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Radwill

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[54] RAILWAY COUPLER YOKE

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[52] **U.S. Cl.** .....**213/67 R,** 213/69

[51] **Int. Cl.** **B61g 9/04,** B61g 9/20

[58] **Field of Search** 213/67, 68, 69

[56] **References Cited**

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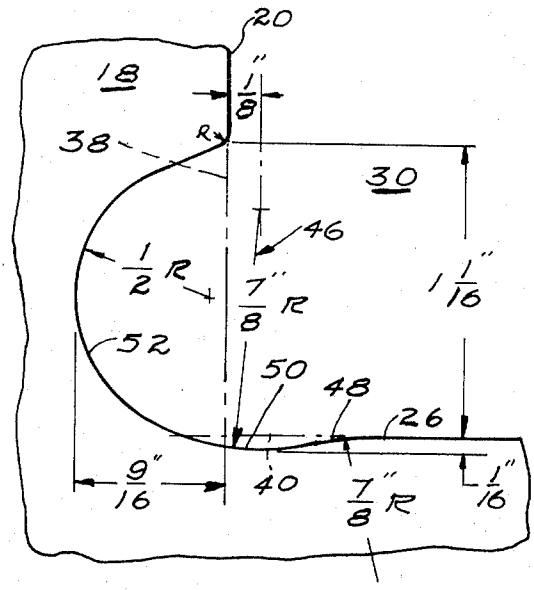
[57] **ABSTRACT**

A new fillet for the intersection of the strap and the rear follower bearing of a yoke is provided having a compound radial surface and an undercut portion. The curve is designed to reduce stress concentration and manufacturing difficulties in this area. The undercut portion removes metal from the draft gear pocket and thereby eliminates notching of the strap.

