July 24, 1956 G. F. OAKLEY 2,755,747

ANCHORING DEVICES FOR LADING TIES AND THE LIKE

Filed Jan. 7, 1953 4 Sheets-Sheet 1

Fig. 1

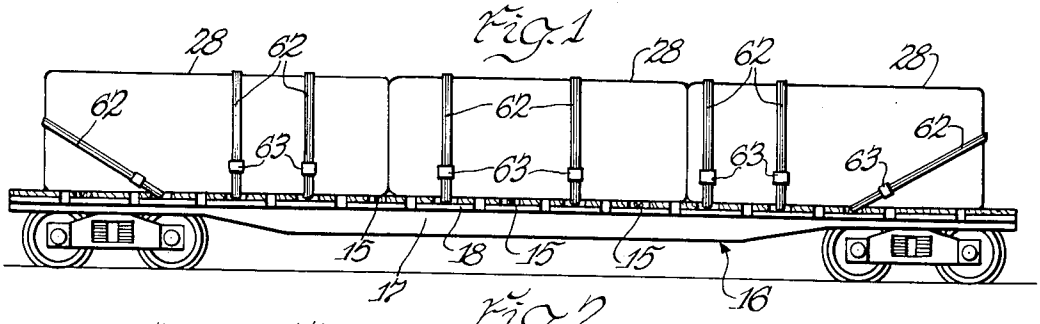


Fig. 2

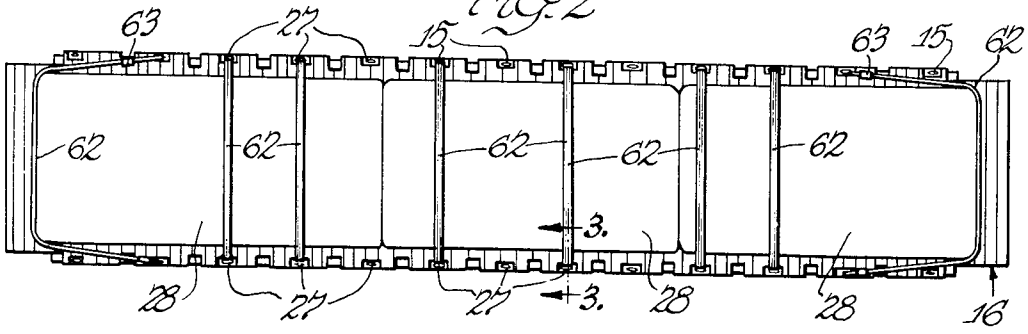
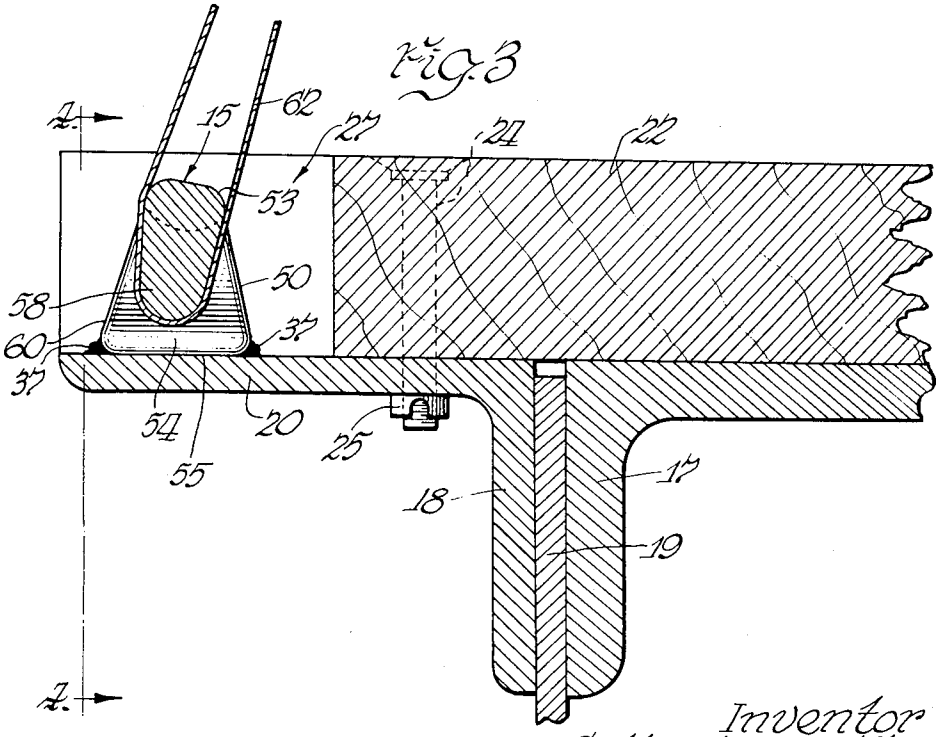


