This invention relates to rubber draft gears for railroad draft rigging.

It is a main object of the invention to provide a unitary rubber draft gear for freight service.

Another object of the invention is to provide a two-section casing for enclosing the rubber units of a draft gear that is equipped with means for insuring that the casing sections will be properly aligned at all times.

Further objects of the invention not specifically mentioned here will be apparent from the detailed description and claims which follow, reference being had to the accompanying drawings in which a preferred embodiment of the invention is shown by way of example and in which:

Figure 1 is a plan view, partly in section, of the gear installed in the yoke and pocket of a railroad vehicle;

Figure 2 is a plan view of the gear prepared for slipping and installation in the yoke of a draft rigging;

Figure 3 is a front end view of the gear shown in Figure 2.

Figure 4 is a plan view through the gear, partly in section, along the line 4–4 of Figure 3, looking in the direction of the arrows;

Figure 5 is an end elevational view of the aligning means;

Figure 6 is a plan view of the aligning means;

Figure 7 is a fragmentary view of the resilient unit, partly in section; and

Figure 8 is an end elevational view of the separators.

The present invention seeks to provide a rubber freight gear which will fit into the AAR standard pocket and yoke of a railroad draft rigging, and to provide in that gear means for definitely maintaining proper alignment under all conditions.

In its preferred form, the gear of the present invention comprises a two-section metallic casing of substantially rectangular cross section, the rear section of which is in the form of a deep cup and the front section a relatively shallow coverlike member. Within the casing is a column of rubber units of essentially known design and separators for dividing the column into groups of several units each, which separators are equipped with flanges that engage the walls of the casing to maintain the units properly positioned therein in known manner.

With the gear installed in the pocket and yoke of a draft rigging, the rear casing seats against the lugs that define the rear end of the pocket and the front casing seats against the usual front follower which in turn seats against the lugs defining the front end of the pocket. The rear end of the coupling shank abuts against the front follower and the yoke abuts against the rear wall of the rear casing.

In draft, the coupler moves forwardly, carrying with it the yoke which moves the rear section of the casing away from the lugs, thereby to compress the column against the front section of the casing which at this time is securely held by the engagement of the front follower with the front lugs. In buff, the action is reversed. The rear casing is firmly seated against the rear lugs of the pocket and the shank forces the front follower and front casing rearwardly to compress the column.

In vehicles in which the front and rear lugs are in proper position, the front follower and rear wall of the rear casing will both be disposed at right angles to the longitudinal median line of the vehicle. Under these conditions the draft gear will be centered upon said line and when the casing sections are moved, either in buff or in draft, there will be but little or no tendency for the gear to buckle or move out of alignment. In vehicles in which the lugs are not properly positioned, the front follower or the rear wall of the casing may not be truly at right angles to the median line of the vehicle and the tendency of the gear to buckle will be increased thereby. The aligning means of the present invention counteracts this tendency to buckle and as a consequence the gear is maintained in proper alignment even under adverse conditions.

Referring now to the drawings in more detail, in its preferred form the gear of the present invention comprises a front casing section A, a rear casing section B aligned therewith and separated thereof, which casing is adapted to fit within the yoke C of the draft rigging. The rear wall of the rear casing section B abuts against the rear lugs of the pocket and the front wall of casing section A abuts against the front follower D in the usual manner. The shank E of the coupler engages the front follower D. A key F projects through the shank E of the coupler and the yoke to couple the two together in the usual manner.

The front casing section A comprises a front wall 10 which is generally rectangular with chamfered corners, from the edges of which wall a narrow integral flange 11 projects rearwardly. As will be seen best in Figure 3, the flange 11 has top and bottom horizontal portions 12 and 13, vertical side sections 14 and 15, and diagonal corner sections 16 which extend between the top and bottom and side sections of the flange. Ears 17 project outwardly from the diagonal sections 16 of the flange and are perforated to receive bolts, as will presently appear. The rear face of the front wall 10 contains sockets 18 by which the rubber units are aligned with respect to the casing in known manner.

The rear casing B consists of a rectangular rear wall 20 and forwardly extending walls 21 integral therewith. The walls 21 of the rear casing have top, bottom and side sections, corresponding to the respective sections of the front casing, which former sections are joined by corner sections 22 corresponding in configuration to the corner section 16 of the front casing. Ears 23 project outwardly from the diagonal sections 22 and are perforated to receive bolts, as will presently appear. The rear wall 20 of the rear casing contains sockets 24 by which the units of the column are aligned with respect to the casing in known manner.

The resilient column consists of rubber pads G of known design, as will be seen best in Figure 7, each of which pads G has a first metallic plate 30 and a second metallic plate 31, to the adjacent faces of which plates rubber 32 is bonded. Plates 30 and the rubber bonded to the same contain bosses 33 which project out of the outer face of the plate, and plates 31 and the rubber adjacent thereto contain sockets 34. The bosses 33 of the rearmost unit G engage in the sockets 24 in the rear wall 20 to position the unit with respect to that wall. The bosses 33 of the adjacent unit register with the sockets 34 in the second plate 31 of the rear unit to align the units with respect to each other in the usual manner.