10 Claims, 4 Drawing Figures



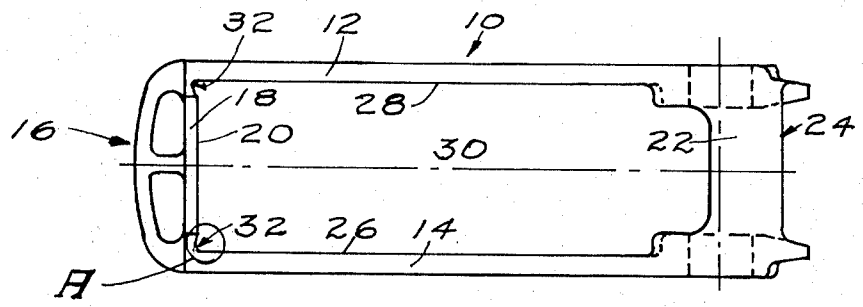


FIG. 1

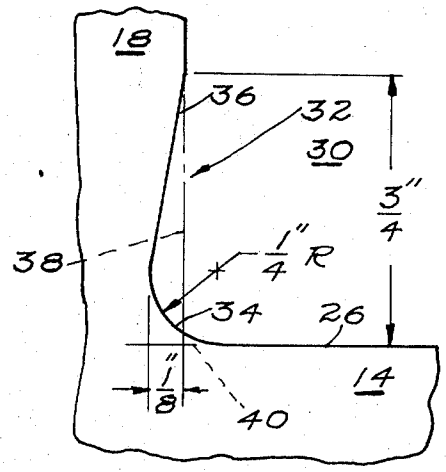


FIG. 2

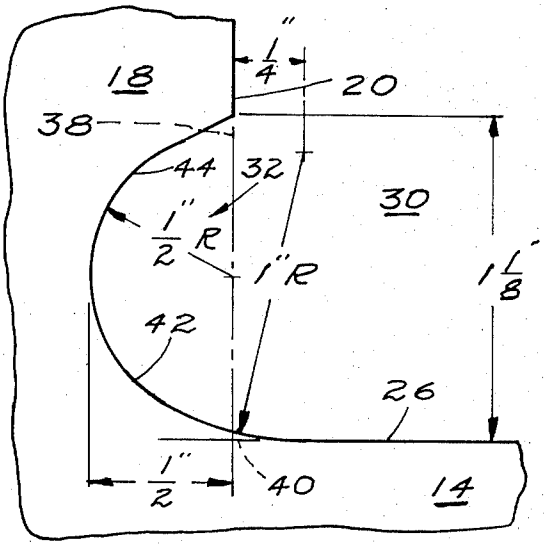


FIG. 3

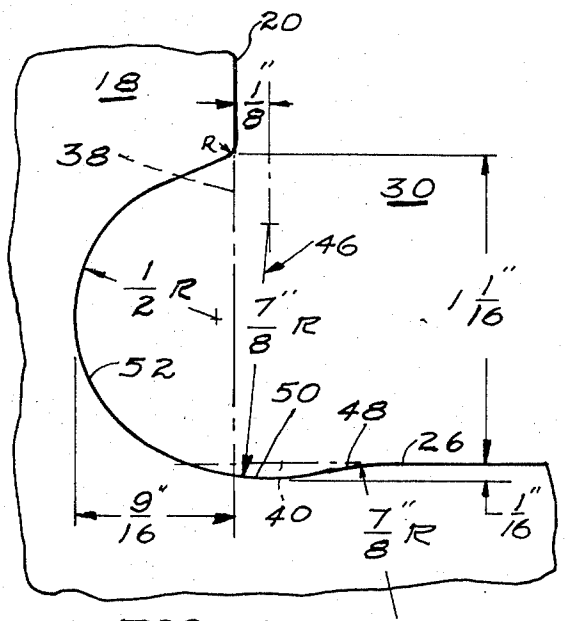


FIG. 4

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RAILWAY COUPLER YOKE

BACKGROUND OF THE INVENTION

This disclosure relates to an improved railway coupler yoke.

For years problems have been encountered by the manufacturers of railway yokes in the area of the intersection of the straps and the rear follower bearing. A fillet has been designed and approved by the American Association of Railroads (A.A.R.) which would reduce stress concentration, manufacturing difficulties and notching in this area. The fillet however has not been completely satisfactory for these purposes.

BRIEF DESCRIPTION OF THE INVENTION

Applicant has solved the above problems by providing a new fillet having an enlarged curved surface and an undercut portion. The enlarged curve aids in the reduction of stress concentration while reducing manufacturing difficulties such as hot tears. The undercut portion eliminates metal in the area of the straps and the rear follower bearing thereby opening up the draft gear pocket. This removal results in the elimination of yoke notching which can seriously reduce the strength and life of the yoke.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a side elevational view of a railway coupler yoke.

FIG. 2 is an enlarged view of the portion of the yoke illustrated in FIG. 1 within circle A.

FIG. 3 is an enlarged view similar to FIG. 2.

FIG. 4 is an enlarged view similar to FIG. 2.

DETAILED DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates an American Association of Railroads (A.A.R.) alternate standard yoke **10** for a type "F" interlocking coupler. The yoke includes spaced upper and lower straps **12** and **14** interconnected at their rear end **16** by a rear follower bearing **18** having a forward surface **20**. The front end of the straps **12** and **14** are interconnected by spaced yoke head tie straps **22** (only one shown) to define a coupler shank opening **24**. The upper and lower surfaces **26** and **28** respectively of lower and upper straps **14** and **12** are perpendicular to forward surface **20** and together therewith define a draft gear pocket **30**.

The novelty of this disclosure lies in a given relief fillet located between lower surface **28** and forward surface **20** and upper surface **26** and forward surface **20**. For ease of disclosure, the fillet area **32**, defined by the circle A, has been enlarged and various relief fillets are illustrated in FIGS. **2** to **4**. It should be appreciated that although only one given type of yoke is illustrated the disclosure hereinafter set out may be readily used on other yokes having a draft gear pocket **30** or the like.

FIG. **2** illustrates the standard A.A.R. fillet **32** located at the junction of bottom strap **14** and rear follower bearing **18**. The fillet is defined by a radial surface **34** that is tangent with upper surface **26**. Surface **34** is defined by the outer point of a ¼ of an inch radius which extends rearwardly of forward surface **20** a maximum of ⅛ of an inch. An angular surface **36** of fillet **32** is tangent to surface **34** and meets forward surface **20** at a point ¾ of an inch above upper surface **26**. It may

be readily seen that surface **34** extends into draft gear pocket **30** in the area of the intersection of the extensions of forward surface **20** and upper surface **26**. These extensions of surfaces **20** and **26** are respectively indicated by dot-dash lines **38** and **40**.

The fillet construction illustrated in FIGS. **1** and **2** although an A.A.R. standard, has resulted in high stress concentration, manufacturing problems, e.g., hot tears, and surface notching from a draft gear moving in the draft gear pocket **30**. In order to correct this problem at least one company began producing yokes having a fillet **32** similar to the one illustrated in FIG. **3**. The upper surface **26** of lower strap **14** is tangent to a radial surface **42** generated by the outer point of a one inch radius which is struck from a point ¼ of an inch forward of forward wall **20**. Radial surface **42** is in turn tangent to a second radial surface **44** which is generated by the outer point of a ½ of an inch radius struck from a point lying on the extension **38** of forward surface **20** and terminating at forward wall **20**, **1** and ⅛ inches above upper surface **26**. Although this construction tended to reduce stress concentration at fillet **32** and minimize manufacturing defects it did not prevent surface notching by the draft gear.

