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G. W. COPE ET AL

3,017,038

DRAFT RIGGING

Filed May 8, 1959

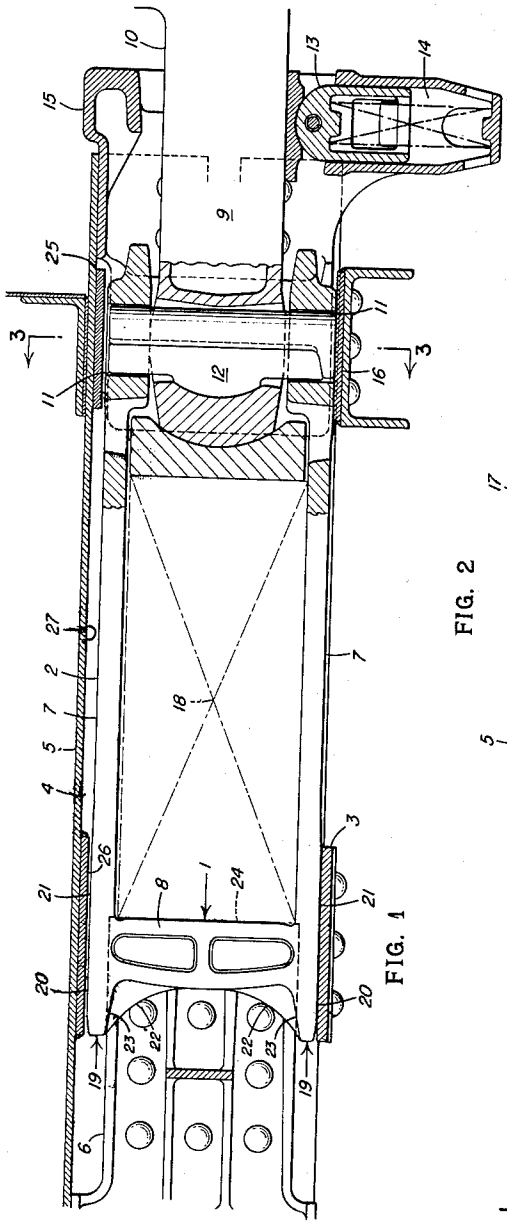


FIG. 1

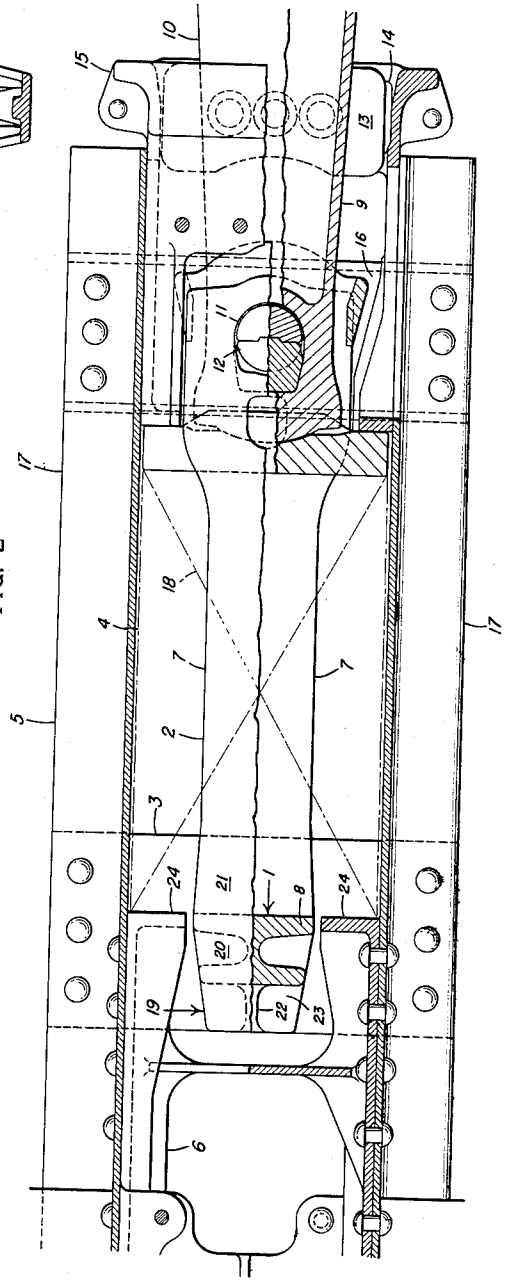


FIG. 2

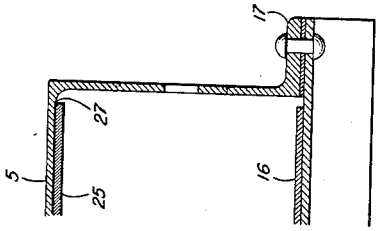


FIG. 3

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DRAFT RIGGING

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This invention relates to railway draft rigging and has for its primary object to provide an improved yoke and support for use with a universally angleable coupler.

While in the years in which it has been in service, the A.A.R. Alternate Standard Type "F" coupler has compiled an enviable record, it would be illogical to expect a coupler differing in so many respects from its predecessor for freight applications, the A.A.R. Type "E" coupler, to operate without fault in the form in which it was first introduced. Its principal advantage over its predecessor, its ability to angle vertically as well as horizontally and so be intercoupled substantially against movement to a mating coupler, in turn has enabled the coupler to transmit to the associated vertical yoke vertical forces for which it has been practically impossible to compensate. As a consequence, the yoke, instead of riding level on its supports in moving in response to forces transmitted to it by the coupler, under certain service conditions, will tilt or cant vertically, particularly on its rear support, causing excessive wear on both that support and the roof of the center sill above the universal connection between the yoke and coupler. While in present applications of the "F" coupler, direct wear of the roof of the center sill above the yoke and coupler connection is prevented by an interposed wear plate, it has now been found possible markedly to reduce the unbalance of the vertical forces from the coupler and the consequent wear without interfering with the desired operation of the coupler by a modification involving only a change in the butt end of the yoke and a repositioning of the latter's rear support.

