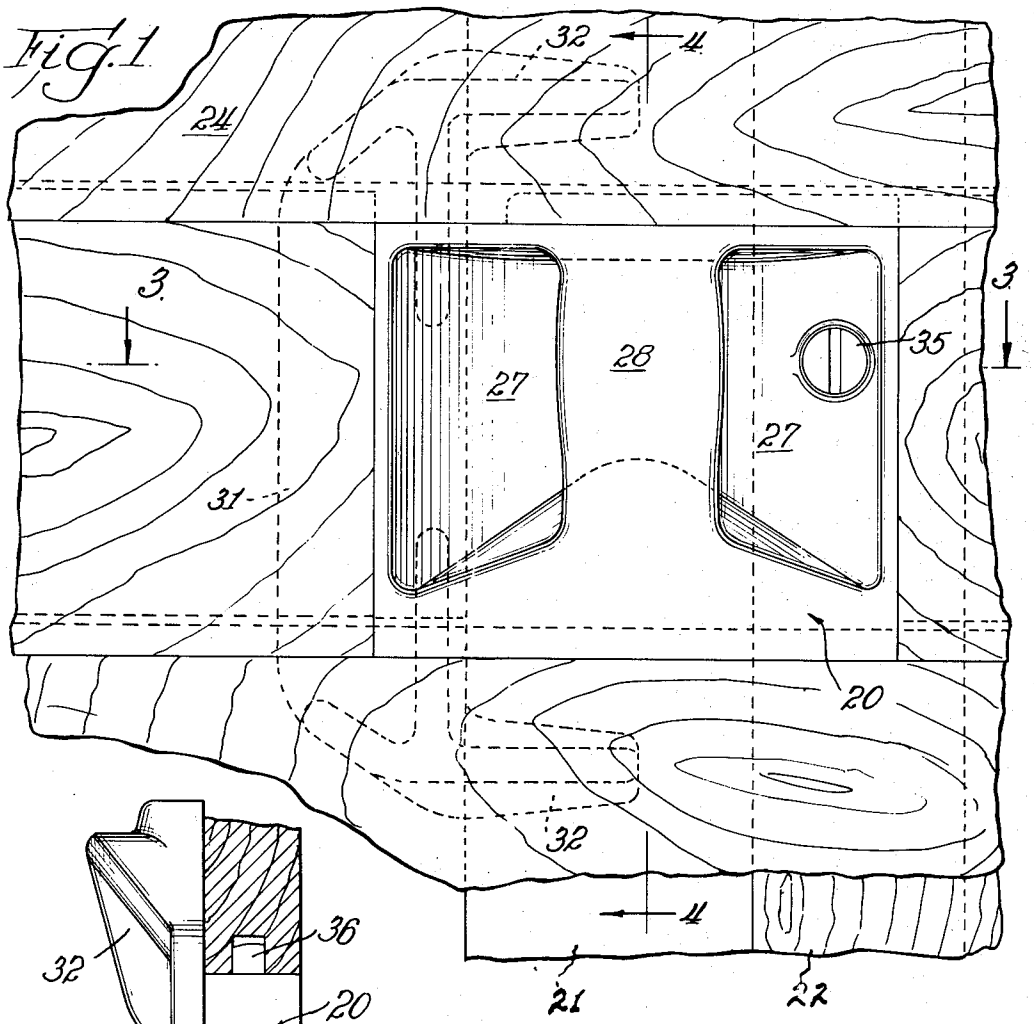
Aug. 30, 1955 M. S. JOHNSON 2,716,382

LADING TIE ANCHORS

Filed June 27, 1952 6 Sheets-Sheet 1

Fig. 1



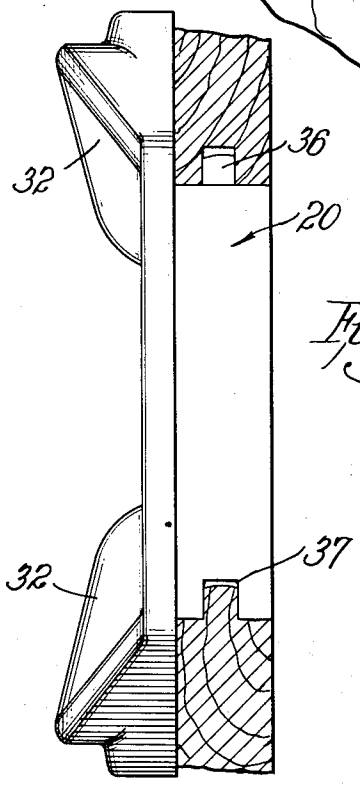


Fig. 2.

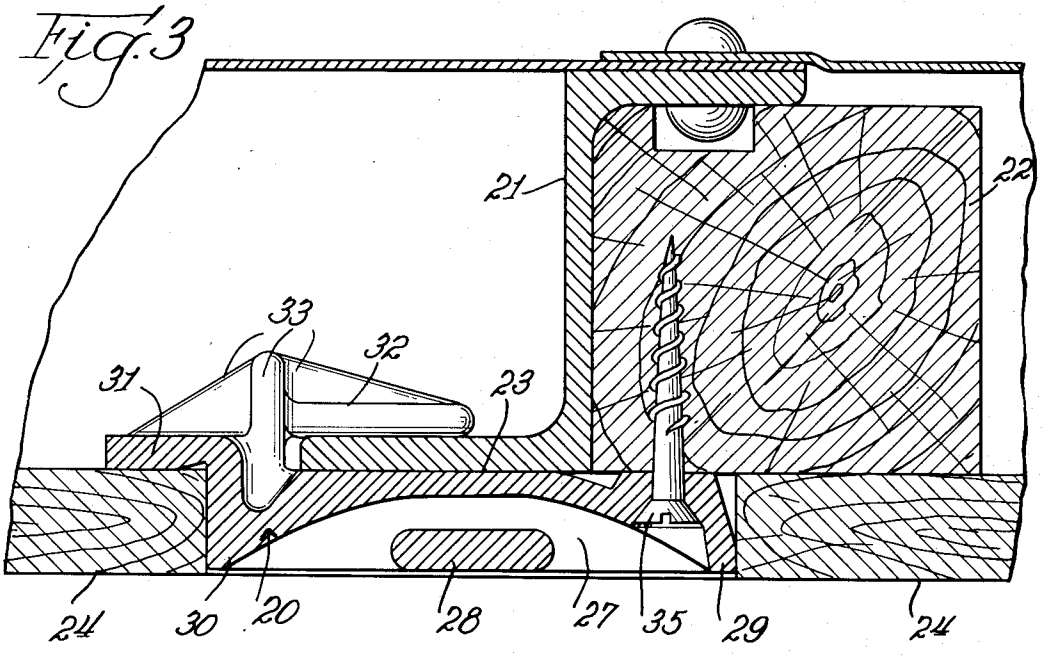
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Aug. 30, 1955 M. S. JOHNSON 2,716,382