Fig. 3



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ANCHORING DEVICES FOR LADING TIES AND THE LIKE

Filed Jan. 7, 1953 4 Sheets-Sheet 2

Fig. 4

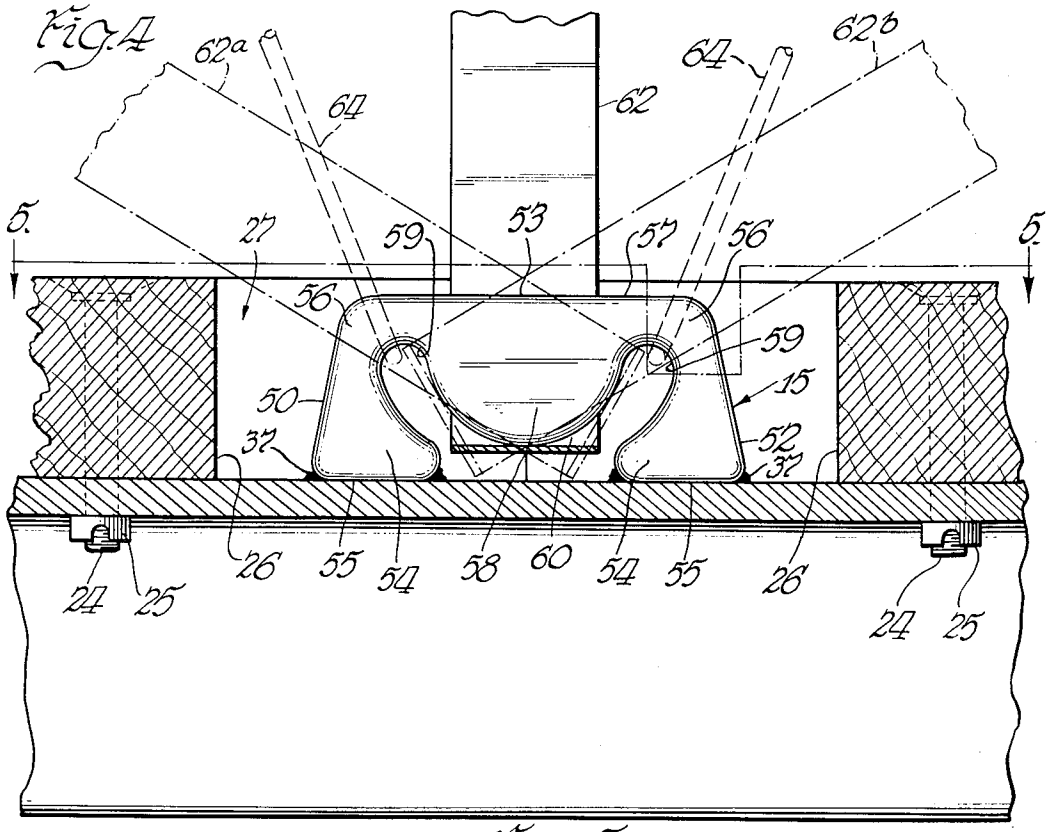
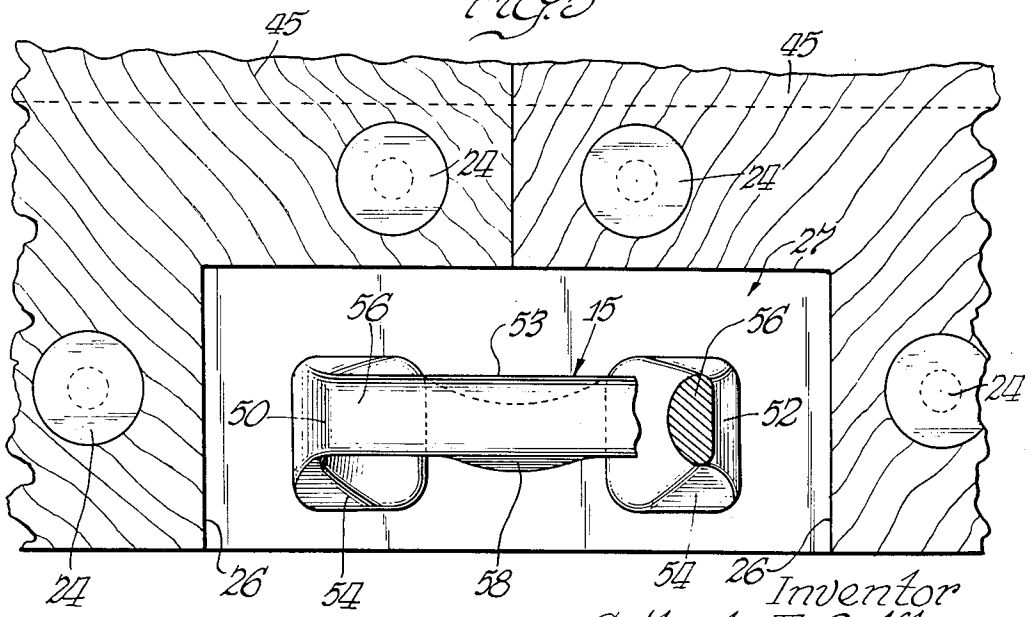


