May 6, 1924. 1,493,192

G. B. DOREY

FRICTION DRAFT RIGGING

Filed Jan. 9, 1922

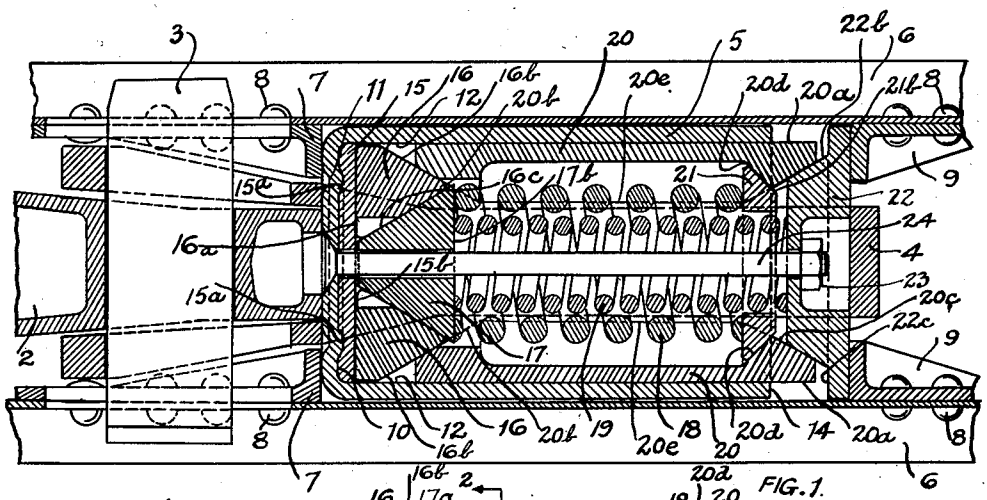


FIG. 1.

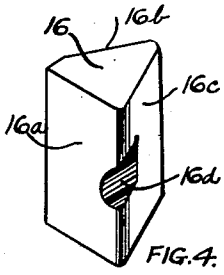


FIG. 4.

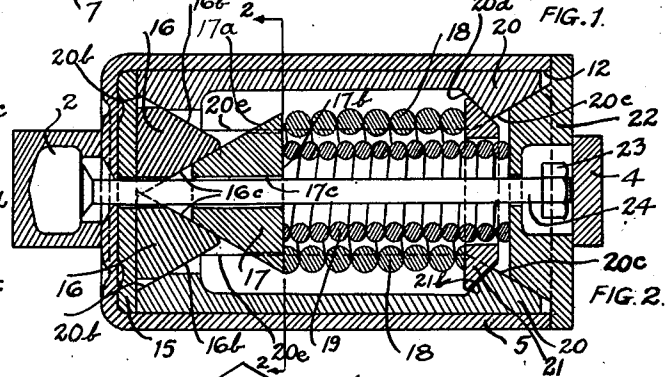


FIG. 2.

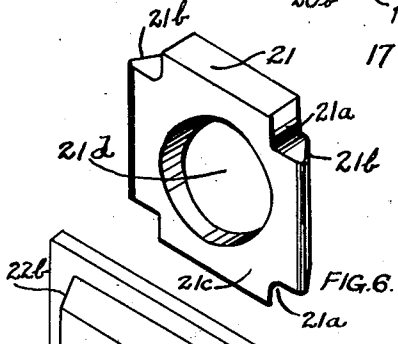


FIG. 6.

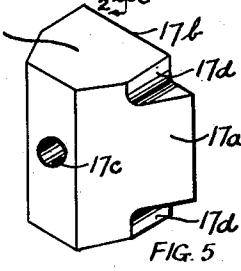


FIG. 5

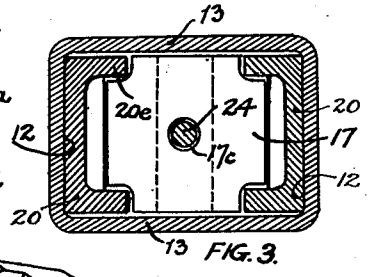


FIG. 3.