LADING TIE ANCHORS

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Fig. 3



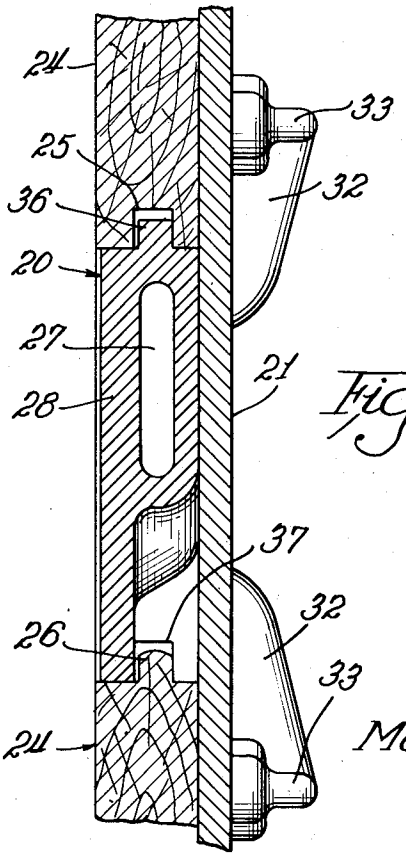


Fig. 4

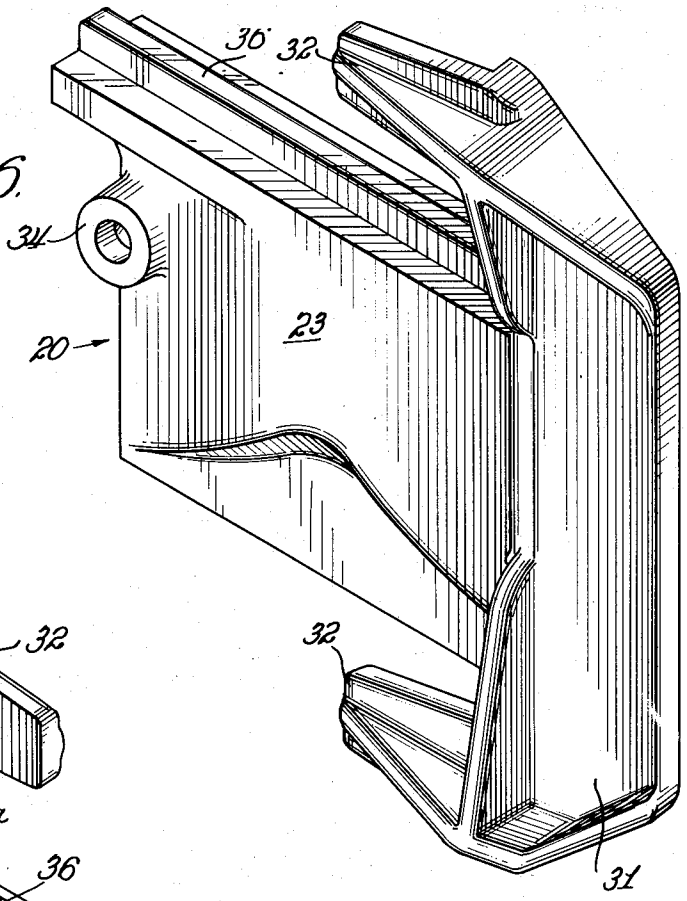
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LADING TIE ANCHORS

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Fig. 6.



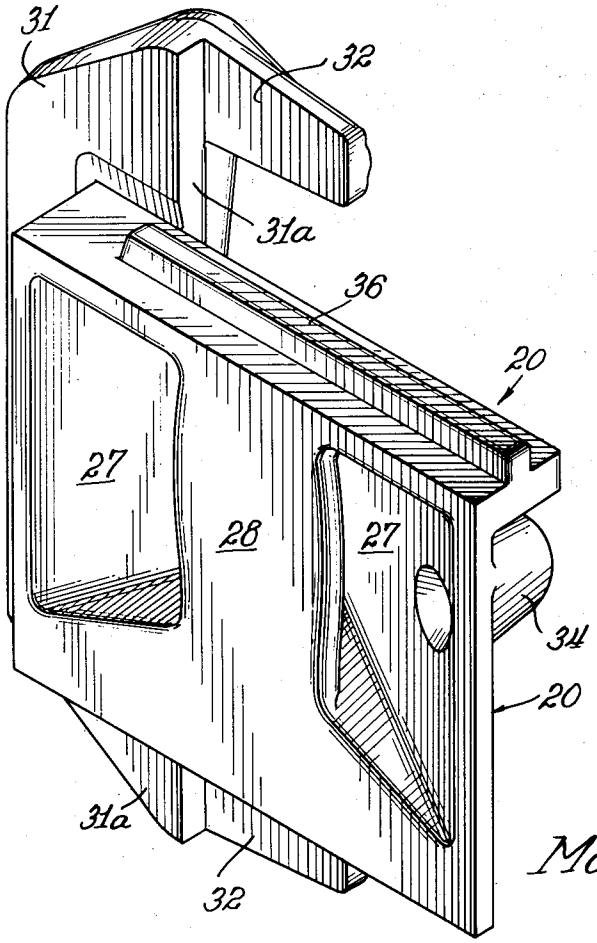


Fig. 5.

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LADING TIE ANCHORS

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Fig. 7.

