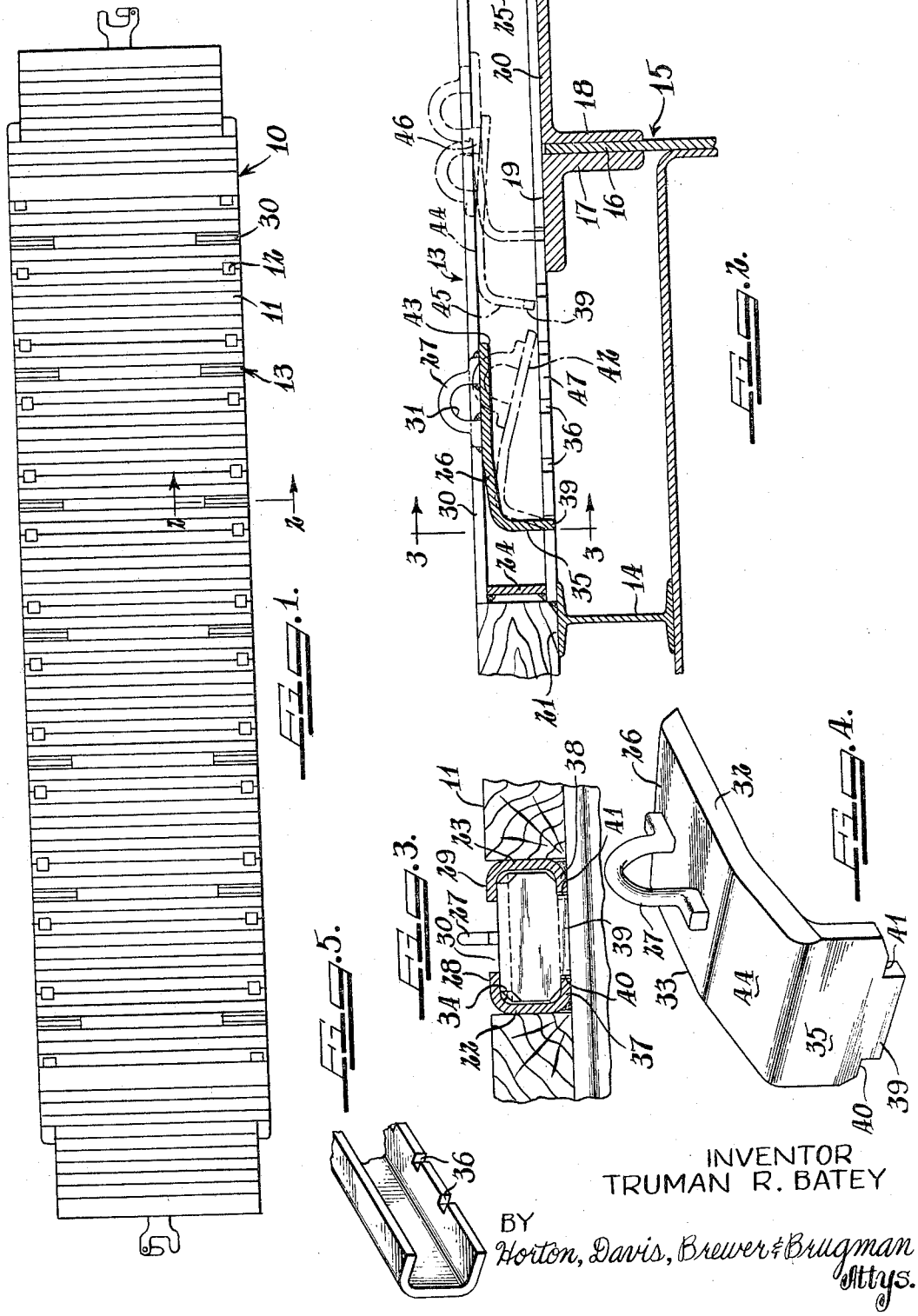
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SLIDING RETRACTABLE LADING STRAP ANCHOR

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SLIDING RETRACTABLE LADING STRAP ANCHOR

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This invention relates to anchors for lading straps such as are used to secure loads on a railway freight car, or the like.

It is frequently desirable to move freight of non-uniform size, such as lumber, on open flat cars. The same flat cars may be used to haul machinery, steel beams, vehicles and various structures in partial state of completion. It is important that any device applied to the floor of the flat car as an anchor to which the goods may be secured, either be removable or retractable so that when not in use, it does not protrude above the general plane of the floor of the flat car. It is, of course, necessary that the anchor be located as close to the base of the load to be tied down as possible to avoid possible shifting of the load.

Removable anchors are not satisfactory, since their very removability leads to their disappearance from the flat car.

Anchors which are retractable have been devised, but to fit the wide variety of loads carried on flat cars, a great number of such anchors is required, thus making the cost of the anchors unduly high.