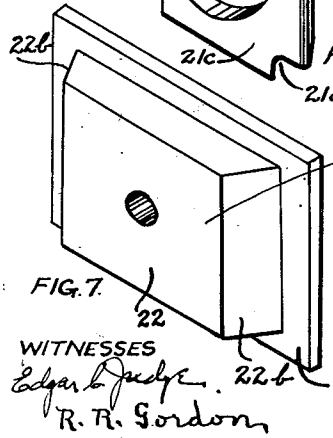


FIG. 7.

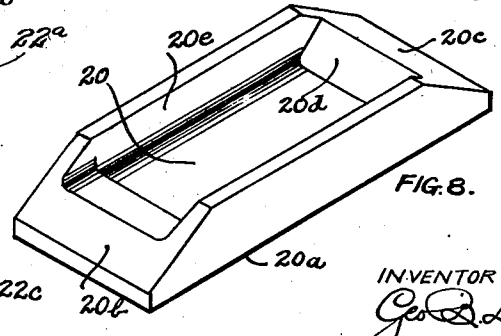


FIG. 8.

WITNESSES

Edgar Judge.

R. R. Gordon

INVENTOR

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UNITED STATES PATENT OFFICE.

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FRICTION DRAFT RIGGING.

Application filed January 9, 1922. Serial No. 528,010. REISSUED

To all whom it may concern:

Be it known that I, GEORGE BINET DOREY, a subject of the King of Great Britain, and residing in the city of Montreal, Province of Quebec, Dominion of Canada, have invented certain new and useful Improvements in Friction Draft Rigging, and do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in frictional draft riggings as applied to railway cars and the like and has particular reference to that type wherein casings are used in connection with wedging elements to secure high resistance and great cushioning power.

One of the main objects of my invention is to provide a draft rigging wherein friction shoes engage the side walls of a casing and are movable relatively thereto.

Another object of my invention is to dispose the various frictional elements in the casing in order that those which have the greatest transverse thrust will be in the bottom of the casing thereby securing the full benefit of the cohesion between the end walls and side walls of the casing to prevent rupture of this member.

A further object of the invention is to provide a removable wear plate between the casing end wall and the friction element.

It is also an object of the present invention to provide a friction draft rigging having a casing with friction shoes in engagement with the side walls thereof and to provide means whereby these shoes will function in unison. Hitherto when friction shoes which have been widely separated from each other have been employed in this manner there has been a tendency for one shoe to move past the other and so impair the efficiency of the rigging. In my invention this deficiency has been overcome by providing at one end of the shoes noncontractible members which extend from one shoe to the other and exert longitudinal as well as transverse pressure thereon.

Provision has also been made to ensure the certain release of the frictional elements after compression.

With these ends in view and other details of novelty such as will be more particularly pointed out hereinafter, my invention resides in the peculiar construction, arrangements and combinations of parts as hereinafter set forth.

For a fuller comprehension of my invention reference must be had to the accompanying drawings wherein like references indicate like parts.

In the drawings forming a part of this specification, Fig. 1 is a horizontal, longitudinal, sectional view of a railway draft rigging, showing my improvements in connection therewith.

Figure 2 is a horizontal, longitudinal sectional view of the rigging showing the same in the fully compressed position with the follower member abutting on the casing.

Figure 3 is a transverse sectional view of the rigging taken on line 2—2 of Figure 2.

Figure 4 is a perspective view of one of the transversely and longitudinally movable members known as wedge blocks.

Figure 5 is a perspective view of the central wedge block.

Figure 6 is a perspective view of the combined spring seat and spreader member.

Figure 7 is a perspective view of the follower member.

Figure 8 is a perspective view of one of the friction shoes.

In the drawings 2 represents the drawbar of the coupler connected by means of key 3 to the yoke 4 in the usual manner, the yoke embracing casing 5 and the whole being located between the center sills 6—6. In the illustration the casing is formed to abut against front stops 7 secured to the center sills by means of rivets 8, rear stops 9 also secured to the center sills in like manner constitute draft gear abutments under buffing strains.