It therefore is an object of the present invention to provide in draft rigging for a Type "F" or like universally angleable coupler a vertical yoke modified in its butt end and are positioned rear support for the yoke, whereby vertical tilting of the yoke under forces transmitted to it by the coupler is markedly reduced.

Another object of the invention is to provide an improved vertical yoke for a Type "F" or like universally angleable coupler, the undersurface of which on which it rides is extended rearwardly beyond its rear wall, thereby enabling the rear yoke support to be shifted rearwardly from its conventional position forwardly of the rear wall to a position in which it normally underlies that wall.

An additional object of the invention is to provide an improved reversible yoke for a Type "F" or like universally angleable coupler which has its butt end so constructed as to enable the weight of the yoke to be substantially equally distributed between its front and rear supports without interfering with the yoke's reversibility.

Other objects and advantages of the invention will appear hereinafter in the detailed description, be particularly pointed out in the appended claims and be illustrated in the accompanying drawings, in which:

FIGURE 1 is a side elevational view of the improved draft rigging of the present invention with portions broken away and shown in section to more clearly illustrate certain of the details of construction;

FIGURE 2 is a plan view of the structure of FIGURE 1 with portions broken away and shown in section

to more clearly illustrate certain of the details of construction; and

FIGURE 3 is a vertical sectional view taken along the lines 3—3 of FIGURE 1.

Referring now in detail to the drawings, in which like reference characters designate like parts, the improved draft rigging of the present invention is of particular utility when applied to a universally angleable coupler such as the A.A.R. Alternate Standard Type "F," and has been so illustrated as exemplary of the invention.