It is an object of this invention to provide a retractable anchor for lading straps wherein the anchor is disposed in the floor of the freight car and is capable of accepting a wide variety of sizes of loads, and which furthermore satisfies the basic requirement of always being as close as possible to the base of the load, regardless of the size of the load.

As a more specific object, this invention seeks to provide a retractable anchor for the lading strap of a freight car wherein the position of said anchor on the floor relative to the load to be tied down is adjustable to bring said anchor as close to the load as possible.

It is also within the purview of this invention to provide a retractable and laterally adjustable anchor for lading straps wherein said anchor is easily moved within the limits of its adjustability and yet is immovable once a location for it is selected and a lading strap is anchored thereto.

A further specific object of this invention is to provide a retractable and laterally adjustable anchor which is dimensioned to occupy a space of the same height and width as a standard floor board of a freight car so that it does not protrude above the surface of the floor when it is not in use, nor does it require special fitting of adjacent floor boards.

These and other objects of this invention will become apparent from the following detailed description of a preferred embodiment when taken together with the accompanying drawings in which:

FIG. 1 is a plan view of a railway flat car which incorporates the sliding retractable anchor of this invention;

FIG. 2 is an enlarged fragmentary elevational view in section of the portion of the flat car which contains the anchors of this invention, said fragmentary elevational view being taken substantially along the line 2—2 of FIG. 1;

FIG. 3 is a fragmentary elevation of the anchor of this invention taken along line 3—3 of FIG. 2;

FIG. 4 is a perspective view of the movable element

of the anchor, said element being shown enlarged with respect to the showing in FIGS. 2 and 3; and

FIG. 5 is a perspective view of a fragment of one of the channels forming part of the anchor.

In general, the preferred form of this invention may take the form of an assembly of steel elements which includes a U-shaped strap secured to an L-shaped locking member retained between parallel opposed channel members disposed in the floor of a flat car. The locking member is proportioned to be freely slidable in the space between the opposed channel members when it is not in use, but it is firmly interlocked with said channel members when a lading strap or similar flexible holding device is securely tied thereto. In the unused condition, the locking member drops down between the channel members to bring the U-shaped strap below the general surface of the flat car floor.

Referring now to the drawings for a detailed description of the invention, there is shown at 10 a railway flat car to which this invention has been applied for illustrative purposes. It is understood that the invention may be applied equally as well to other forms of freight carriers, such as trucks and ships. Said flat car 10 has a deck which is surfaced with floor boards 11 placed side by side crosswise of the flat car. Said boards may have a series of spaced recesses 12 running along the sides thereof, said recesses serving to receive stakes or other vertical support members for the purpose of providing removable side walls for the flat car. Also at spaced intervals along both sides of the car are elongated slidable retractable anchor assemblies 13 made in accordance with this invention. Said anchor assemblies occupy a space having a width equal to the width of a floor board 11, and they are of the same height as a floor board, so that adequate space for the retention of the anchor assemblies may be provided very simply merely by removing a portion of a single floor board in existing flat cars, or by making certain of the flow boards in new construction shorter than the intervening floor boards.

The sub-structure of the flat car is shown in part in FIG. 2 and comprises two longitudinally disposed I-beams, one of which is shown at 14, said I-beams functioning as the center sills of the car. Two side sill assemblies 15 are provided which extend parallel to the center sills adjacent the side edges of the floor of the flat car. The center and side sills are appropriately secured together in spaced relation by cross braces which are not a part of this invention and are not shown in the drawings. Side sill assemblies 15 are comprised of a plate 16 to one side of which is secured an angle iron 17 and to the other side of which is secured an angle iron 18, the top surfaces 19 and 20 of said angle irons being coplanar with the top surfaces 21 of the I-beams 14 of the center sills. Floor boards 11 extend across and rest upon top surfaces 19, 20 and 21 and are appropriately secured thereto by known means (not shown).

Anchor assemblies 13 are elongated box-like metal structures which may be fabricated in several ways to have top, bottom, side and end walls, with a slot in the top wall through which access may be had to a slidable anchor plate held captive in the structure. In the form selected to illustrate this invention the assembly is comprised of spaced opposed substantially identical channel members 22 and 23 which are rigidly connected together at their end regions by end closure plates 24 and 25 disposed within said channels 22 and 23 and preferably welded thereto. Disposed between said channels 22 and 23 is an anchor plate 26 of generally L-shape having a U-shaped strap 27 welded or otherwise rigidly secured to the outside surface of the longer leg of the L. Anchor plate 26 is of a width which is slightly less than the

distance between the inner surfaces of the channels 22 and 23, so that said plate is loosely held between the said channels and may slide readily therein. The upper sides 28 and 29 of the channels 22 and 23, respectively, have their top surfaces flush with the top surfaces of the boards 11 and extend inwardly toward one another to overly the plate 26. Said upper sides 28 and 29 thus form a top wall for the structure and define a slot 30 through which strap 27 is adapted to extend so that it can be made to protrude above the general level of the floor of the car to present an eye 31 through which a lading strap, chain or wire may be passed to secure a load to the floor of the car.

