal respectively of the cylinder to and from the beam.

In the acompanying drawings:

Fig. 1 is a plan view, partially in section, of a brake rigging for a four-wheel (that is, two axle) car truck, which rigging embodies one form of the invention showing the manner by which a pair of brake cylinders are mounted on a single brake beam and operatively connected to a second brake beam.

Fig. 2 is a plan view, partially in section, of a brake rigging for a four wheel (that is, two axle) car truck, which rigging embodies another form of the invention in which a single brake cylinder is mounted on each of two brake beams and connected to the other brake beam.

Fig. 3 is a partial plan view corresponding to Fig. 1, and showing, on an enlarged scale, details of the cylinders and the manner of mounting on the brake beams.

Fig. 4 is a fragmentary end view of the brake rigging shown in Fig. 3, looking in the direction of the arrow shown in Fig. 3.

Fig. 5 is a partial plan view corresponding to Fig. 2 and on an enlarged scale, it being noted that Figs. 3 and 5, when placed together along their common line X—X, represent a plan view, on an enlarged scale, of the same embodiment of the brake rigging shown in outline form in Fig. 2.

Fig. 6 is a partial elevational view of a brake beam suitable for use with the brake rigging shown in either Fig. 1 or Fig. 2, and illustrating a cushioned support for a brake cylinder.

Fig. 7 is a fragmentary view, taken on the line VII—VII of Fig. 6, looking in the direction of the arrows, and showing further details of the cushioned support of Fig. 6.

Fig. 8 is a view taken on the line VIII—VIII of Fig. 7, looking in the direction of the arrows, and showing other details of the cushioned support illustrated in Figs. 6 and 7.

Figs. 1 and 3

Referring to Fig. 1 of the drawings, the reference numerals 1 and 2 designate respectively the wheels secured at opposite ends of each of two axles of a two-axle four-wheel railway car truck.

The brake rigging shown in Figs. 1 and 3 comprises a pair of brake beams 3 and 4 extending crosswise of the car truck and in parallel spaced relation to each other and to the truck bolster 5. The brake beams 3 and 4 are symmetrically arranged on opposite sides of the truck bolster 5 and are movably supported at each end on the

side frame members of the truck in the manner hereinafter described.

The brake beams 3 and 4 each have the shape of a standard channel, illustrated as a U-channel. Brake beam 3 is further constructed, as hereinafter described, to provide a support for a pair of brake cylinders.

A brake head 6 is riveted or otherwise attached to each end of each of the brake beams 3 and 4 adjacent to and on the inboard side of a guide foot 7. Each foot 7 is a flat L-shaped metal member, one leg of which extends between the flanges of the brake beam and is suitably secured thereto. The other leg of each guide foot 7 is slidably supported in a grooved wear plate and guide member 8, said wear plate and guide member being secured to a truck side frame 9. The wear plate and guide members and guide feet serve to support the brake beams 3 and 4 at the proper height above the rails, (that is somewhat below the horizontal diameter of the wheels) the groove in the wear plate and guide member 8 being at a slight angle to the horizontal to permit bodily movement of said brake beams in a direction radially of the associated wheels when a brake application is made.

Each brake head 6 carries a composition brake shoe 10 for contact with the tread of an associated wheel. In customary manner the shoe has a backing plate provided with a key bridge to receive a key 11 for removably locking the shoe to the brake head 6.

The brake shoes 10 are operated into and out of contact with their associated wheels 1, 2 by means of a pair of fluid pressure motors or brake cylinders 12, only one of which is shown in Fig. 3, both brake cylinders being secured to the brake beam 3 in a manner now to be described.