Fig. 5



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July 24, 1956 G. F. OAKLEY 2,755,747

ANCHORING DEVICES FOR LADING TIES AND THE LIKE

Filed Jan. 7, 1953 4 Sheets-Sheet 3

Fig. 6

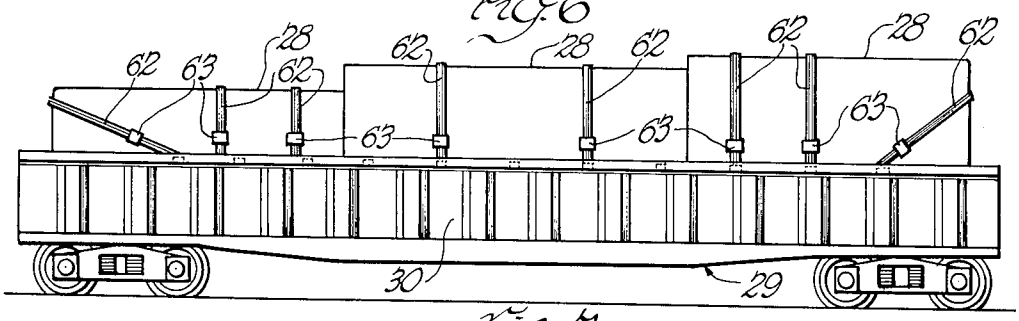


Fig. 7

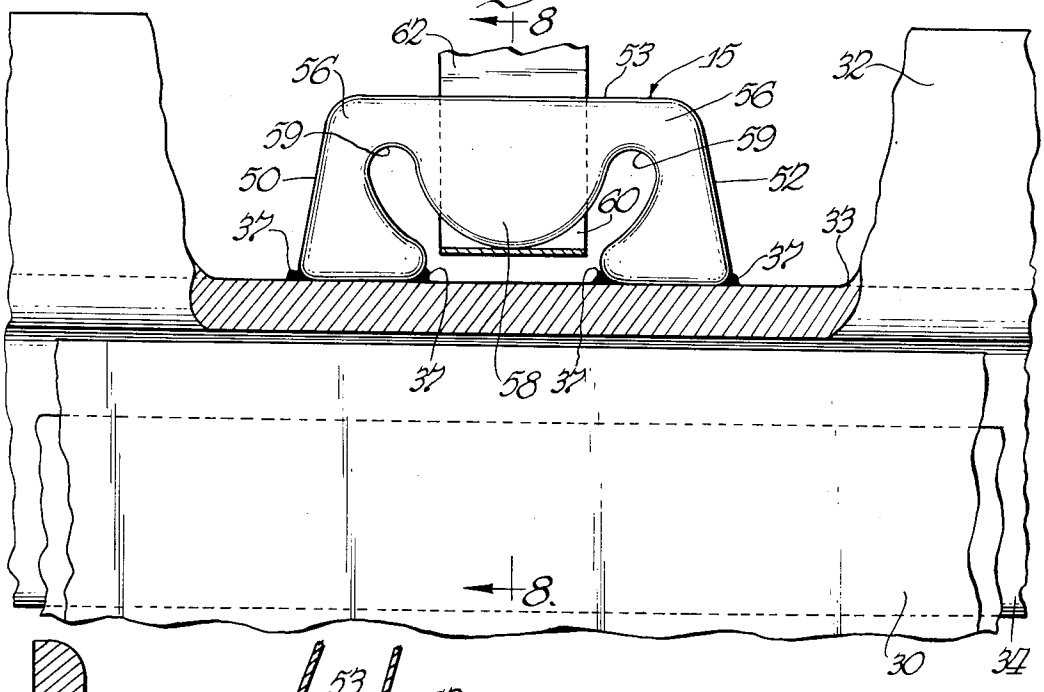
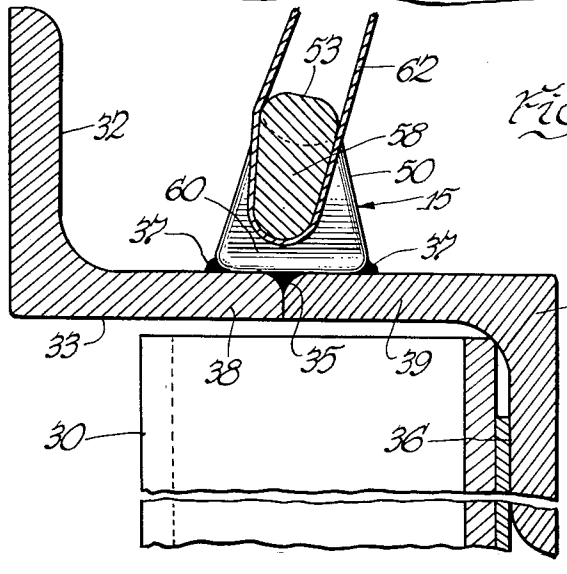