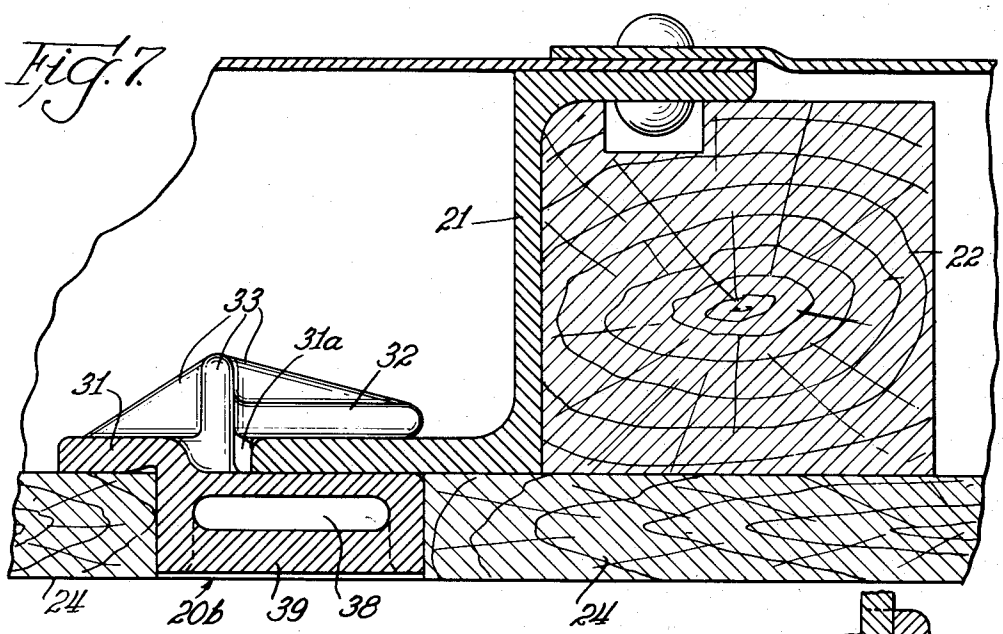
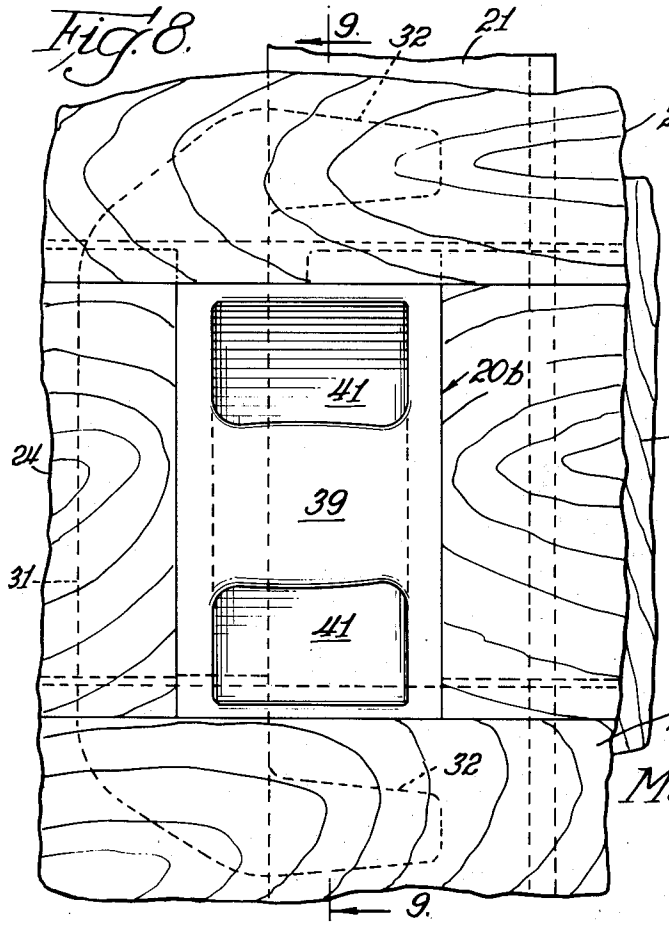


Fig. 8.



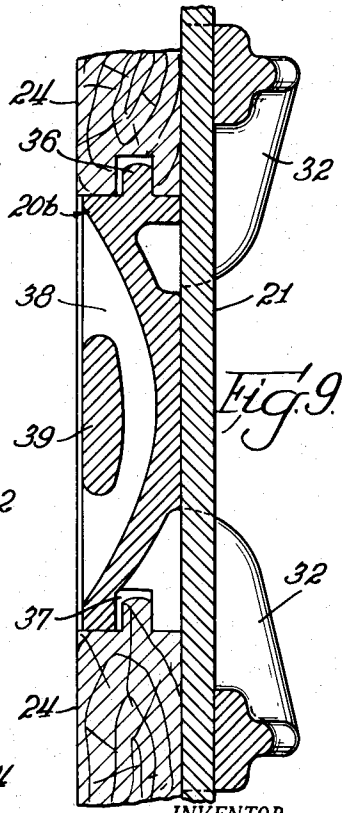


Fig. 9.