It will be noted that the units in the column G are re-
versed and that the bosses 33 extend outwardly from both ends of the column.

As shown, the rubber column consists of sixteen (16) pads which are divided into groups by separators H, each of which consists of a weible plate 40 located between the adjacent units G and flanges 41 engaging the vertical walls of the casing and flanges 42 engaging the top and bottom walls thereof. It will be noted that the intersecting flanges upon the separators H are of such width that when the column is compressed to its maximum extent the flanges are still spaced apart; that is to say, the column does not go solid within itself.

The units G are octagonal in shape to fit in the casing with a minimum of lost space and, as will be seen, best in Figure 8, the separator plates 40 correspond in shape and contain short flanges 44 that project from the plate opposite to flanges 41 and 42 and engage diagonal sections 22 of the walls of casing B.

In order to obtain great strength with a minimum thickness of metal, separators H are preferably forged from steel plates.

The aligning means I contain a platelike web 45 from the edges of which a continuous flange 46 extends in both directions. Flange 46 telescopes into the front and rear sections of the casing and has substantial engagement with the walls thereof for a purpose which will presently appear. As will be seen best in Figures 5 and 6, the flanges 46 are preferably formed in two sections from steel plates, which sections are welded to the plate 45 as indicated at 47. Such construction produces great strength with a minimum thickness of metal in the aligning means.

In assembling the gear, the rear casing B is placed with its rear wall 20 lowermost upon a suitable support, and the column of units G and separators H are built up therein with the uppermost units G extending beyond the open end of the rear casing member B. The aligning means I is then put in place over the exposed end of the column and the remaining units G placed above it, after which the front section A is placed over the latter units. The stack thus formed and consisting of pads, separators, aligning means and front casing, extends a considerable distance above the upper end of the casing B. Flanges 46 on the aligning means do not extend into the flanges 11 on casing A or into the walls 21 of casing B at this stage of assembly.

Pressure is then applied to compress the stack to the overall length shown in Figure 2, which length is sufficiently short to permit insertion of the gear in the yoke C together with the front follower D. Bolts 49 are then projected through the openings in the ears 17 and 23 and secured to hold the casing in this compressed condition during shipment and installation in the yoke. During this compression of the stack, flanges 46 are telescoped in the casings A and B, as shown in Figure 4, where they have sliding fit to maintain alignment of the casings. The compression of the units G builds up in the column the relatively high initial resistance desirable in freight gears.

In operation, forces acting on the drawbar in draft are transmitted through the key F to the yoke C which moves the rear casing B forwardly off of the rear lugs of the pocket, thereby compressing the column. Any tendency of the casing members A and B to become misaligned as a result of this operation are resisted by the aligning means I. Forces acting on the coupler in buffer C are transmitted through the shank E to the front follower D, moving that follower rearwardly off of the front lugs, the follower moving the front casing section A rearwardly to compress the column. Here again, any tendency of the casing members to become misaligned is resisted by the engagement of the aligning means I with the walls of the casing.

From the foregoing it will be seen that the draft gear for freight service of the present invention is a unitary structure having high initial resistance and high capacity in foot pounds of work done by the gear. The aligning means of the present invention maintains the gear properly aligned even though the pocket defining lugs of the vehicle are out of line.

Having thus complied with the statutes and shown and described a preferred embodiment of my invention, what I consider new and desire to have protected by Letters Patent is pointed out in the appended claims.

I claim:

1. A rubber gear for railway draft rigging comprising: a cuplike generally rectangular metallic rear casing consisting of a planar rear wall with integral side walls extending forwardly therefrom, said side walls being joined together by integral diagonally disposed corner walls, said casing having its greatest dimension from said rear wall to its open end; a generally rectangular metallic front casing spaced from and aligned with said rear casing and consisting of a front wall and integral narrow flanges extending rearwardly therefrom said casings being capable of relative movements each with respect to the other; a column of metal-faced rubber units disposed within said casing sections and engaging said front and rear casings consisting of a front wall and side walls projecting rearwardly therefrom a distance less than the width of the front wall, said casings being disposed with their open ends adjacent and being capable of relative movement each with respect to the other; a plurality of metal-faced rubber units disposed within said column and extending between the rear wall of the rear casing and the front wall of the front casing; an aligning means consisting of a platelike web disposed between the metal faces of adjacent ones of said units; and a flange extending in both directions from the edges of said web, said flange bridging the gap between said casings and being telescoped into both casings and having substantial contact with the sides walls on both casings to maintain the same in alignment in the rigging during relative movements of the casings.

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