Fig. 8



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July 24, 1956 G. F. OAKLEY 2,755,747

ANCHORING DEVICES FOR LADING TIES AND THE LIKE

Filed Jan. 7, 1953 4 Sheets-Sheet 4

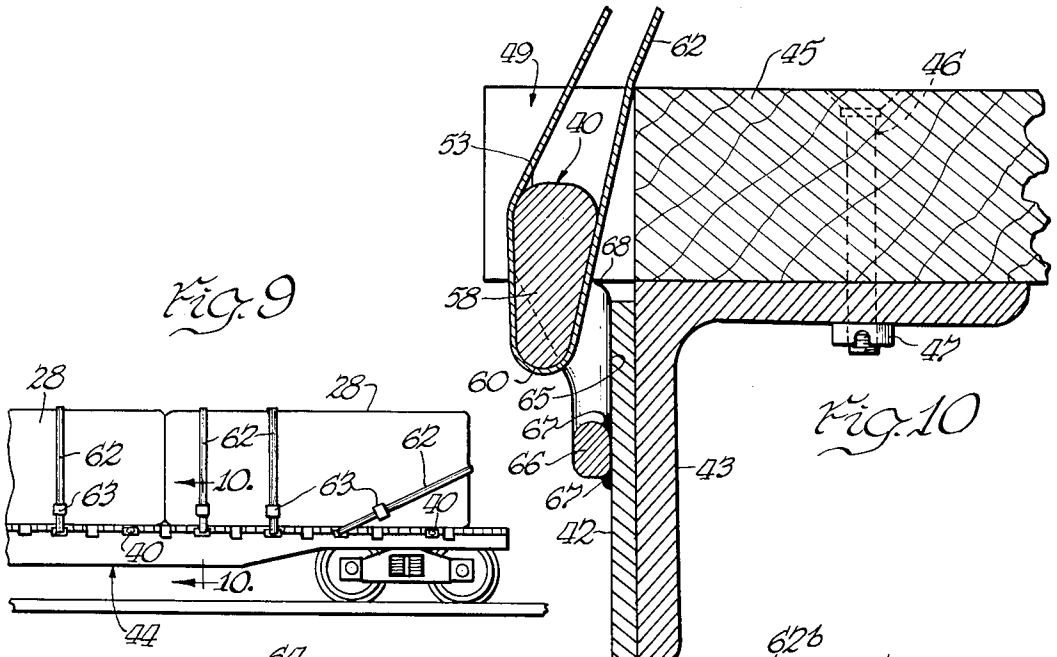


Fig. 9

Fig. 10

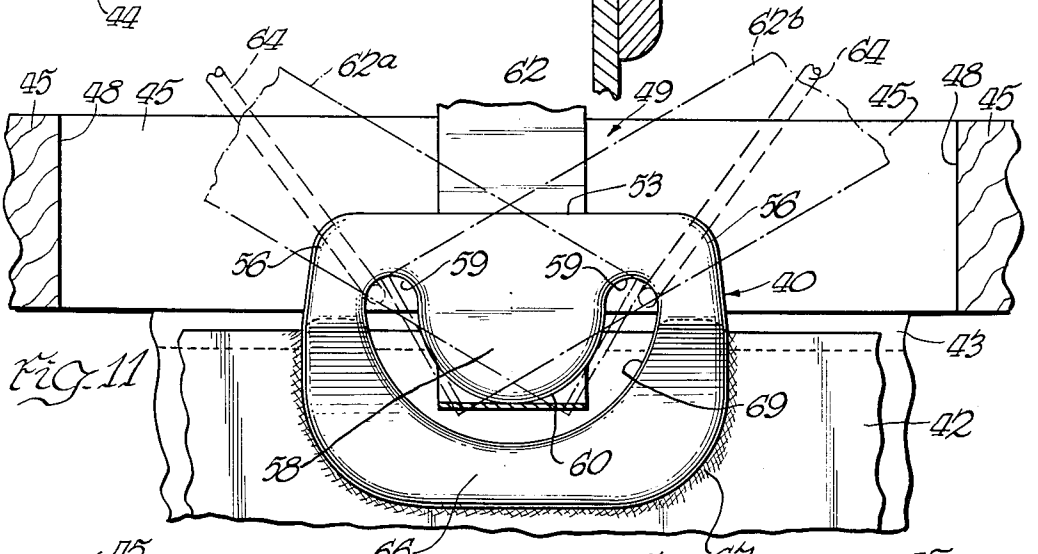


Fig. 11

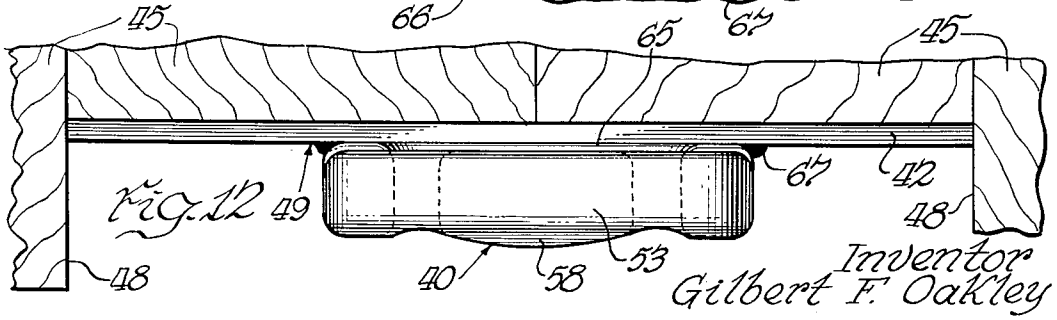


Fig. 12

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2,755,747

ANCHORING DEVICES FOR LADING TIES AND THE LIKE

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Application January 7, 1953, Serial No. 330,082

6 Claims. (Cl. 105—369)

This invention relates to anchoring devices for lading ties and the like, and more particularly to such devices which are adapted to relatively permanent mounting for use on cargo carrying vehicles such as flat cars and gondola cars of various constructions used on railroads.

One of the objects of my invention is to provide anchoring devices adapted to be secured at available positions along the sides and at the ends of flat cars and gondola cars and the like to afford a secure anchor for lading ties, such as either straps or wires, or both.

As another object, my invention has within its purview the provision of anchoring devices for lading ties which permit a wide range in angularity in the directions at which the ties may extend therefrom without being twisted or distorted.

It is another object of this invention to provide anchoring devices for lading ties which present bearing surfaces shaped to prevent loads from being carried through the edges of lading straps, even though the directions at which the straps extend from the devices are varied through a wide range.