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LADING TIE ANCHORS

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Fig. 11

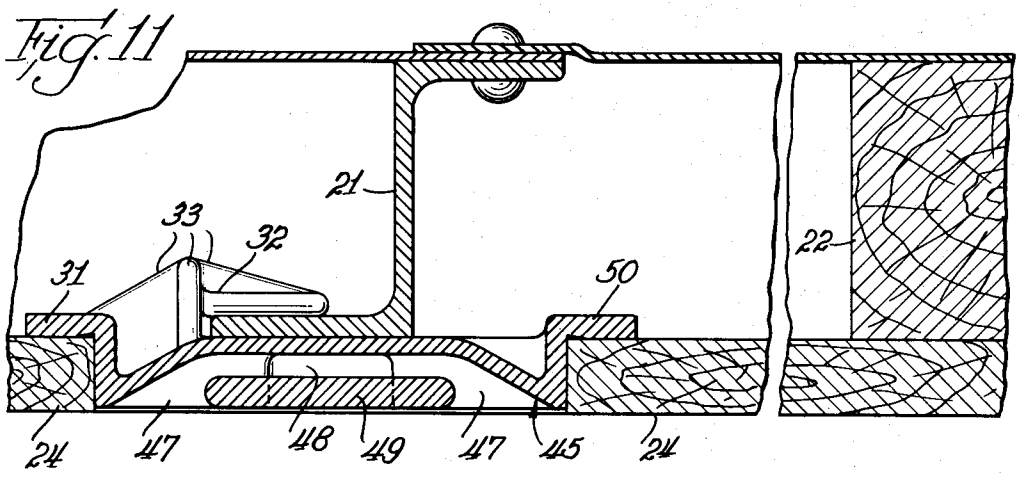


Fig. 10

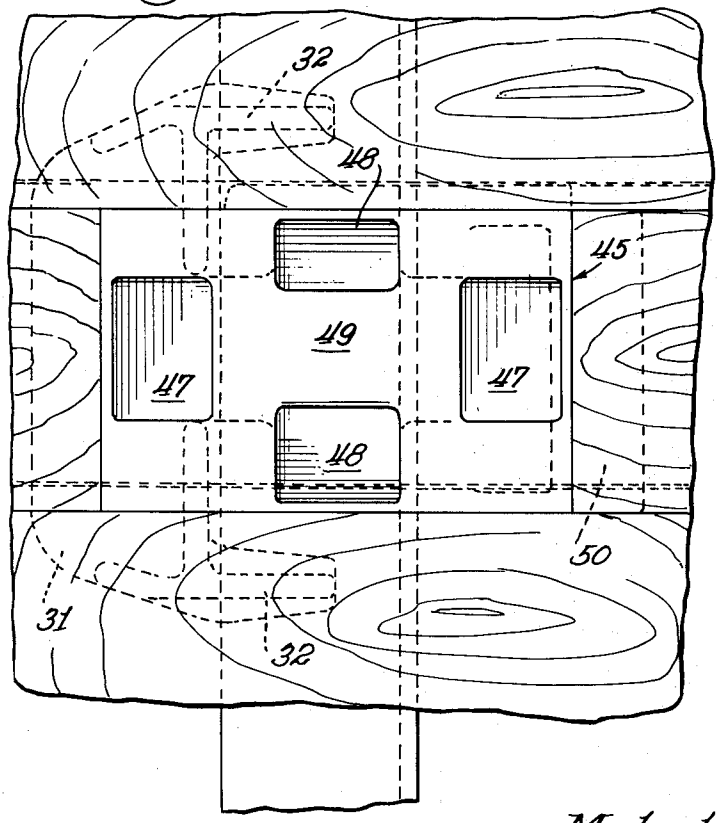
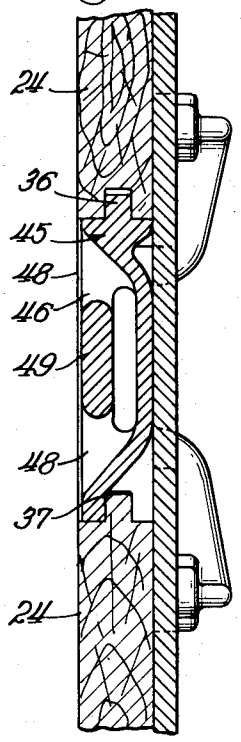


Fig. 12.



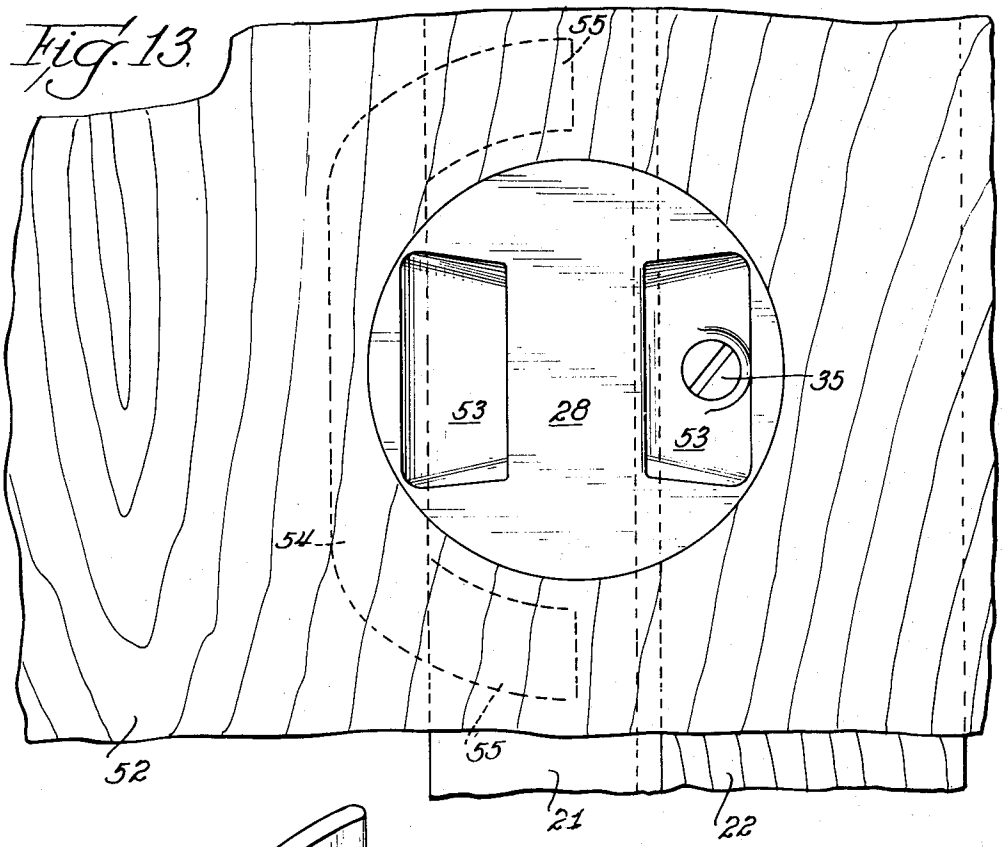
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Aug. 30, 1955 M. S. JOHNSON 2,716,382

LADING TIE ANCHORS

Filed June 27, 1952 6 Sheets-Sheet 6

Fig. 13.