In order to secure the brake cylinders 12 to the brake beam 3, a portion of the web of the U-channel constituting the beam 3 adjacent each end and inboard of the wheels, is removed, as by cutting it out with an acetylene torch, and then the portion of each of the flanges or legs 13, 14 (Fig. 3) of the U-channel opposite the removed portion is extruded or expanded in a suitable manner after pre-heating, thus forming a circular opening substantially the same diameter as the outside diameter of the body of the cylinder 12. A brake cylinder non-pressure head 15 in the shape of a dished annulus is then secured, as by welding, to the web side of the extruded flanges, and a substantially annular plate 16 is secured to the opposite or free edges of the extruded circularly formed flanges, as by welding. The inside diameter of the annular plate 16 is substantially the same as the outside diameter of the body of the cylinder 12 to permit the open end of the cylinder body to be inserted therethrough and the cylinder 12 secured to the plate 16 as by a plurality of bolts 17 and nuts, only one of which is shown in the drawing, said bolts extending through a plurality of circumferentially-spaced holes in an external radial flange 18 formed integral with the cylinder 12 and similarly arranged holes registering therewith in the annular plate 16.

In the drawings the flanges of the brake beams are extruded symmetrically with respect to the longitudinal center line of the beam so that the longitudinal axis of the brake cylinder intersects the longitudinal center line of the beam. It will be apparent, however, that if desired the flanges may be asymmetrically extruded with respect to the longitudinal center line of the beam to enable support of the brake cylinder in a position such that the axis thereof is below or above the longitudinal center line of the brake beam.

The body of the brake cylinder 12 has a bore in which a piston 19 is slidably operable. A hollow rod 20 secured coaxially to the piston 19 extends through a central opening in the non-pressure head 15 and is adapted to receive one end of a push rod 21, the opposite end of which is pivotally connected as by a pin 22, to a clevis 23 secured, as by riveting, to the brake beam 4. A push rod holder pin 24 extends diametrically through a reinforcing ring flange 25 attached to the free end of the hollow rod 20 and through the push rod 21 to connect the push rod to the hollow rod to insure that these members are moved together to a brake release position, in which they are shown in Fig. 1, by a spring 26 interposed between the piston 19 and the non-pressure head 15.

Formed on a packing cup secured to the piston 19 are a plurality of lugs which, when the piston 19 occupies the position in which it is shown in Fig. 1, contact the end wall or pressure head of the cylinder 12 to form between the piston and the closed end of the cylinder a pressure chamber 27 to which fluid under pressure may be supplied through a passageway 28 formed in a rib 29 extending outwardly from the periphery of the body of the cylinder 12 and formed integral therewith. The passageway 28 opens at the contact face of flange 18 and registers with a port 30 in the annular plate 16. The port 30 in turn registers with a passageway 31 formed in an elbow fitting 32 secured to the inside surface of the annular plate 16. A pipe or conduit 33 having screw-threaded or other means of attachment with the elbow fitting 32 may be connected through a pipe T and a flexible hose 33*a* to the brake cylinder pipe leading from the usual brake controlling valve device of the air brake system on railway freight cars. Fluid under pressure supplied to pressure chamber 27 through pipe 33, passageway 31, port 30 and passageway 28 causes movement of the cylinder 12, and brake beam 3 in one direction and the piston 19, rod 21, and brake beam 4 in the opposite direction to effect braking contact of the brake shoes, carried by the beams 3 and 4, with the tread of their respectively associated wheels.

In order to provide in customary fashion for operation of the brake beams by hand brake means, two pair of lugs 34 are secured, one pair adjacent each brake cylinder, as by welding, to the web of the channel constituting brake beam 3, and pivotally connected to the lugs 34, as by a pin 35, is one end of a link 36. The opposite end of the link 36 is connected, as by a pin 37, to the opposite fingers of a clevis 38 formed at one end of a hand brake lever 39. The lever 39 is slanted with respect to the horizontal and extends laterally of the car truck. Moreover, lever 39 is suitably fulcrumed on the push rod 21, which extends between the fingers of the clevis 38, as by a pin 40. The free end of hand brake lever 39 is connected as through a cable 41 and a system of pulleys (not shown) to the hand brake wheel which is located at one end of the freight car.