This invention comprehends, as another object, the provision of anchoring devices for lading ties which are suited to production as one-piece units which may be firmly secured in place by welding.

My invention has for a further object the provision of anchoring devices for lading ties embodying tie anchoring portions which, when mounted, are disposed at angular positions generally aligned with the directions at which lading ties extend to average types or sizes of loads.

Another object of my invention is to provide anchoring devices for lading ties which are suited in size and shape to mounting at positions which prevent direct contact with lading.

Within the purview of this invention, I have also provided anchoring devices for lading ties which have their outer surfaces contoured to deflect blows which they may accidentally receive in the loading or unloading of cargo.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings in which similar characters of reference indicate similar parts throughout the several views.

Referring to the four sheets of drawings:

Figs. 1 and 2 are respectively side elevational and top plan views depicting the adaptation of a preferred embodiment of my anchoring device for lading ties to one type of flat car structure utilized on railroads;

Fig. 3 is a fragmentary end sectional view taken substantially at a position indicated by a line 3—3 and accompanying arrows in Fig. 2, and drawn to a scale considerably larger than that of Fig. 2;

Fig. 4 is a fragmentary side sectional view taken substantially as indicated by a line 4—4 in Fig. 3 and accompanying arrows, and illustrating various positions and types of lading ties applied to the preferred form of my anchoring device which is illustrated in Figs. 1 to 3 inclusive;