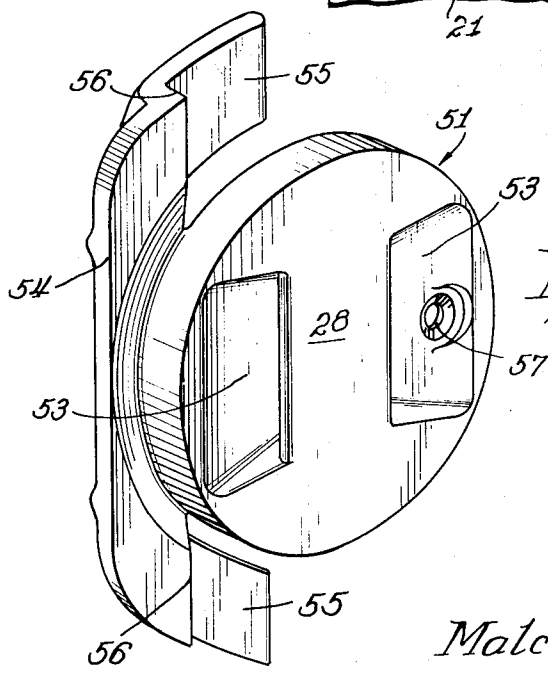


Fig. 14.

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United States Patent Office 2,716,382 Patented Aug. 30, 1955

2,716,382

LADING TIE ANCHORS

Malcolm S. Johnson, Flossmoor, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill., a corporation of Illinois

Application June 27, 1952, Serial No. 295,991

9 Claims. (Cl. 105—369)

My invention relates to anchor means whereby the commodities or lading in railroad house cars may be easily and securely anchored to the car walls against shifting during transit through the medium of conventional metallic tie straps or wires; said means being intended to lie flush with the car lining and to effect sealing relation with the lining boards against passage of any granular substance or grain with which the car may subsequently be loaded.

My invention also has for its object the provision of anchor means which provide a smooth surface on the car interior and an uninterrupted and easy passage therethrough of the lading tie strap or wire; and which will form firm interengaging relation with the structural metal post of the car to transmit the pulling strains to the structural metal post without the use of any permanent fastening means, such as rivets, bolts, welding or the like.

Another object of the invention is the provision of an anchor which requires no special wood mill work at preselected points for the reception of the anchor, which latter must be of sufficient dimensions to be formed with a concaved passage or "scoop" having outwardly sloping or curved ends which will readily guide the tie element in its passage beneath the tie bar or tie band holding portion of the anchor.

A further object of the invention is the provision of an anchor which will afford sufficient support or "backing up" of the adjacent ends of lining boards at opposite sides of the anchor without placing all of the outward pressure on the lining boards to the tongues and grooves of the wood lining boards.

My improved anchor also has for its object the provision of a structure which will afford wide bearing on the metal structural posts of the car and which will effect firm interengaging relation therewith, prevent rotative movement and at the same time compensate for the loads encountered by the car lining.

The aforementioned objects and advantages of my invention will all be readily comprehended from the following detailed description of the accompanying drawings wherein:

Figure 1 is a front elevation of one form of my invention shown in applied condition with portions shown in dotted lines rearward of the car lining boards and flange of a structural car post of which portions are shown.

Figure 2 is an end elevation of the anchor shown in Figure 1 with lining boards in section.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1, as viewed by the arrows.

Figure 4 is a vertical sectional view on the line 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is a perspective view of the forward side of the anchor shown in Figures 1 and 3.

Figure 6 is a similar view of the rear side of the anchor shown in Figure 5.

Figure 7 is a longitudinal sectional view showing a

modified form of the invention, with portions of the car lining and sections of the car structural post and wood furring strip.

Figure 8 is a front elevation of the modification of my improved lading tie anchor shown in Figure 7.

Figure 9 is a vertical sectional view taken on the line 9—9 of Figure 8, looking in the direction of the arrows.

Figure 10 is a front elevational view of a further modification of my invention.

Figure 11 is a cross-sectional view of Figure 10.

Figure 12 is a vertical sectional view of Figure 10, looking toward the left.

Figure 13 is a front elevation of another form of my improved anchor shown in applied position to the inner lining of a railroad car at a point coincident with a structural car post and furring strip of which portions and a portion of the car lining sheet are shown in elevation.

Figure 14 is a perspective view of the anchor shown in Figure 13, as viewed from the forward or inner car side.

My improved tie anchors are intended to be flush with the tongue-and-groove lining boards of a railroad box or house car and in order to enable easy and quick application, the main body portion preferably is of rectangular form and provided with straight side walls and ends thus requiring no special mill work on the lining boards which may be cut to length with an ordinary wood saw to provide straight ends to abut the end walls of the anchor.

In the present day standard house or box cars the structural sides are formed of a number of steel Z-bar posts extending from floor to roof and generally with wood furring strips or posts bolted or secured to the steel Z-bars. When the car is lined the wood lining, consisting of tongue-and-groove boards of more or less uniform width, is nailed to the furring strips starting at the floor and progressing up the side.

In the exemplification of my invention as shown in Figures 1 to 6 inclusive, my improved anchor **20** is shown in conjunction with a Z-bar structural side post indicated at **21** and provided with an attached furring strip **22**, see Figure 3.

The main body of the anchor **20** is provided with a flat or straight rear wall **23** which rests snugly against the flange of the Z-bar **21** as shown in Figure 3 and the overall thickness of the main body is substantially equal to the thickness of the standard lining boards indicated at **24** in Figure 4, whose one longitudinal edge is provided with a groove as at **25**, while the other longitudinal edge is provided with a tongue as at **26**.

The anchor **20**, which may consist of a steel casing or stamping is cored on its outer or forward face to provide a longitudinal or horizontal concaved or dished channel **27** and an integral tie element holding bar portion **28**, extending vertically across the central or deep part of the channel; the latter sloping forwardly or outwardly at the ends and terminating adjacent the end marginal portions **29** and **30**. The length of the anchor is such that it will project beyond the edge of the Z-bar flange or forwardly facing side and part way over the furring strip **22**, as clearly shown in Figure 3. The end wall **30** terminates in a flange portion **31**, whose forward face is disposed in the same horizontal plane as the rear face of the main or body portion of the anchor, as shown in Figure 3, and provides backing for the adjacent end of a lining board **24**.