The improvement residing in the construction of the butt end 1 of the vertical yoke 2 and the disposition relative thereto of the rear yoke support or cross tie 3, a brief description of the structure associated therewith in the illustrated embodiment will suffice for an understanding of the invention. Conventional except for its butt end 1, the yoke 2 fits in a pocket 4 in a center sill 5 forwardly of a combined backstop and center filler 6 and has a pair of vertically spaced, longitudinally extending arms or straps 7 extending forwardly from and connected by a vertically directed rear wall 8. In the manner usual in such installations, the arms 7 straddle the shank 9 of a Type "F" or other universally angleable coupler 10 and have vertically aligned apertures 11 for the reception of a pivot or yoke pin 12 by which the coupler and yoke are connected for relative universal angling. Forwardly of the pivot pin 12, the shank 9 of the coupler 10 is supported on a resilient coupler carrier 13 pocketed in an upwardly opening pocket 14 formed in a striking casting 15. The yoke 2 is supported beneath the pivot pin 12 on a suitable front support or cross tie 16 disposed below the front portion of the yoke pocket 4, that shown extending transversely between and being secured by riveting to the bottom flanges 17 of the center sill 5.

In the usual installation, the yoke would have a rearwardly convex butt end of which the midportion of the rear wall 8 would be the rear extremity. In turn, the rear support which, jointly with the front support 16, supports the yoke 2 would be disposed considerably forwardly of the rear wall 8 and support the bulk of the weight of the yoke and the cushioning mechanism 18 contained in the yoke. Instead, in accordance with this invention, at least the lower and, for reversibility, both of the yoke arms 7 are extended or projected rearwardly by a pair of vertically spaced rearward extensions or projections 19 projecting or extending rearwardly beyond the rear wall 8 and each preferably in the form of a reinforced horizontally disposed flange aligned longitudinally with one of the arms. The projections 19 have oppositely facing substantially planar and horizontal outer faces or surfaces 20 which extend or project rearwardly beyond the rear wall 8 substantially to their rear extremities so as to be substantially coterminous therewith. Substantially parallel, each of the faces 20 is coplanar with and forms a rearward extension of a corresponding outer face or surface 21 of or on at least the contiguous or adjoining portion of the related arm.

The rear support 3, while extending across the center sill 5 beneath the yoke pocket 4 and secured to the undersides of the sill's bottom flanges 17, as in the conventional installation, is moved or shifted rearwardly of the sill from its conventional position so as to underlie and be substantially centered vertically on the rear wall 8 in the normal position of the yoke 2. So positioned or disposed, the rear support 3 is slidably engaged by the confronting outer or under faces 20 and 21 of the lower arm 7 and its rearward extension 19 for support of the butt end 1 of the yoke and, since the rear support and the front support 16 are now substantially equidistant from the center of gravity of the yoke and its cushioning

mechanism 18, the weight of the latter is substantially equally distributed between the supports.

Rearwardly tapered horizontally and each preferably reinforced by a vertical midrib 22 extending outwardly to its inner face 23 from the rear wall 8, the rearward extensions 19 not only permit the rearward shifting of the rear support 3, but also are adapted to guide the yoke between the rear stop lugs 24 on the combined backstop and center filler, this being of especial advantage if the cushioning mechanism 18 is such that the travel of the yoke in either direction will exceed the usual 2½ inches.

Although the redistribution of the weight of the yoke 2 and cushioning mechanism 18 substantially equally between the front and rear supports 16 and 3, made possible by this invention, alone will suffice markedly to reduce the vertical tilting, canting or cocking of the yoke caused in the conventional installation by the unbalanced vertical forces transmitted to the yoke by the coupler, the possible extent of any tilting that may still occur may be limited by restricting the vertical dimension of the pocket 4 in the center sill 5 and at the same time protecting the latter from wear by front and rear pads or wear plates 25 and 26 vertically aligned respectively with the front and rear supports 16 and 3, and each secured, as by welding, to the roof 27 of the center sill. With or without the pads 25 and 26, the redistribution of the weight of the yoke 2 and cushioning mechanism 18 has the further advantage, incident to its restraint on tilting of the yoke, of correspondingly restraining upward and downward creep of the pivot pin 12 relative to the yoke arms 7 on vertical angling of the coupler 10 with corresponding reduction in the wear on the pin and arms.