Fig. 5 is a top plan view with a portion depicted in section and taken substantially on a line 5—5 of Fig. 4 and in the direction of the arrows;

Fig. 6 is a side elevational view illustrating the application of the anchoring device of Figs. 1 to 5 inclusive to one type of a gondola car utilized on railroads;

Fig. 7 is a fragmentary side view drawn to an enlarged scale and having a portion broken away to show the application of Fig. 6 in greater detail;

Fig. 8 is an end sectional view wherein the section is taken substantially on a line 8—8 of Fig. 7 and in the direction of the arrows;

Fig. 9 is a fragmentary side elevational view showing the application of a modified form of my anchoring device for lading ties to a flat car of somewhat different structure than that illustrated in Figs. 1 and 2;

Fig. 10 is an end sectional view drawin to a larger scale than Fig. 9 and taken substantially on a line 10—10 of Fig. 9 and in the direction of the arrows;

Fig. 11 is a fragmentary side elevational view of the anchoring device depicted in Fig. 10, and illustrating the application of different types of lading ties thereto at various positions; and

Fig. 12 is a fragmentary top plan view of the anchoring device depicted in Figs. 9, 10 and 11.

In the exemplary embodiments of my anchoring device for lading ties which are depicted herein for illustrative purposes, I have shown two forms of the anchoring device in applications to freight cars of different structure, such that they have different facilities for the mounting of my anchoring devices. In addition to being suggestive of the types of mountings to which my anchoring devices are particularly adapted, the illustrated applications indicate the mountings and applications of the anchoring devices sufficiently to show the adaptability and preferred placement of the two types of anchoring devices with respect to vehicles other than freight cars. Furthermore, it may be observed from the accompanying drawings and from the following description that the two forms of my anchoring device are quite similar in certain essential respects; the differences in the two forms being generally desirable for adapting those forms to mounting on convenient and suitable supporting structures having different angular relationships to the directions at which lading ties will extend therefrom in use.

Considered generally, one form of anchoring device 15 is depicted in Figs. 1 to 5 inclusive in its application to one form of flat car 16 wherein each side sill 17 of the car has a sill angle 18 extending therealong and secured to the side sill through a plate 19, the sill angle 18 having thereon a flange 20 which projects outwardly along each side of the car. Floor boards 22 are secured at their ends to the outwardly projecting flanges of the sill angles by fastening means such as bolts 24 and associated nuts 25, and certain of such floor boards have notches 26 at their ends and at spaced positions along the car which provide pockets 27 in which the anchoring devices can be mounted in preselected spaced relationship along the flange of the sill angle. With this arrangement, my disclosed anchoring device can be mounted within the protective confines of each pocket, and is exposed from above and from the outside of the car for facilitating the application of one or more lading ties thereto and for the extension of such lading ties upwardly and inwardly with respect to the car for securing a load 28 in place on the car floor.

In Figs. 6, 7 and 8, I have illustrated the adaptation of the anchoring device 15 to a gondola type of freight car 29. This type of car has side walls 30, and in the particular form herein illustrated has a top flange 32 extending along the exterior of each side wall and formed by utilizing two longitudinally extending angles 33 and 34 abutted together and secured to one another, as by weld-

ing at 35, with a flange 36 on the angle 34 inverted with respect to the flange 32 on the angle 33. The flange 36 on the angle 34 is secured in place relative to the side wall 30 by being welded thereto. With this mounting structure provided along the tops of the side walls of a gondola car, the anchoring devices 15 are secured, as by welding along the sides and ends thereof at 37, to abutting flanges 38 and 39 of the angles 32 and 34 respectively; the anchoring devices being disposed in preselected spaced relationship to one another along the opposite sides of the car.

In Figs. 9 to 12 inclusive, I have illustrated an anchoring device 40 modified to the extent required for securing the device to a supporting structure, such as a plate 42 on the outer surface of a side sill 43 on a flat car 44. In this instance, the plate 42 is secured to the side sill angle 43 and is normally disposed in a substantially vertical plane, so as to present a relatively flat and vertically disposed mounting surface. Floor boards 45 are secured to the side sill angle 43 by fastening means, such as bolts 46 and associated nuts 47. These floor boards extend outwardly of the car beyond the outer surface of the plate 42 and have notches 48 at predetermined spaced positions to provide pockets 49 in which the anchoring devices are mounted in spaced relationship along the side of the car and at positions such that they are exposed for the application of lading ties thereto and so that the lading ties may extend upwardly and inwardly of the car for securing the load 28 in place on the car floor.