The casing 5 is preferably formed of rectangular section with one end closed and the other end open, the bottom wall 10 being reinforced with a corrugation 11, extending in the form of a circle and providing a very rigid member for the purpose of sustaining

the strain due to coupler shocks. A friction plate 15 is fitted in the bottom of the casing and is formed with a recessed portion corresponding to the corrugation in the casing and designated as 15^a while the outer surface of the plate as at 15^b is made to act as a friction surface. In this manner as the plate wears away it may be readily renewed without the necessity of discarding the entire casing. The side walls of the casing constitute friction surfaces as at 12 and register with surfaces of the friction shoes in a manner to be hereinafter explained while the top and bottom walls 13 serve as ties to prevent rupture of the casing incidental to the transverse thrust caused by the frictional elements. The outer edge of the casing walls as at 14 serves as an abutment for the follower member when the gear is fully compressed thereby relieving the frictional elements of undue strain. The surface 15^b of the friction plate 15 registers with surfaces 16^a of the wedge blocks 16, the latter members are each formed with three bearing surfaces as shown in Figure 4. The wedge surfaces 16^c being adapted to co-act with wedge surfaces 17^a of the central wedge member 17 which is disposed between the wedge blocks 16 and adapted to be moved in a longitudinal, direction. The surface 17^b forms an abutment for the outer spring 18 and also for the inner spring 19. A hole 17^c is provided in the central wedge member for the passage of the bolt 24 which extends longitudinally throughout the gear. A recess is also provided in the wedge blocks 16 as shown at 16^d for the purpose of providing clearance for the central bolt when the wedge blocks have moved transversely towards each other as shown in Figure 2.

Friction shoes 20 are disposed on each side of the casing 5 within this member and surfaces 20^a of these shoes co-act with surfaces 12 of the casing. The inner ends of the shoes are formed with inclined surfaces 20^b adapted to register with surfaces 16^b of the wedge blocks 16. The outer ends of the shoes are formed with oppositely inclined surfaces 20^c and 20^d which are connected with the other end of the shoes by means of flanges 20^e serving to re-inforce the shoes against bending. The central wedge blocks 17 have the corners recessed as at 17^d for the purpose of providing clearance at the flanged portion of the shoes.

A spring seat 21 extending from shoe to shoe is formed with wedging surfaces 21^b adapted to register with similarly inclined surfaces of the shoes as at 20^d. The corners of the spring seat are recessed to provide clearance for the flanged portion of the shoes, such recesses being designated as 21^a. The flat surface 21^c forms an abutment for the outer spring 18 while the inner spring 19 extends longitudinally through the member 21 passing through the hole 21^d formed therein for this purpose and abuts against surface 22^a of the follower member 22. The follower member is preferably formed to act as a spreader through the agency of the sloping surfaces 22^b which register with the inclined surfaces 20^c of the shoes. The surface 22^c is preferably made flat to form a solid abutment on the casing edge at 14. A hollowed out portion is formed in the follower member for the reception of the nut 23 whereby the bolt 24 serves to retain the gear in its assembled relation.

The operation of the draft rigging takes place as follows:—In draft or buffing strains the draft rigging is compressed by the approach of the follower member 22 to the casing 5. This movement causes the friction shoes 20 to be moved inwardly into the casing and by reason of the contact between the inclined walls 20^b and the wedge blocks 16, the latter members will be moved transversely towards each other displacing the central wedge member 17, in a direction opposite to the movement of the shoes, thereby compressing the springs from the closed end of the casing. The transverse reaction due to this wedging action forces the shoes in close frictional engagement with the casing walls which action is further augmented by the follower member 22 and spring seat 21 inasmuch as both of these members are formed with inclined bearing surfaces which register with similarly inclined bearing surfaces on the shoes.

As the shoes move inwardly in the casing the spring seat 21 moves in unison therewith thereby compressing the spring in the same ratio and consequently it will be seen that the spring is compressed from both ends of the gear at the same time. The outward thrust is always maintained on the shoes by this outer spring 18 inasmuch as there is always a certain amount of initial compression in the spring which serves to give great shock absorbing capacity from the very start of the compression movement. This outward thrust is also exerted by the wedging action of the follower member 22 through the medium of the inclined walls 22^b bearing on the inclined walls 20^c of the shoes.

On the maximum compression being reached, the follower member abuts on the edge 12 of the casing 5 thereby greatly relieving the friction elements of excessive strain.