It should be appreciated that fillet **32** illustrated in FIGS. **1** and **2** has been in use as an A.A.R. standard for decades. Further, the modified fillet **32** in FIG. **3** has been in limited use for a period of years. During both of their uses the problems set out above have continued to exist.

FIG. **4** illustrates a new fillet **46** which provides a solution to all three problems. The increased radii substantially reduces the stress concentration over the A.A.R. standard in FIG. **2** and offer a reduction in stress concentration over the fillet illustrated in FIG. **3**. The size of fillet **46** further minimizes hot tears and other casting defects. Since the construction of fillet **46** is tapered and undercut with minimized strength decrease, draft gear notching has been eliminated.

The embodiment illustrated in FIG. **4** has a downwardly extending radial surface **48** which is tangent to upper surface **26** of strap **14**. Surface **48** is generated by the outer point of a 7/8 of an inch radius. An upwardly extending radial surface **50** generated by the outer point of a 7/8 of an inch radius struck from a point ⅛ of an inch forward of forward surface **20** is tangent to surface **48** and extends below surface **26** a distance of 1/16 of an inch. Surface **50** is further tangent to a forwardly extending radial surface **52** which is generated by the outer point of a ½ of an inch radius. Surface **52** as illustrated extends rearward of forward surface **20** a distance of 9/16 of an inch and preferably blends into forward surface **20** through a small fillet R or alternately may terminate at forward surface **20**, **1** and 1/16 inches above surface **26**.

It should be noted that the significant factor in the construction of surfaces **48**, **50** and **52** is that they are always below or rearward of the extensions **38** and **40** respectively of forward surface **20** and upper surface **26** and their point of intersection, i.e., they do not extend into draft gear pocket **30**. Further, the broad sweeping curve formed by surfaces **48**, **50** and **52** reduce stress concentration and manufacturing defects. Within these guidelines various changes may be made to the given dimensions referred to in FIG. **4**. It should

be appreciated that although reference has only been made in FIG. 4 to a lower fillet, identical or similar changes could be made to the upper fillet of the yoke. Further, the fillets illustrated are only side views. Those skilled in the art will recognize that they extend across the straps as a single surface.

What is claimed is:

1. In a coupler yoke having a forward surface on a rear follower bearing and a strap having an upper surface, said upper surface being generally perpendicular to said forward surface and together partially defining a draft gear pocket, a relief fillet comprising a downwardly extending surface blending into said upper surface and sloping away from said upper surface and rearwardly toward said forward surface, a curved upwardly extending surface blending into said downwardly extending surface and extending beyond said forward surface and then curving back and blending into said forward surface.

2. The fillet set out in claim 1 wherein said curved upwardly extending surface includes an upwardly extending radial surface tangent to said downwardly extending surface, and a forwardly extending radial surface tangent to said upwardly extending radial surface and blending into said forward surface.

3. The fillet set out in claim 2 wherein said upwardly extending radial surface is generated from a location upwardly from said upper surface and forward of said forward surface.

4. The fillet set out in claim 2 wherein said forwardly extending radial surface is generated from a location upwardly from said upper surface and rearward of said forward surface.

5. The fillet set out in claim 2 wherein said downwardly extending surface is radial and is tangent to said upper surface, and is generated from a location downwardly from said upper surface.

6. The fillet set out in claim 5 wherein said upwardly extending radial surface is generated from a location upwardly from said upper surface and forward of said forward surface and said forwardly extending radial surface is generated from a location upwardly from said upper surface and rearward of said forward surface.

7. In a yoke having a strap with a generally flat surface and a rear follower bearing with a generally flat surface, said flat surfaces being generally perpendicular to one another and defining therebetween a portion of a draft gear pocket, a relief fillet at the junction of said flat surfaces comprising a first surface angling away from said flat surface of said strap, away from said draft gear pocket and toward said flat surface of said rear follower bearing, and a second surface tangent to said first surface and joining said flat surface of said rear follower bearing, said first and second surfaces being located, other than at their junctions with said flat surfaces, away from and out of said draft gear pocket.

8. The fillet set out in claim 7 wherein said second surface includes a first radial surface tangent to said first surface and a second radial surface tangent to said first radial surface and blending into said forward surface, said radial surfaces opening toward said draft gear pocket.

9. The fillet set out in claim 8 wherein said first surface is curved and is tangent to said flat surface of said strap, said curved surface being generated from a location out of said draft gear pocket.

10. The fillet set out in claim 9 wherein said first radial surface is generated from a location in said draft gear pocket and said second radial surface is generated from a location out of said draft gear pocket.

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