Referring in greater detail to the structure of the anchoring device 15 which is depicted in Figs. 1 to 8 inclusive, that device has mounting portions 50 and 52 at its opposite ends and a tie anchoring portion 53, all of which, in the disclosed structure, are integrally cast or forged as a unitary and substantially rigid structure. The mounting portions each have a relatively large base portion 54, the bottom of which presents a flat mounting surface 55, and each of which mounting portions tapers upwardly both longitudinally and laterally to a curved neck portion 56 which adjoins the adjacent end of the tie anchoring portion. The tie anchoring portion is characterized in the disclosed structure by a relatively straight top surface 57 extending between the neck portions, and particularly by a protuberance 58 which extends downwardly between the mounting portions and presents a convex and substantially arcuate surface longitudinally of the anchoring device and spaced from both the mounting portions and a relatively flat surface upon which the mounting surfaces 55 are disposed. In the illustrated structure, the opposed inner surfaces of the mounting portions are curved to follow generally the curvature of the opposed surface portions of the protuberance, and the neck portions 56 have arcuately curved inner surfaces which are reversely curved with respect to the curvature of the protuberance and afford smoothly curved inner surface portions adjoining the protuberance and mounting portions.

As may be observed by reference to Figs. 3 and 8, the protuberance 58 has a sectional shape such that its lower and longitudinally convex surface 60 is also convexly and substantially arcuately curved laterally of the anchoring device. Additionally, in the disclosed structure, the opposed faces of the protuberance diverge somewhat in a direction away from the convexly curved surfaces thereof, as shown in Figs. 3 and 8. As a further characteristic of my disclosed anchoring device, as depicted in Figs. 3 and 8, the sectional shape of the protuberance is such that it is practically symmetrical with respect to a central plane passing longitudinally of the protuberance, but the protuberance is tilted with respect to the mounting portions and the mounting surfaces, so that from bottom to top, as mounted for use, the protuberance slopes inwardly in a direction from which a lading tie, such as a lading strap 62, normally extends to a load on the car. Thus, the general plane of the protuberance forms an acute angle with the inner faces of the mounting portions.

With the structural arrangement herein depicted and described, a lading strap, such as 62, of substantial width, may be anchored to the anchoring device 15 by looping that strap under the arcuate surface of the protuberance and securing the end of the strap to the portion thereof whch extends over the load by fastening means such as a seal 63 of the type commonly used with such lading straps, and as indicated in Figs. 1 and 6. A lading strap which engages the convex surface of the protuberance in the manner described has a substantial bearing surface with the protuberance, but as shown in Fig. 4, may be varied in position through the widely variant angles, as shown in dot-and-dash lines at 62*a* and 62*b* in Fig. 4 without having the lading strap stressed more at either of its edges than at its mid-portion. The desirability of limiting the stressing of the side edges of the lading strap is brought about by the greater likelihood of tearing when the stress at the edges of the strap exceeds that at the mid-portion of the strap. It may be further observed that the angle at which the lading strap extends from my anchoring device 15 to a desired position relative to a load may be varied very considerably without weakening the strap by the formation of any kink or sharp bend therein. As also indicated in Fig. 4, my anchoring device 15, by virtue of its structure and contours, is adapted to the anchoring of wire or rope ties, as depicted at 64, and such lading ties may, if desired, be utilized simultaneously with lading straps, without either interfering with the other.

By having relatively large base portions on the mounting portions of my anchoring device, ample space is provided for welding the anchoring device to a supporting structure to afford secure mounting of the device on the supporting structure. The tilting of the protuberance between the mounting portions of the device and toward the inner surface from the bottom to the top of the protuberance tends to align the protuberance with the usual angles at which lading straps extend therefrom to a load. Furthermore, the tapering of the outer surfaces of the anchoring device from the bottom to the top affords angular deflection for blows which may be accidentally struck against such an anchoring device in the loading and unloading of lading relative to a vehicle with which the device is utilized. Additionally, protection is also afforded for my disclosed anchoring device in that it is susceptible to production with adequate strength in sizes and proportions which permit it to be mounted within a pocket formed by the floor boards of the car, as shown in Figs. 1 to 5 inclusive, or behind an upwardly projecting flange at the top of the side walls of a gondola car, as shown in Figs. 6 to 8 inclusive.