In operation, when it is desired to effect a brake application, fluid under pressure is admitted simultaneously to the pressure chamber 27 in each of the cylinders 12 through the flexible hose 33*a* which is connected to the brake controlling valve device of the usual air brake system on railway freight cars, pipe 33, passageway 31, port 30, and passageway 28. Fluid under pressure thus supplied to the chamber 27 formed between the piston 19 and the closed end or pressure head of each brake cylinder 12 is effective to move the piston 19 and cylinder 12 in opposite directions. As the pistons 19 and cylinders 12 are moved in opposite directions, the brake beams 4 and 3 also move in opposite directions since the pistons 19 are connected to brake beam 4 through push rods 21 and cylinders 12 are carried by brake beam 3. As the brake beams move in opposite directions, the brake shoes carried by the beams are brought into braking contact with the wheels of the truck to effect a braking action on the wheels.

As the brake beams 3 and 4 are moved as described above, these beams are supported and guided by the guide feet 7 as these feet have sliding contact in the groove in the wear plate and guide members 8. As hereinbefore mentioned, the orientation of the wear plate and guide members 8 is such that the brake beams 3 and 4

and the brake shoes 10 carried thereby are moved radially toward the wheels.

It will be understood that in view of the symmetrical disposition of the brake cylinders on one brake beam on opposite sides of the longitudinal axis of the truck and the corresponding symmetrical relation of the points at which the piston rods are anchored to the other brake beam, the simultaneous supply of fluid at the same pressure to the pressure chambers 27 of both brake cylinders produces substantially equalized forces of application of the brake shoes to the wheels.

When it is desired to release the brake application, the fluid under pressure supplied to chamber 27 of both brake cylinders 12 is vented in the usual manner to atmosphere through the passageway 28, port 30, passageway 31, pipe 33, and the flexible hose 33*a* to the brake controlling valve device of the car brake system, whereupon the force of each spring 26 acting on the non-pressure head 15 moves corresponding brake cylinder 12 and its piston 19 in a brake releasing direction to move the brake beams toward each other and the brake shoes correspondingly away from the tread surface of the wheels of the truck to effect a brake release.

Due to the inclination of the grooves in the wear plate and guide members 8, the brake beams tend to return by action of gravity to their normal symmetrical relation with respect to the truck bolster, in which position the clearance between the brake shoes on one brake beam and their associated wheels is substantially equal to the clearance between the brake shoes on the other brake beam and their associated wheels. However, due to the predominating weight of brake beam 3, which carries two brake cylinders 12 over the weight of brake beam 4 which carries no brake cylinder, the tendency is for brake beam 3 to travel by action of gravity, upon release of air from the brake cylinders 12, further down the inclined groove of the wear plate and guide members 8 and thus past the normal intended release position. Therefore, in order to limit the travel of the heavier of the two brake beams toward its release position, each wear plate and guide member 8 is so positioned that the bottom or closed end of the groove therein serves as a limit stop to movement of the guide foot 7 toward the bolster 5 (see Fig. 3).

It will be noted that it is not necessary to use a slack adjuster with this type of rigging. Since there are no links and levers between each of the brake cylinders and the brake beams of the present invention, there can be no wear therein which must be compensated for by a slack adjuster as in conventional brake rigging. It should be understood that the length of the bore in the casing of cylinders 12 is such as to provide sufficient travel for the piston 19 in addition to that required to effect contact of the brake shoes with the wheel treads, that as the brake shoes 10 wear away, the shoes are always properly moved into braking contact with the wheels of the truck during each brake application throughout their useful life without the necessity of a slack adjuster to compensate for wear of the shoes.

Figs. 2 and 5

The second embodiment of the invention, shown in Fig. 2 and in Figs. 3 and 5 taken together, comprises a brake rigging in which a single brake cylinder 12 is secured to one end of the brake beam 3 with the push rod 21 thereof connected to the brake beam 4 as shown in Fig. 1, and in which a single brake cylinder 42, substantially identical to the brake cylinder 12, is secured to the opposite end of the brake beam 4 with a push rod 43 thereof connected to the brake beam 3 as shown in Fig. 5. Other elements in Fig. 5, including the hand brake mechanism, which are the counterparts of elements shown in Fig. 3 are identified by the same reference numerals as in Fig. 3 without further description.