The flange **31**, preferably at its upper and lower ends, is formed with the integral, reversely extending portion, preferably in the form of horizontally disposed bars **32**, **32** with flat forwardly presented surfaces, predeterminedly spaced from the rear wall of the main body of the anchor so as to snugly fit onto the flange in interengaging relation with the Z-bar **21**, as shown in Figure 3, thereby firmly clamping the anchor to the Z-bar; the bars **32**, **32**

for the purpose of reenforcement being shown provided with reenforcing ribs and webs as at **33**.

The bars **32**, **32** are of length sufficient to extend across a major portion of the width of the Z-bar flange and are of substantial width to afford a wide bearing on the Z-bar flange and thus provide a wide frictional and binding engagement.

The anchor is of predetermined length so as to have the opposite or right hand end thereof extend beyond the Z-bar into overlapping engagement with the furring strip **22**; and if desired, this end of the anchor may be provided with a rearwardly extending apertured boss, as at **34** (see Figure 5) to receive a bolt or screw **35** which screws into the furring strip as shown in Figure 3, and thereby assists in holding the anchor against any shifting or loss in the event of breakage of the adjacent lining board, although, after all of the lining boards have been installed and nailed in place, such shifting is not possible. The orifice of the boss is countersunk so the screw head may be below the channel.

The anchor is substantially of the same width and thickness as the standard lining boards and replaces a section of the lining. The main body of the anchor on its top is provided with an integral tongue **36** (see Figure 4) extending lengthwise and intermediate the vertical planes of the outer or forward face and the rear side or face, so as to register with and extend into the groove **25** on the lower longitudinal edge of the lining board thereabove, while the lower or bottom edge of the anchor is provided with a groove **37**, for receiving the tongue **26** along the upper edge of the subjacent lining board **24** (Figure 4). With this interlocking engagement between the anchor and the lining boards **24** grain, flour, or the like, of a subsequent lading is prevented from entering or falling behind the lining, while the snug fit at the extended ends beyond the Z-bar likewise prevents the condition just mentioned.

In order to provide a wide gripping or interengaging relation with the Z-bar, I prefer to extend the end flange **31** somewhat beyond the top and the bottom of the main body of the anchor (see Figure 5) and thereby vertically space the Z-bar engaging bars **32**, **32**; the flange **31** being shouldered as shown at **31***a* to approximate the thickness of the Z-bar flange and provide a flat abutting surface.

It will be understood, that the spacing between the bars or prongs may be minutely less than the thickness of the Z-bar flange so as to effect a snug frictional engagement with the Z-bar flange.

In Figure 7, a view similar to Figure 3 with the structural Z-bar **21** and furring strip or post **22**, I show a modification of anchor **20***b* which is of less width; provided with the tie element or strap receiving channel **38** which extends vertically and rearward of the forward and integral tie element holding bar portion **39**.

One end or side of theanchor is provided with a flange **31**, similar to that previously described with its forward face disposed in the same horizontal plane as the rear of the anchor and the flange provided with one or more reversely disposed prongs or bars **32**, spaced sufficiently from the rear of the anchor to frictionally and snugly effect overlapping interengagement with the flange of the structural Z-bar **21**.

The bar **32**, like the previously described structure, preferably is reenforced by the ribs and web shown at **33**, and the inner side of the rib preferably provided with a shoulder at **31***a* to effect abutting relation with the Z-bar flange.

As this modified anchor does not overlap the entire Z-bar flange, the latter affords sufficient backing for the adjacent end of the lining board **24**, which also is backed up by the furring strip **22**, to which it is nailed; while the lining board **24** at the opposite side of the anchor is backed up by the integral flange **31**; the ends of the lining boards being straight-cut to effect snug relation with the walls of the anchor as shown.

The upper and lower ends of the anchor may be tongued and grooved as shown in Figure 9; it being understood that the anchor **20***b*, like the preceding structures, preferably is made equal to the width of the conventional or standard car lining boards so that the anchor replaces the cut-away section of the lining; the thickness of the body portion of the anchor being the same as that of the conventional lining boards **24**.

In Figures 7, 8 and 9, I disclose a modification of the invention insofar as the disposition of the tie element holding bar and cavity are concerned—the bar in the previously described structures being vertically disposed. In the instant modification, the anchor **20***b* is provided with a vertically extending concaved channel **38** terminating at its upper and lower ends in the forwardly presented openings **41**, **41**, thereby providing a horizontally extending integral tie element attaching bar **39**.

The anchor **20***b* is provided with a straight or flat rear wall portion which bears against the structural post **21** of the car; while the ends of the anchor **20***b* are provided with a tongue **36** and a groove **37**, similar to the previously described type shown in Figure 4; the tongue and groove being formed to register with the matching groove and tongue of the lining boards **24** which extend across the top and beneath the bottom of the anchor and thus effect a granular passage sealing relation.

As the exemplification is shown applied to a Z-bar post with a furring strip **22** at the right, the left hand vertical side of anchor **20***b* is provided with a flange, shown in dotted lines at **31**, which provides backing for the adjacent end of the lining board **24**, similar to that shown in Figures 1 and 5 and terminates at the ends in the reversely extending prongs or bars **32**, which are slightly spaced from the rear of the body of anchor **20***b*, to permit wedging overlapping relation with the flange of the Z-bar or post **21**, and thereby cause the body of the anchor to firmly bear against the Z-bar against movement.

With certain car loadings or ladings, it is advantageous to tie the load down and hence it is desirable to employ an anchor with a horizontally disposed tie bar as shown in Figure 8.

In order to adapt my improved anchor to both lateral and vertical tie-down conditions, I disclose in Figures 10, 11 and 12, a modification wherein the anchor **45**, which, like the previously described embodiments, consists of a suitable metallic unit of depth or thickness similar to the thickness of the standard car lining boards and cored or formed to provide an arcuate tie wire or band receiving channel **46** on its forward face which is of predetermined width and length with its ends extending forwardly and terminating in openings **47**, **47**; while the sloping walls at the top and bottom provide the upper and lower tie element receiving openings **48**, **48**.

The tie element receiving channel with its openings is formed to leave the intermediate integral tie holding bar **49**, which extends from opening **47** to **47** and of width equal to the distance between openings **48**, **48**. This type of anchor permits the use of tie bands or elements which may extend laterally about the lading and/or vertically across the lading in keeping with the type of the lading in the car.