In the anchoring device 40 which is depicted in Figs. 9 to 12 inclusive, the characteristics of the tie anchoring and neck portions are quite similar to those described with respect to the anchoring device 15, and like reference numerals on the two forms of the device refer to corresponding parts which perform similar functions. The differences between the two anchoring devices are mainly in the mounting portions. Both are substantially symmetrical with respect to a central plane which bisects the protuberance and tie anchoring portion longitudinally of the anchoring devices, but a mounting portion 66 of the anchoring device 40, in addition to adjoining the opposite ends of the tie anchoring portion through curved neck portions, has adjoined ends which form a closed loop with the tie anchoring portion and present a substantially flat mounting surface 65 on one side which is offset from the general plane of the protuberance in a direction to space the protuberance outwardly from the surface of a supporting structure upon which the device is mounted. In securing the mounting portion 66 to a supporting structure, such as the plate 42 on the side sill of a railway car, both the inner and outer edges of that mounting portion are welded to the supporting structure

by continuous welded seams 67 which extend along both of the opposite side portions of the mounting portion.

The tie anchoring portion of the anchoring device 40 being spaced outwardly from the adjacent mounting structure by an offset 68 at the neck portion thereof, space is provided for connecting one or more lading ties, such as the lading strap 62 or the wire or rope tie 64, thereto. It may be observed that when a lading strap is looped over the protuberance 58, an arcuate slot 69 between the outer surface of the protuberance and the inner surface of the mounting portion affords sufficient room for movement of a lading strap angularly between widely divergent positions, as shown in Fig. 11, while contact is maintained between the protuberance and a lading strap at the mid-portion of the lading strap and undue stressing of the edges of the anchored lading strap is avoided. It is also to be observed that the protuberance slopes inwardly toward the top, as shown in Fig. 10, so that it more directly opposes the pull transmitted through the lading strap for normal angles of such straps in securing loads in place. By having the offset 68 above the part of the mounting portion which is secured to the supporting structure, ample space is provided for the anchoring of wire or cable ties, and for the use of such ties with lading straps, when desired.

From the foregoing description and reference to the accompanying drawings, it may be understood that I have provided anchoring devices for lading ties which are suited to use on cargo carrying vehicles, such as flat cars or gondola cars utilized on railroads, which anchoring devices are rugged in structure and may be securely mounted to afford secure anchorage for various types of lading ties, used singly or in combination, and which permit a wide range in the angle at which the lading tie or ties extend therefrom without either unduly stressing the anchored lading tie or causing it to be sharply bent or twisted.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. An anchoring device for lading ties comprising an integral and rigid structure having mounting and tie anchoring portions, both of which are substantially symmetrical with respect to a central plane, said mounting portions having substantially flat mounting surface portions and end supporting portions on opposite sides of the central plane, said tie anchoring portion extending between the end supporting portions in spaced relationship to the mounting surface portions and having a substantially arcuate protuberance which projects between the end supporting portions and provides an anchoring surface to which lading ties may be secured, said anchoring device having front and back surfaces in spaced relationship to one another and extending laterally of said central plane, and said protuberance being disposed at an angle with respect to the mounting surface portions such that it slopes generally toward said front surface in a direction away from the arcuate surface thereof.

2. An anchoring device for lading ties as defined in claim 1, and wherein the front and back surfaces of said protuberance diverge from one another in a direction away from the arcuate surface thereof to provide a wedge shape to the protuberance.

3. An anchoring device for lading ties as defined in claim 1, and wherein said end supporting portions are adjoined separately from the tie anchoring portion through a connecting portion which is spaced from the protuberance and offset from the tie anchoring portion in a direction parallel to said central plane and lateral to said front and back surfaces, and said connecting portion having the substantially flat mounting surface portions on the side thereof which is remote from the tie anchoring portion.

4. An anchoring device for lading ties comprising a one-piece rigid metal structure having a tie anchoring portion connected at its opposite ends through curved neck portions to end supporting portions having support engaging surface portions thereon, said tie anchoring portion having a protuberance projecting between the supporting portions in spaced relationship thereto and having a smoothly and convexly curved surface adjoined at its opposite ends by smoothly and reversely curved surfaces of the curved neck portions, the supporting portions being so proportioned and disposed with respect to the protuberance that the protuberance is held in spaced relationship to a flat support engaged by said support engaging surface portions, said anchoring device having front and back faces on the neck and supporting portions, and the protuberance having substantially flat front and back faces in acute angular relationship to one another and to the front faces of the supporting portions, and said acute angular relationships being such that the flat front and back faces of the protuberance diverge away from the curved surface and the front and back faces of the protuberances diverge in the opposite direction from the front faces of the supporting portions.

5. An anchoring device for lading ties as defined in claim 4, and wherein said supporting portions are offset away from the support engaging surface portions at a position between those surface portions and the curved neck portions.

6. An anchoring device for lading ties as defined in claim 4, and wherein said convexly curved surface of the protuberance is substantially semi-circular in each of two transversely disposed planes.

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