The operation of the brake rigging comprising the brake mechanism shown in Fig. 2 is very similar to the operation of the brake rigging comprising the brake mechanism shown in Fig. 1 differing therefrom, however, in that one end of each beam is moved by means of a brake cylinder carried oppositely on the other beam.

A slack adjuster is not necessary for use with the brake rigging comprising the brake mechanism shown in Fig. 2 for the same reasons as explained previously in connection with the embodiment shown in Figs. 1 and 3.

Figs. 6 to 8

Figs. 6 to 8 disclose a brake cylinder carrying brake beam 44 that may be used as a brake beam in either of the previously-described embodiments of the invention. The brake beam 44 has the shape of a standard channel, illustrated as a U-channel, modified as hereinafter described to permit resiliently mounting thereon a pair of brake cylinders, one adjacent each end, only one of which is shown in Figs. 6 and 7.

Each end of the brake beam 44 is provided with a cast steel guide foot and brake head support 45 which is provided with a channel-shaping recess therein by which the support 45 may slidably fit over the end of the U-channel and then be secured thereto as by riveting or welding. Each guide foot and brake head support 45 is provided with two lugs 46 and 47 to which a brake shoe carrying brake head (not shown) may be secured, as by bolts and nuts (not shown). An outer end 48 of each guide foot and brake head support 45 is slidably supported on a truck side frame, substantially as previously described for brake beams 3 and 4.

Each brake head carries a composition brake shoe (not shown) for contact with the tread of an associated wheel.

In order to secure a fluid motor or brake cylinder 49 to each end of the brake beam 44, a portion of the web of the U-channel comprising the brake beam 44 adjacent each end, and inboard of the guide foot and brake head support 45 is removed, as by cutting out with an acetylene torch. The flanges of the U-channel opposite each removed portion of the web are then extruded or expanded to form a circular opening 50, the diameter of which is slightly greater than the outside diameter of the casing of brake cylinder 49.

The brake cylinder 49 has a closed cupped-shaped end provided on the outer surface thereof with a centrally located boss 51 in which is a rectangular recess. The opposite end of the cylinder 49 is open and is provided inwardly of the open end with a pair of external diametrically opposite bosses 52 and 53, each of which has therein a rectangular recess open at one end.

The brake cylinder 49 is resiliently mounted on the brake beam 44 and within the circular opening 50 in spaced relation to the wall thereof by means of three T-shaped rubber cushioning members 54, 55, and 56. The cushioning member 54 is rectangular in cross-section and, as viewed in Fig. 7, is disposed between the bottom of the recessed boss 53 and the right-hand end of the guide foot and brake head support 45. The cushioning member 55 is also rectangular in cross-section and, as viewed in Fig. 7, is disposed between the bottom of the recessed boss 52 and a steel block 57 welded to the web and flanges of the U-channel member comprising the brake beam 44. The cushioning member 56 is contained partly in the rectangular recess in boss 51 on the closed end of the cylinder 49 and partly in a rectangular recess 58 formed in a U-shaped strap or support 59 for the cylinder. Strap 59 has flared ends 60 and 61 secured in abutting relation respectively, with the right-hand end of guide foot and break head support 45 and the block 57 by bolts 62, 63, and nuts 64, 65. A pair of plates 66, 67 (Fig. 8), disposed on opposite sides of the recess 58 in strap 59, are welded to said strap to retain the rubber cushion member 56 within the recess 58.

An annular plate 68 is disposed in contact with the

open end of the cylinder **49** and has a diameter slightly greater than that of the circular opening **50** in the web of the U-channel constituting the brake beam **44** to permit the plate to be welded to the web and flanges. An annular extension **69** formed integral with the guide foot and brake head support **45** extends over the annular plate **68** in contact therewith and is secured thereto, as by a plurality of rivets **69***a*, one of which is visible in Fig. 7, to increase the rigidity of the plate **68** and its resistance to the bending moment to which the plate is subjected, by reaction of a release spring (not shown) when fluid under pressure is supplied to the brake cylinder **49**.