In the particular exemplification as shown in Figures 10 and 11, the anchor is of length sufficient to extend to opposite sides of the web or vertical median line of the Z-bar post, a car construction wherein the furring strip **22** is positioned a distance from the structural post **21** so that the cut ends of lining boards to opposite sides of the Z-bar **21** would have no backing against flexing or pressure breakage. I, therefore, provide the anchor, adjacent its rear wall, with flat-faced flanges as at **50** and at **31**, which will "back-up" the adjacent ends of the lining boards **24**; the anchor having straight or flat faces to provide abutting relation with the straight-cut ends of the boards as shown in Figure 11, which, together

with the flat-faced flanges **31** and **50**, will prevent passage of grain to the rear of the lining.

Flange **31**, similar to that shown in Figure 3, terminates at top and bottom in the reversely presented prongs or bars **32**, **32** or in a single wide bar disposed a predetermined distance from the rear wall of the anchor to receive the flange of the Z-bar and effect snug frictional holding relation therewith; the bars **32**, **32** preferably being reenforced by the ribs and webs **33**. The body of the anchor on its upper and lower sides, as in the previous structures, may be tongued and grooved, as at **36** and **37**, to receive the groove of the lining board **24** which passes across the top and to receive the tongue of the lining board which passes immediately beneath the anchor, thereby providing a seal against passage of grain to the rear of the lining and at the same time, in conjunction with the lining supporting flanges and the tongue-and-groove interengaging relation, affords adequate support for the lining boards against flexing due to pressure of the car lading, especially when the boards are split or broken and particularly when the anchor is more or less narrow and no furring strip is employed adjacent the structural metallic car post.

As is apparent, particularly in cars where the furring strip or post is not placed adjacent the structural metallic post, the anchor need not be provided with the apertured screw or bolt receiving boss shown in Figures 5 and 6 and disclosed in Figure 3; but in order to properly support and "back-up" the lining boards, the anchors are provided, especially at the ends, with lining board holding surfaces or flanges, particularly at the ends where the lining boards are cut to abut the anchor.

In application, lining boards are placed on the side of the car to a height where an anchor is to be located. The desired anchor is then placed on the longitudinal edge of the last applied board and onto the tongue of the board as shown in Figures 4, 9 and 12; the anchor being positioned adjacent one of the metallic Z-bar posts. Straight edged boards are then placed at opposite sides of the anchor with their ends arranged on the supporting flanges of the anchor. As the anchors are positioned horizontally substantially in the plane of the vertical median line of the Z-bar flange, which is relatively narrow, it is apparent that a very narrow portion of the Z-bar, if any, would be available for backing up or sufficiently supporting the ends of abutting lining boards if an anchor without supporting flanges was employed; and furthermore, an anchor confined entirely within the narrow dimensions of the Z-bar, without the flange extension, would necessitate a short channel or short scoop which would make it difficult to readily insert a tie band around the band holding bar of the anchor.

To obviate this difficulty and to properly support or back-up the adjacent ends of the lining boards, I have devised anchors having a long cavity or channel behind the tie bar, as is clearly evident from the various exemplifications shown.

After placement of the first anchor, considered upwardly from the car floor as just described, lining of the car is continued in the usual manner until all of the desired anchors have been located and all lining boards have been applied, the anchors driven onto the Z-bars and the lining boards nailed to the furring strips or wood posts of the car. The boards immediately above the top and bottom of the anchors effect tongue-and-groove interengagement with the anchors which prevents grain falling behind the lining and holds the boards in place; and in conjunction with the flanges of the anchors provide adequate support for the lining boards adjacent the anchors.

As the width of the flange of the standard metallic car post is relatively narrow, it is apparent that an anchor which would permit the ends of the lining boards to also rest on the Z-bar flange would necessarily require a short scoop or cavity which would make it difficult to insert a retaining band or element behind the tie bar or holding

portion of the anchor; hence my improved anchors are designed with relatively long scoops or channels and board-end supporting surfaces or flanges on the outer walls of the anchor.

In Figures 13 and 14, I disclose a form of my improved anchor adapted for use with railroad freight cars which may be lined with sheets of plywood, or the like, of a preselected thickness, instead of the more or less universally employed lining boards which are arranged lengthwise of the car. Plywood, as well known, is preferably cut with an annular hole to avoid slivering or splitting and for that reason, I have provided the circular form of anchor as shown in Figures 13 and 14.

The anchor **51**, as shown in Figure 14, is of circular form and of thickness preferably approximating the thickness of the plywood lining sheets shown at **52** in order that the rear wall of the anchor may lie flush with and bear against the car metal structural post or Z-bar **21**, to one side whereof the usual wood furring strip **22** is generally secured. The Z-bar **21** and furring strip **22** are generally vertically disposed and extend from top to bottom of the car and are secured together.

The anchor **51**, which may be of malleable iron, is of predetermined thickness to provide a tie band or wire-receiving channel between the rear and forward wall extending transversely and terminating in forwardly sloping ends or openings **53**, **53**, spaced apart transversely of the body to provide the intermediate tie element holding tie bar **28**, similar to that shown in Figure 1.

The outwardly sloping ends of the channel aid in guiding the tie band or wire through the channel and are spaced from each other to provide a relatively wide tie bar **28**, integral with the wall of the anchor.

The anchor at one side, the left-hand side in Figure 14, and preferably in the plane of the rear wall is provided with a flat-faced flange **54** which extends laterally beyond the anchor side and somewhat at its ends above and below the annular body and the ends of the flange **54** offset rearwardly to provide the reversely extending distal ends **55**, **55**, arranged in a vertical plane rearward of the vertical plane of the rear side of the body of the anchor corresponding to the width of the shoulders **56**, **56**, formed at the off-sets in the ends of the flange **54** and which approximate the thickness of the flange or leg of the Z-bar post **21**. This enables the flange ends **55**, **55** to be forced edgewise onto the Z-bar into wedging or firm gripping engagement, while the shoulders **56**, **56** effect abutting relation with the longitudinal edge of the Z-bar, as shown in dotted lines in Figure 13.

