Dec. 30, 1952

A. C. TUTTLE

2,623,477

ANCHORING DEVICE FOR LADING STRAPS AND OTHER CARGO-BINDING ELEMENTS

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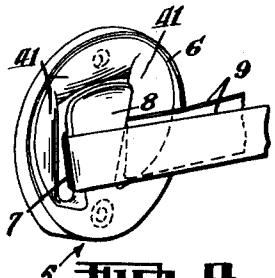


FIG. 8

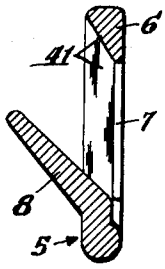


FIG. 9

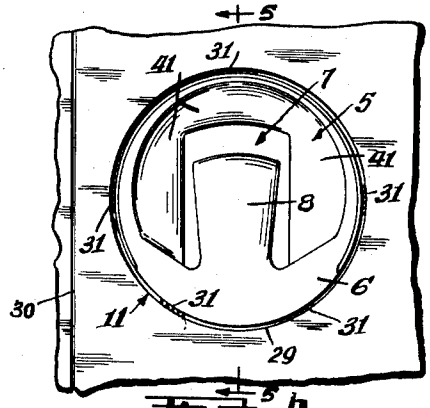


FIG. 4

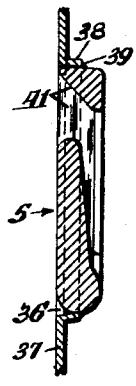


FIG. 7

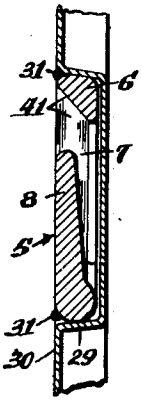


FIG. 5

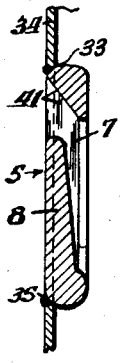


FIG. 6

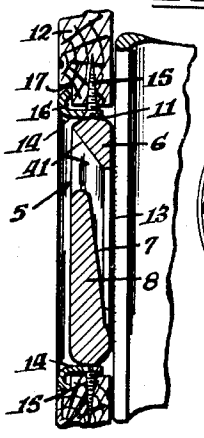


FIG. 1

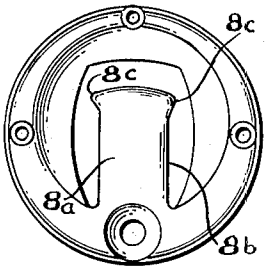


FIG. 10

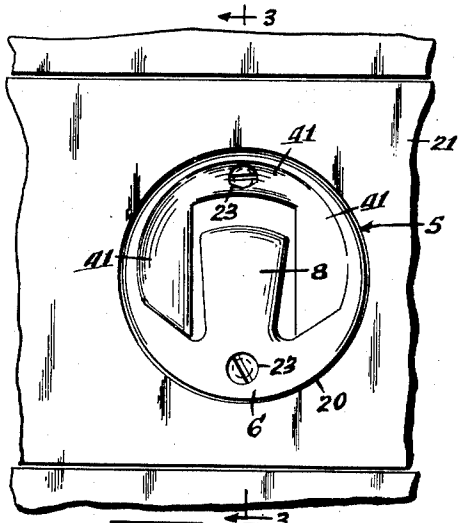


FIG. 2

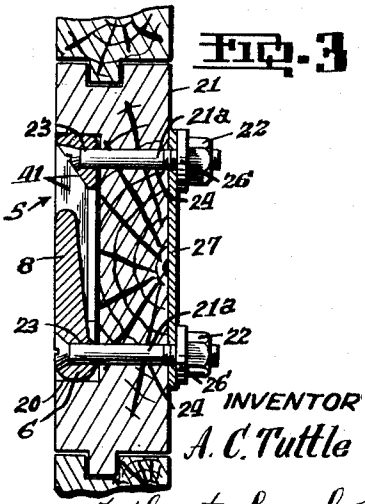


FIG. 3

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ANCHORING DEVICE FOR LADING STRAPS AND OTHER CARGO-BINDING ELEMENTS

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Application July 16, 1951, Serial No. 236,905

7 Claims. (Cl. 105—369)

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This invention relates to an improved anchoring device for lading straps and other flexible cargo-binding elements used in railway freight cars and other vehicles.

One object of the invention is the provision of an anchoring device which has a high strain resistance; is compact and simple in design; can be produced in quantities at a relatively low cost; and is easily applied to either the wall or floor structure of a railway freight car or other vehicle. This object is achieved by the provision of an anchoring device comprising a one-piece forging including a strain-distributing member having a central opening and an anchoring post extending inwardly from the inner edge of said member and partially spanning said opening with sufficient clearance at the sides and free end of the post to enable a lading strap or other flexible cargo-binding element to be conveniently looped around said post.