As hereinbefore mentioned, a brake cylinder **49** may be mounted adjacent only one end or each end of the brake beam **44**. Fluid under pressure is supplied to each brake cylinder **49** from the usual brake system found on a railway car through a flexible hose (not shown), an elbow fitting **70**, a pipe T **71**, pipe **72** disposed between the flanges of the U-channel constituting brake beam **44**, an elbow fitting **73**, a port **74** in a plate **75** extending across the flanges of the U-channel constituting brake beam **44** and welded thereto, a flanged fitting **76**, a pipe **77**, an elbow fitting **78**, and a passageway (not shown) in a header **79** formed integral with the brake cylinder **49** and provided with a flanged bolting face for receiving a corresponding bolting face formed on the elbow fitting **78**.

Each of the brake cylinders **49** mounted on break beam **44** has slidably mounted therein a piston (not shown) having a hollow rod **80** which extends through the annular plates **68** and **69** to the exterior of the cylinder for connection with another brake beam, such as the brake beam **4** shown in Fig. 1, as through a push rod in the manner shown in the embodiment of Fig. 1.

When a brake beam **44** is substituted for each of the brake beams **3** and **4** in a brake rigging such as that described in Fig. 1, the operation of the brake rigging is substantially the same as that of the brake rigging disclosed in Fig. 1 and a detailed description thereof is not thought to be necessary.

Having now described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. A brake beam for a railway vehicle truck, said brake beam comprising a channel member having an opening through the web thereof and having its flanges opposite the opening formed to provide an annular support for receiving a brake cylinder, and an annular plate disposed over the said opening in the web of said channel member and secured to said web and flanges to provide a non-pressure head for a brake cylinder to be carried in said annular support.

2. A brake beam for a railway vehicle truck, said brake beam comprising a channel member having an opening through the web thereof and having its flanges opposite the opening formed to provide an annular support, a brake cylinder having one end of its cylinder body disposed in and supported by said annular support, and attaching means secured intermediate its end to the other end of said cylinder body and at each of its ends to the web of said channel member.

3. A brake beam for a railway vehicle truck, said brake beam comprising a channel member having an opening through the web thereof and having its flanges opposite the opening formed to provide an annular support, a brake cylinder having one end of its cylinder body disposed in and supported by said annular support, and means connecting the cylinder body of said brake cylinder to said channel member for additionally supporting said brake cylinder, said means comprising a U-shaped member secured intermediate its ends to the other end of said cylinder body and at each of its ends to the web of said channel member.

4. A brake beam for a railway vehicle truck, said brake beam comprising a channel member having an opening through the web thereof and having its flanges opposite the opening formed to provide an annular support for receiving a brake cylinder, an annular plate disposed over the said opening in the web of said channel member and secured to said web and flanges to provide a non-pressure head for a brake cylinder to be carried in said annular support, and a brake shoe head support member secured to the end of the channel adjacent to said opening and having an annular extension which is coaxially arranged over the outside face of the said annular plate in contact therewith and secured thereto for reinforcement of said annular plate.

5. A brake beam for a railway vehicle truck, said brake beam comprising a channel member having an opening through the web thereof and having its flanges opposite the opening formed to provide an annular support for receiving a brake cylinder, an annular plate disposed over the said opening in the web of said channel member and secured to said web and flanges to provide a non-pressure head for a brake cylinder to be carried in said annular support, and a combined guide foot and brake shoe head support member secured to the end of the channel adjacent to said opening and having an annular extension which is coaxially arranged over the outside face of the said annular plate in contact therewith and secured thereto for reinforcement of said annular plate.

6. A brake beam for a railway vehicle truck, said brake beam comprising a channel member having an opening through the web thereof and having the flanges opposite the opening formed to provide an annular support, a cylinder closed at one end and open at the opposite end, said cylinder being attached to said annular support adjacent the open end of the cylinder, a piston operable in the cylinder and having a piston rod extending through the open end of the cylinder, and means carried on the brake beam for providing a communication through which fluid under pressure may be supplied to a pressure chamber formed between said piston and the closed end of the cylinder.