With the introduction of large bearing areas in draft riggings it has become a matter of frequent occurrence for some of the members to bind owing to some of the various elements having varying degrees of roughness in the friction surfaces and so permit the other frictional elements to move past the others. In this particular inven-

tion provision has been made to guard against such a possibility by guiding the central wedging member and preventing any sidewise movement thereof. Any unusual displacement of any of the parts would immediately be reflected by a sidewise movement of this member and consequently special provision has been made to cause it to travel at all times in a straight line, by having the guide flanges 20[c] of the shoes fitting in the corners of the wedge member at 17[d] and also through the medium of bolt 24 which passing through the entire mechanism serves to centralize the member 17.

Special provision has also been made to cause the shoes to move in unison by exerting pressure thereon at three distinct places viz; at the inner end by the compressible mechanism and at the outer end by the opposed wedging surfaces of the spring seat and the follower member.

On release of the mechanism the inner spring 19 moves the follower member out of engagement with the shoes and at the same time the pressure of the outer spring exerted through the spring seat moves the shoes bodily forward; during this action the compressible mechanism at the other end of the casing is also expanded outwardly reacting against the inclined surfaces of the shoes and thereby assisting the return movement of the parts.

Although I have shown herein and described what I now consider to be the preferred embodiment of the invention, the same is merely illustrative and I contemplate all changes and modifications which come within the scope of the appended claims.

What I now claim is as follows:

1. In a friction shock absorbing mechanism, the combination with a friction shell; of longitudinally disposed friction shoes co-acting with said shell; wedge pressure transmitting means co-acting with the opposite ends of said shoes, said wedge pressure transmitting means at one end of said shoes including a pair of wedge members co-acting respectively with the inner and outer wedge faces at the corresponding ends of said shoes; and a spring resistance interposed between the wedge pressure transmitting means at one end of the mechanism and the wedge member co-acting with the inner faces of the shoes.

2. In a friction shock absorbing mechanism, the combination with a friction shell; of longitudinally disposed friction shoes co-acting with said shell, each of said shoes having an outer wedge face at one end thereof, outer and inner wedge faces at the opposite end thereof; wedge pressure transmitting means at opposite ends of the mechanism, including wedge members co-acting respectively with the outer and inner wedge faces of said shoes; and a spring resistance co-acting with said wedge pressure transmitting means.

3. In a friction shock absorbing mechanism, the combination with a shell; of longitudinally disposed friction elements co-acting with said shell, each of said elements being provided with outer wedge faces at the opposite ends thereof, each of said elements also having an inner wedge face thereon at one end thereof; wedge pressure transmitting means at opposite ends of the mechanism co-acting respectively with the outer faces of each of said shoes; a wedge member co-acting with the inner faces of said shoes; and a spring resistance interposed between the wedge pressure transmitting means at one end of the mechanism and the wedge member.

4. In a friction shock absorbing mechanism, the combination with a friction shell; of longitudinally disposed friction elements co-acting with said shell, each of said elements being provided with outer wedge faces at the opposite ends thereof, each of said elements also having an inner wedge face at one end thereof; a pair of wedge blocks at one end of the mechanism having wedge faces co-acting with the outer wedge faces at one end of said shoes; a wedge member co-acting with the outer wedge faces at the other end of said shoes; a spring follower having wedge faces co-acting with said wedge blocks; a second spring follower having wedge faces co-acting with the inner wedge faces of said shoes; a spring resistance element interposed between said followers; and a second spring resistance element interposed between said wedge member and one of said followers.

5. In a friction draft rigging the combination with a casing including an end wall having a raised portion formed therein; of a plate adapted to present on one side a recessed portion to fit over the said raised portion of the casing and presenting on the opposite side a bearing surface for frictional elements.

6. In a friction shock absorbing mechanism, the combination with a compressible mechanism including a central wedge member; of friction shoes adapted to co-act upon said compressible mechanism and displace the central wedge member, said shoes having flanges thereon and said wedge member having the corners recessed to provide clearance for the flanges of said shoes.

7. In a friction shock absorbing mechanism, the combination with a casing; of a spring resistance comprising a plurality of springs, friction shoes co-acting with said casing; and oppositely disposed non-compressible wedging members at one end of said shoes operating to force the shoes

outwardly against the casing walls, one of said wedging members being adapted to form an abutment for one of said springs and operating to resist inward movement of the shoes, said member having an opening formed therein permitting another of said springs to extend outwardly therethrough and resist inward movement of the other wedging member.

GEORGE BINET DOREY.

Witnesses:
EDGAR G. DOEBAL,
SYDNEY LANGLOIS.