Another object is to provide a method of forging the improved anchoring device in which provision is made to facilitate machining of the anchoring post to reduce wear and tear on the flexible cargo-binding element looped around the post. This object is achieved by initially forging the anchoring device from suitable metal stock so that the anchoring post normally lies within the central opening of the strain-distributing member, then heating the forging to a malleable condition and forcing the anchoring post from its normal position within the central opening of the strain-distributing member to an inclined position in which the sides of the post are accessible for machining thereof, machining the sides of the post to provide smooth surfaces for engagement with the cargo-binding element and then reheating the forging to a malleable condition and forcing the anchoring post back to its normal operative position within the central opening of the strain-distributing member.

Another object of the invention is the provision of an anchoring device of the character described having a tensile or strain-resisting strength of approximately 50,000 p. s. i.

Other objects, advantages and characteristic features of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings, in which—

Fig. 1 is a view showing my improved anchoring device in vertical section and illustrating one method of applying it to the wall structure of a freight car.

Fig. 2 is a view showing the anchoring device

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in plan and illustrating another method of installation which is applicable to either the floor or wall structure of a railway freight car or other vehicle.

Fig. 3 is a sectional view along the section line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 2 but illustrating one method of attaching the anchoring device to steel sheeting when the latter is used for lining the walls of freight cars or other vehicles in which the anchoring device is installed.

Fig. 5 is a sectional view along the section line 5—5 of Fig. 4.

Figs. 6 and 7 are views similar to Fig. 5, but showing alternate methods of attaching the anchoring device to the steel sheeting.

Fig. 8 is a perspective view of the anchoring device with a cargo-binding element in the form of a lading strap shown looped around the anchoring post.

Fig. 9 is a vertical sectional view of the anchoring device showing the manner in which the anchoring post is temporarily displaced from its normal position within the central opening of the strain-distributing member to permit of the aforesaid machining of the sides of the post.

Fig. 10 is a fragmentary plan view showing a further slight modification.

In these drawings my improved anchoring device is generally indicated at 5. It comprises a one-piece drop forging including a strain-distributing member 6 having a central opening 7 and a co-planar anchoring post 8 extending inwardly from the inner edge of member 6 and partially spanning said opening. The sides and free end of post 8 are spaced from opposing marginal walls of opening 7 to provide clearance for looping a lading strap 9, or other flexible cargo-binding element about said post in the manner illustrated in Fig. 8.

Post 8 is made of gradually increasing width toward its free end so that it has a wedge-shape which causes the post embracing loop of cargo-binding element 9 to move inwardly on the post as the loop is tightened about the post by load stresses. This minimizes the hazard of the looped portion of the cargo-binding element slipping off the free end of the post under service conditions.

In the installation shown in Fig. 1 the anchoring device 5 is fitted in an opening 11 in the inside lining 12 of a railway freight car with the strain-distributing member 6 welded, as indicated at 13, to a metal post constituting part of the frame structure of the car wall. In order to minimize wear on the cargo-binding element 9 by

contact with lining 12 the opening 11 is provided with a smooth lining ring or thimble 14 secured in place by screws 15. The ring or thimble 14 is formed with an outwardly directed convexly curved flange 16 received in a recess 17 formed by enlarging the inner end of the lining opening 11.

In the installation shown in Figs. 2 and 3 the anchoring device 5 is pocketed in a shallow recess 20 provided in the inner side of a wooden board or panel 21 which may constitute part of either the wall lining or the floor of a freight car. In this case the anchoring member is secured in the recess 20 by bolts 21*a* and nuts 22. The bolts 21*a* pass outwardly through openings 23 in the anchoring member 5 and through registering openings 24 in the board or panel 21. The bolt receiving openings 23 of the anchoring member are countersunk to receive the heads of the bolts 21*a* so that the bolt heads lie flush with the portions of the anchoring device surrounding the bolt holes. If desired washers 26 and a wear plate 27 may be confined between the nuts 22 and the adjacent side of the board or panel 21.

The installation shown in Figs. 4 to 7 inclusive illustrate three methods of attaching the anchoring device 5 to steel sheeting when the latter is used for lining the walls of freight cars or other vehicles in which the anchoring device is installed.

In the installation shown in Figs. 4 and 5 the anchoring device 5 is seated in a pocket 29 formed in the steel sheeting 30 and is tack welded to the mouth of the pocket as indicated at 31.

In the installation shown in Fig. 6 the inner side of the anchoring device 5 is fitted in an opening 33 in the steel sheeting 34 and is secured to the edge of said opening by a continuous welding 35.

In the installation shown in Fig. 7 the inner side of the anchoring device 5 is fitted in an opening 36 in the steel sheeting 37, said opening being bounded by a rearwardly directed flange 38 to which the anchoring device is secured by a continuous weld 39.

At the side facing the interior of the railway car or other vehicle in which it is installed the anchoring device 5 is formed with inclined surfaces 41 giving a concave effect to the portions of the anchoring device bordering the sides and free end of anchoring post 8. This provides additional clearance between the anchoring post and the strain-distributing member 6 to facilitate the looping of a lading strap 9 or other flexible cargo-binding element around the anchoring post.