7. A brake rigging for a railway vehicle truck, said brake rigging comprising two spaced apart substantially parallel brake beams extending transversely of the truck, a brake cylinder having one end closed and on diametrically opposite sides thereof a pair of bosses in each of which a recess is formed, a rubber cushioning member partly contained in each of said recesses and partly projecting from said recesses laterally of said cylinder, means securing the projecting portion of each of said cushioning members to one of said brake beams thereby causing said cushioning members to support in shear the weight of said cylinder, an anchor member of U-shape attached at its free ends to said one brake beam and applying an axial force to the closed end of the cylinder thereby to aid in supporting the cylinder on the brake beam, and a piston operable in said cylinder and having a piston rod anchored to the other of said brake beams, said cylinder having a pressure chamber formed between the closed end thereof and said piston to which chamber fluid under pressure may be supplied to move the brake cylinder and the piston in opposite directions so as to effect corresponding movement of said brake beams in opposite directions to effect a brake application.

8. A brake beam for a railway vehicle truck, comprising a U-shaped channel having a portion of its web removed and the flanges of said channel opposite said removed portion extruded to form a circular opening, a cylinder closed at one end and having a pair of diametrically opposite recessed bosses thereon, said cylinder being disposed coaxially in said circular opening in spaced relation to said extruded flanges, a pair of rubber cushioning members one disposed at each side of said cylinder with a portion thereof supported by said channel and another portion supported in one of said recessed bosses for resiliently supporting said brake cylinder in spaced apart relation to said channel, said cushioning members being subject to shearing stress derived from the weight

of said cylinder, a U-shaped anchor member for applying an axial force to said cylinder to additionally support said cylinder on said channel, said anchor member extending around the closed end of said cylinder in spaced apart relation thereto and having its opposite ends secured to said channel, a third rubber cushioning member disposed between the closed end of said cylinder and said anchor member and cooperating with said pair of cushioning members to provide a three-point resilient mounting for said cylinder with respect to said channel, a non-pressure head for closing the open end of said cylinder, said non-pressure head being secured to said channel, and a piston slidably operable in said cylinder and having a piston rod extending through said non-pressure head.

9. A brake beam for a railway vehicle truck, comprising a U-shaped channel having a portion of its web removed and the legs of said channel opposite said removed portion extruded to form a circular opening, a pair of annular members, one secured to one side of said extruded legs, and the other secured to the opposite side of said extruded legs, a cylinder closed at one end and open at the other and having a circular flange located intermediate its ends and extending from the periphery thereof, said cylinder being disposed in said circular opening in said channel with the open end thereof in abutting relation with one of said annular members and said circular flange in abutting relation with the other of said annular members, means securing said circular flange to the other of said annular members, and a piston slidably operable in said cylinder and having a piston rod extending through said one annular member.

10. A brake rigging for a multi-wheel type of railway vehicle truck having a longitudinal axis and a transverse axis, said rigging comprising two hollow brake beams extending transversely of the truck each in substantially parallel relation to said transverse axis, a pair of plates each having a central opening therein and being rigidly secured to the outside face of one of said brake beams in spaced relation symmetrically on opposite sides of the longitudinal axis of the truck, a pair of brake cylinder casings, each brake cylinder casing being open at one end and closed at the other end and having a flange for abutting contact with one of said plates, means removably securing each of said casings to a corresponding one of said plates, a piston slidably disposed in each of said casings and cooperating with said closed end of said casing to form a pressure chamber therebetween, each of said pistons having a piston rod secured thereto and extending through the central opening in one of said plates and the said hollow brake beam carrying said plate, the free end of said rod being anchored to said other brake beam at points spaced therealong in correspondence to the spaced relation of the plates on said one brake beam, a passageway in each of said casings, said passageway opening at one end into the pressure chamber in said casing and at the other end at that face of the flange of said casing that is in abutting contact with one of said plates, a port in each of said plates, each of said ports registering with the said other end of said passageway in that casing having its flange in abutting contact with the respective plate, and conduit means carried by said one brake beam and having two branches each of which is connected to a corresponding one of said ports, each said passageway, port, and a branch of said conduit means cooperating with the other said passageway, port, and branch of said conduit means to provide means through which fluid at the same pressure may be supplied simultaneously to both of said pressure chambers to cause said brake cylinder casings and said pistons to move in opposite directions relative to said truck to effect corresponding movement of said brake beams away from each other.