One of the sloping outlets or ends **53** of the channel, namely the one at the right in Figure 14, which will come into lapping relation with the furring strip **22**, is shown provided with a countersunk aperture **57** to receive the screw **35** which screws into the furring strip **22** and assists in holding the anchor against shifting.

It is, of course, understood that the lining sheet **52** is also nailed to the furring strip **22**, after the anchor has been inserted into the preformed hole from the rear of the lining boards and the gripping toes or ends **55**, **55** have been forced onto the Z-bar flange or side.

What I claim is:

1. A tie anchor for railroad house cars having structural wall posts and tongued and grooved inner lining boards, comprising a single rectangular unit adapted to bear against a structural car post and having a tie element holding portion and a tie element receiving cavity extending beneath the holding portion with openings on the forward side of the unit at opposite sides of the holding portion, the upper and lower sides of the unit being tongued and grooved to match the grooves and tongues of the lining boards and having lining board supporting surfaces at the sides and a reversely disposed integral portion spaced a predetermined distance from the rear side of the anchor to receive a portion of a

car structural post therebetween and effect holding relation therewith.

2. A tie anchor for railroad house cars having flanged structural wall posts and inner lining boards bearing against the flanged portions thereof, comprising a single rectangular unit adapted at rear to fit against a flange of a structural post and provided at front with a tie element holding portion and a tie element receiving cavity extending beneath said holding portion and opening forwardly on opposite sides of said holding portion, the ends of the unit being formed to hold the adjacent portions of the lining boards against pressure from the car lading and maintain the unit and the lining boards in alignment, the unit being provided at rear with a portion spaced rearwardly from and extending along the portion of the unit fitting against the flange portion of the car post and adapted to overlie the same and effect holding engagement therewith.

3. A tie anchor for railroad house cars having vertically disposed flanged structural wall posts and inner lining boards bearing against the flanged portions thereof, comprising a single piece unit provided with a tie element holding portion flush with the forward face of the lining boards and a tie element receiving cavity extending beneath the element holding portion, the front wall being provided with a plurality of prearranged tie element receiving openings communicating with said cavity aligned in pairs, one pair being aligned substantially at the transverse median line of the unit while the other pair is arranged substantially at the vertical median line of the unit above and below the transverse median line, all of said openings being spaced apart to provide tie element holding portions therebetween, the rear side of the unit being adapted to bear against the flange of a wall post and having a reversely disposed integral portion spaced from and extending along the rear side to receive a portion of the flange of the structural post therebetween for transmitting pulling strains encountered by the unit to the structural post.

4. A tie anchor for railroad house cars having structural wall posts and tongued and grooved inner lining boards of substantially uniform width and thickness, comprising a single rectangular unit of substantially the same width and thickness as said lining boards so that the unit can be used as a continuation of a lining board and having a tie element holding portion and a tie element receiving space extending beneath the holding portion, the upper side of the unit having a tongue to interfit with the groove of the lining board thereabove and the lower side of the unit having a depending flange constituting an extension of the forward side for overlying the tongue of the lining board therebelow, the unit having means associated therewith whereby it can be secured to a structural wall post.

5. A tie anchor for railroad house cars having structural wall posts and tongued and grooved inner lining boards of substantially uniform width and thickness, comprising a single rectangular unit of substantially the same width and thickness as said lining boards so that the unit can be used as a continuation of a lining board and having a tie element holding portion and a tie element receiving space extending beneath the holding portion, the upper side of the unit having a tongue to interfit with the groove of the lining board thereabove and the lower side of the unit having a depending flange constituting an extension of the forward side for overlying the tongue of the lining board therebelow, at least one end of the unit having endwise extending flange means for engaging the rear side of the juxtaposed end of the lining board of which the unit constitutes an extension for backing up the same and holding it against pressure movement of the car lading, the unit having means associated therewith whereby it can be secured to a structural wall post.

6. A tie anchor for railroad house cars having flanged structural wall posts and tongued and grooved inner lining boards of substantially uniform width and thickness bearing against the flanged portions of said posts, comprising a single rectangular unit of substantially the same width and thickness as said lining boards so that the unit can be used as a continuation of a lining board and having a tie element holding portion and a tie element receiving space extending beneath the holding portion, the upper side of the unit having a tongue to interfit with the groove of the lining board thereabove and the lower side of the unit having a depending flange constituting an extension of the forward side for overlying the tongue of the lining board therebelow, the unit having its rear side adapted to bear against the flange of a car structural post and on its rear side a portion spaced therefrom and extending therealong to receive therebetween a portion of the flange of the car structural post.

7. A tie anchor for railroad house cars having flanged structural wall posts and tongued and grooved inner lining boards of substantially uniform width and thickness bearing against the flanged portions of said posts, comprising a single rectangular unit of substantially the same width and thickness as said lining boards so that the unit can be used as a continuation of a lining board and having a tie element holding portion and a tie element receiving space extending beneath the holding portion, the upper side of the unit having a tongue to interfit with the groove of the lining board thereabove and the lower side of the unit having a depending flange constituting an extension of the forward side for overlying the tongue of the lining board therebelow, at least one end of the unit having an extension the front face of which is coplanar with the rear side of the unit for underlying the rear side of the juxtaposed end of the lining board of which the unit constitutes an extension for backing up the same and holding it against pressure movement of the car lading, the unit having its rear side adapted to bear against the flange of a car structural post and on its rear side a portion spaced therefrom and extending therealong to receive therebetween a portion of the flange of the car structural post.

8. A tie anchor for railroad house cars having vertically disposed flanged structural posts and a horizontally extending inner lining bearing against the flanged portions thereof, comprising a single piece tie anchor adapted to bear against the flange of a structural post and extend substantially flush with the car lining, the forward face of the anchor being formed with a tie element holding portion and a tie element receiving space extending beneath the holding portio, the anchor on its rear side having an integral portion spaced therefrom and extending therealong to receive therebetween a portion of the flange of the car structural post.

9. A tie anchor for railroad house cars having vertically disposed flanged structural posts and lining board means bearing against the flanged portions thereof comprising, a tie anchor adapted to bear against a structural post and having a circular body portion for extending through to be substantially flush with the car lining and form a continuation thereof, tie element holding means on the exposed side of said anchor, the anchor on its rear side having an integral portion spaced therefrom and extending therealong to receive therebetween a portion of the flange of the car structural post.

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