From the above detailed description, it will be apparent that there has been provided an improvement in draft rigging for universally angleable couplers by which the effect of the otherwise unbalanced vertical forces transmitted by the coupler to the yoke are markedly reduced without detriment to the operation of the coupler. It should be understood that the described and disclosed embodiment is merely exemplary of the invention and that all modifications are intended to be included which do not depart from either the spirit of the invention or the scope of the appended claims.

Having described our invention, we claim:

1. In draft rigging, the combination with a center sill having a yoke pocket, a coupler and a front support secured to said sill and underlying a front portion of said pocket, of a vertical yoke connected to said coupler and supported below its connection thereto on said front support, said yoke having a pair of vertically spaced longitudinally extending arms connected rearwardly by a rear wall, a lower of said arms extending rearwardly beyond said rear wall, a substantially planar underface on said lower arm and extending both rearwardly and forwardly beyond said rear wall, and a rear support secured to and extending across said sill beneath said pocket and cooperating with said front support for supporting said yoke, said rear support being engaged by said underface and disposed longitudinally of said center sill normally to underlie said rear wall.

2. In draft rigging, the combination with a center sill having a yoke pocket, a coupler and a front support secured to said sill and underlying a front portion of said pocket, of a vertical yoke connected to said coupler and supported below its connection thereto on said front support, said yoke having a pair of vertically spaced longitudinally extending arms connected rearwardly by a rear wall, a rearward extension on said yoke in longitudinal alignment with a lower of said arms and projecting rearwardly beyond said rear wall, said extension having a horizontal underface substantially coterminous therewith and coplanar with and forming a rearward extension of an undersurface on said lower arm, and a rear support secured to and extending across said sill beneath said pocket and cooperating with said front support for supporting said yoke, said rear support being engaged by said underfaces and disposed longitudinally of said center sill normally to underlie said rear wall.

3. In draft rigging, the combination with a center sill having a yoke pocket, a coupler and a front support secured to said sill and underlying a front portion of said pocket, of a vertical yoke connected to said coupler and supported below its connection thereto on said front support, said yoke having a pair of vertically spaced longitudinally extending arms connected rearwardly by a rear wall, a pair of vertically spaced rearward extensions on said yoke projecting rearwardly beyond said rear wall and each having an outer face substantially coterminous therewith and coplanar with and forming a rearward extension of an outer face on one of said arms, and a rear support secured to and extending across said sill beneath said pocket and normally underlying said rear wall, said rear support being engaged by the outer face on a lower of said arms and its rearward extension for supporting a rear end of said yoke.

4. In draft rigging, a vertical yoke connectable to a coupler, said yoke having a pair of vertically spaced longitudinally extending arms connectable forwardly to said coupler and connected rearwardly by a vertically directed rear wall, and a pair of vertically spaced rearward extensions on said yoke projecting rearwardly beyond said rear wall and each longitudinally aligned with one of said arms, each of said extensions having a substantially horizontal outer face extending substantially coterminously therewith rearwardly beyond said rear wall and forming a rearward extension of an outer face on one of said arms.

5. In draft rigging, a vertical yoke connectable to a coupler, said yoke having a pair of vertically spaced longitudinally extending arms connectable forwardly to said coupler and connected rearwardly by a vertically directed rear wall, a pair of vertically spaced horizontally directed flanges on said yoke and projecting rearwardly beyond said rear wall, a vertically directed reinforcing rib between each projection and said wall, and a substantially horizontal outer face on each of said projections and extending substantially coterminously therewith rearwardly beyond said rear wall, each of said outer faces being coplanar with and forming a rearward extension of an outer face on the related of said arms.

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