11. A brake rigging for a four-wheel type of railway vehicle truck having a transverse axis and a longitudinal axis perpendicular thereto, which brake rigging comprises the combination of two brake beams extending in spaced substantially parallel relation to the transverse axis of the car truck, and guidably supported at the ends thereof on the truck for bodily movement longitudinally of the truck, brake shoe means carried inboard of and adjacent to each guidably supported end of each brake beam for causing a braking effect to be exerted on a corresponding wheel of the truck, a pair of brake cylinder casings each of which is secured to one of said brake beams inboard of one of said brake shoe means on opposite sides of and in symmetrically spaced relation to the longitudinal axis of the truck along the length of said one brake beam, a piston operable in each said brake cylinder casings and having a piston rod anchored to the other of said brake beams at corresponding opposite sides of and in symmetrically spaced relation to the longitudinal axis of the truck, each of said brake cylinder casings having a pressure chamber to which fluid under pressure may be supplied, and conduit means through which to supply fluid at the same pressure simutaneously to both said pressure chambers to cause each said brake cylinder casing and each said piston to move in opposite directions relative to said truck to effect corresponding movement of said brake beams away from each other.

12. A brake rigging for a four-wheel type of railway car truck as claimed in the preceding claim 11, further characterized by a pair of levers each pivotally connected to a corresponding one of said piston rods, a pair of links each anchoring one end of a corresponding one of said levers to said one brake beam, and means for manually applying force to move the opposite ends of said levers thereby to cause relative movement of said pistons and brake cylinder casings to correspondingly move the brake beams to effect braking contact of said brake shoe means with the wheels of the truck.

13. A brake rigging for a multi-wheel type of railway vehicle truck having a longitudinal axis and a transverse axis, said brake rigging comprising two brake beams extending transversely of the truck and on opposite sides of the transverse axis in substantially parallel relation thereto, each brake beam being identically constructed with an annular plate arranged to one side of a point midway of the length of the beam such that in the installed positions of the beams the annular plates are disposed symmetrically on opposite sides of the longitudinal axis of the truck, a pair of brake cylinder casings, each brake cylinder casing being open at one end and closed at the other end and having a flange for abutting contact with a corresponding one of said annular plates, means removably securing each of said casings to its corresponding annular plate so that said casings extend respectively in opposite directions from the annular plates, a piston slidably disposed in each of said casings and cooperating with said closed end of said casing to form a pressure chamber therebetween, each of said pistons having a piston rod secured thereto, the free end of each said piston rod being anchored to the other brake beam at a point spaced therealong from the longitudinal axis of the truck in correspondence to the spaced relation of the annular plate from said longitudinal axis, a passageway in each of said casings, said passageway opening at one end into the pressure chamber in said casing and at the other end at that face of the flange of said casing that is in abutting contact with the annular plate to which said casing is secured, a port through each of said annular plates, each of said ports registering with the said other end of said passageway in that casing having its flange in abutting contact with the respective annular plate, and conduit means carried by a brake beam and having two branches each of which is connected to a corresponding one of said ports, each said passageway, port and branch of said conduit means cooperating with the other passageway, port, and branch of said conduit means to provide means through which fluid at the same pressure may be supplied simultaneously to both of said pressure chambers

to cause said brake cylinder casings and said pistons to move in opposite directions relative to said truck to effect corresponding movement of said brake beams away from each other.

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