The anchoring device described herein is preferably made by a drop forging operation from metal having a tensile strength of the order of 50,000 p. s. i. In this connection I have found that a satisfactory metal is steel having a carbon content of the order of 1.30 to 1.35. The inclined surfaces 41 of the anchoring device are formed during the forging of the anchoring device from the stock metal and the anchoring device is then heated to a temperature at which the anchoring post 8 may be conveniently bent or deflected from its co-planar position within the strain-distributing member 6 to the outwardly inclined position shown by full lines in Fig. 9. After the anchoring post 8 has been deflected to the position shown in Fig. 9 the sides of the anchoring post are machined to provide smooth surfaces which reduce wear and tear on the post-engaging portion of the lading strap 9 or other flexible cargo-binding element looped about the anchoring post. When the machining is completed the anchoring device is reheated to a suitable temperature and the anchoring post 8 is then bent or deflected back to its original co-planar position within the strain-distributing member 6.

Forged anchoring devices made in accordance with the present invention are exceptionally strong and compact and may be produced at a relatively low labor and material cost for application to either a wall or floor structure of a railway freight car or other vehicle.

In the modification shown in Fig. 10, the anchoring post 8 is formed with parallel sides 8*a* and 8*b* extending from the anchored end to within a short distance of the free end of the post. In this case the free end of the post is widened to provide lateral projections formed with inclined surfaces 8*c* merging with the parallel sides 8*a* and 8*b*.

Having thus described the nature of my invention and several preferred embodiments thereof, it will be understood that various modifications may be resorted to within the scope and spirit of the invention as defined by the appended claims.

I claim:

1. An anchoring device for lading straps and other flexible cargo-binding elements used in railway freight cars and other vehicles, comprising a one-piece forging composed of metal having a tensile strength of approximately 50,000 p. s. i., said forging including a strain-distributing member having a central opening completely surrounded by said member and an anchoring post extending inwardly from the inner edge of said member and partially spanning said opening, the sides and free end of said post being spaced from opposing marginal portions of said opening to provide clearance for looping the lading strap or other flexible cargo-binding element around said post.

2. An anchoring device for lading straps and other flexible cargo-binding elements, comprising a one-piece forging including a strain-distributing member having a central opening completely surrounded by said member and an anchoring post extending inwardly from the inner edge of said member and partially spanning said opening, the sides and free end of said post being spaced from opposing marginal portions of said opening to provide clearance for the looping of the cargo-binding element around said post.

3. An anchoring device as set forth in claim 2, in which the strain-distributing member is provided at one side with inclined surfaces, giving a concave effect to the portions of the strain-distributing member opposed to the sides and free end of the anchoring post.

4. A method of producing an anchoring device for lading straps and other flexible cargo-binding elements which comprises forging from suitable metal stock a one-piece anchoring device comprising a strain-distributing member having a central opening completely surrounded by said member and a co-planar anchoring post extending inwardly from a wall portion of said opening in spaced relation to the remaining wall portions of said opening, heating said forging to a temperature at which the forging is rendered malleable and, while the forging is in said heated malleable condition, forcing the anchoring post from its co-planar position within the central opening of the strain-distributing member to an inclined position in which the sides of the anchoring post are accessible for ma-

chining, subjecting the anchoring post, while in said inclined position, to a machining operation by means of which the sides of the post are made smooth to eliminate wear on a cargo-binding element looped around said post, and then reheating the forging to a malleable condition and forcing the inclined anchoring post back to its normal position in co-planar relationship with the strain-distributing member.

5. An anchoring device for lading straps and other flexible cargo-binding elements, comprising a rigid one-piece forging including a strain-distributing portion having the form of a closed loop with an opening in the mid-portion thereof, and an anchoring post integrally formed with and extending inwardly from a region of the inner surface of said strain-distributing portion and having a free end lying within said opening and spaced laterally from opposed sides of the strain-distributing portion, said strain-distributing portion having front and rear surfaces in spaced planes, and the anchoring post having a substantially flat front face and a rear surface spaced from the plane of the rear face of the strain-distributing portion so as to lie between

the planes of the front and rear faces of the strain-distributing portion, the sides and free end of the anchoring post being spaced from opposing portions of the strain-distributing portion to provide clearance for looping the cargo binding element around said anchoring post so as to engage the rear surface of the anchoring post.

6. An anchoring device for lading straps and other flexible cargo binding elements as defined in claim 5, and wherein the front face of the anchoring post is substantially flush with the plane of the front surface of the strain-distributing portion.

7. An anchoring device for lading straps and other flexible cargo binding elements as defined in claim 5, and wherein said opposed sides of the strain-distributing portion are bevelled so as to face angularly toward the anchoring post and the plane of the front face of the strain-distributing portion.

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No references cited.