The sides 32, 33 of anchor plate 26 are substantially parallel and may be chamfered or rounded to clear the rounded interior corners 34 of the channels 22 and 23. When U-shaped strap 27 is pulled up by a lading strap or the like, the upper surface of anchor plate 26 is made to bear against the inner surfaces of upper sides 28 and 29 of the channels 22 and 23 to provide the necessary retainer for the lading strap against upward movement of the anchor relative to the car floor.

It is contemplated that anchor plate 26 will also be held against lateral movement along the channels 22 and 23 when the plate is in load-holding position. The retention of the plate against lateral movement is accomplished by interlocking the downwardly projecting leg 35 of the plate with the channels 22 and 23 at a selected one of several available locations along the length of the channels. It may be observed that lower sides 37 and 38 of channels 22 and 23 respectively form the bottom wall of the anchor assembly and define a slot 47 therein. Each of said channels has a series of spaced rectangular notches 36 formed in its lower sides 37 and 38, respectively, i.e., in the sides of slot 47. The notches of each channel are transversely aligned with those of the opposite channel. The lower end of the downwardly projecting leg 35 is notched at its corners 40 and 41 to form a tongue 39 adapted to be received in the notches 36 of the opposed channels 22 and 23. Said notches 40 and 41 serve to limit the movement of leg 35 downwardly so that tongue 39 does not, at any time, project below the lower sides 37 and 38 of channels 22 and 23.

The plane of anchor plate 26 in the vicinity of the U-shaped strap 27 is substantially perpendicular to the plane of the downwardly projecting leg 35 of said plate 26. Thus when the anchor plate is in operative position, that is, when a lading strap is secured to or through the U-shaped strap 27, leg 35 is substantially vertical and tongue 39 is received in opposed notches 36 in the channels 22 and 23. Under these conditions lateral movement of the anchor plate 26 cannot take place, and the load retained by the lading strap is secure against transverse movement relative to the car floor. When, however, the anchor plate 26 and its U-shaped strap 27 are not in use, the unbalanced nature of the anchor plate causes said plate to drop downwardly into the space between channels 22 and 23 and assume the position shown at 42 in dot-dash outline in FIG. 2. In this position the inner corner 43 of plate 26 rests upon the lower sides 37 and 38 of the channels 22 and 23 and bridges the notches 36, inasmuch as anchor plate 26, as stated above, extends from channel 22 to channel 23 with a loose fit. In such lowered position, strap 27 is entirely below the upper surface of the car floor and hence does not interfere with either the movement or the support of a load on the car floor.

The lateral adjustability of the anchor assembly 13 is effected by raising tongue 39 out of notches 36 and then sliding anchor plate 26 with tongue 39 in a raised position in the desired direction to the notches 36 nearest to the location desired for the anchor plate. Interference between plate 26 and the inner surfaces of the upper sides 28 and 29 of the channels 22 and 23 when tongue 39 is raised, is avoided by forming a downward bend in the section 44 adjacent leg 35, as shown in FIG. 2. This, in effect, shortens leg 35 to provide clearance between plate 26 and the channel sides 28 and 29 when leg 35 is raised to free tongue 39 from notches 36 during the sliding movement of anchor plate 26. The position of the plate in the channels during sliding movement is shown in dot-dash lines at 45. It may be noted that although tongue 39 rides upon the lower channel sides 37 and 38 between notches 36 and 38, the relief provided by the bent portion 44 avoids any binding of the plate in the channels and permits said plate to be moved lengthwise of the channels to any desired position. During such lengthwise movement, the U-shaped strap 27 extends sufficiently upwardly above plate 26 to render said strap readily available from the floor of the car by the one who is securing a load to the car floor. During the sliding movement it is necessary that a twist be exerted upon the strap 27 to raise tongue 39 out of notches 36 and to hold said tongue out of notches 36 until the selected notches are reached. A typical new setting for the plate is shown in dotted outline at 46 in FIG. 2. It may be noted that in the position shown in FIG. 2 the notch selected is immediately over angle iron 17, but inasmuch as tongue 39 does not protrude below the channels 22 and 23, the presence of the angle iron 17 does not in any way affect the engagement of tongue 39 with notches 36, nor the operation of the device as a whole.

The length of the anchor assemblies 13 may vary to suit particular load dimensions. Thus, where a greater variation in the width of the load is anticipated, longer assemblies may be provided which make available a greater number of notches 36 for providing a greater selection of locations for the anchor plate 26. Each anchor assembly 13 is fabricated as a unit and may then be appropriately secured as by welding to the steel frame of a car. The material of the channels 22 and 23 and of the anchor plate 26 is preferably forged steel of a thickness selected to provide an ample margin of strength for the anticipated loads to be borne by the assembly.

As clearly shown in FIG. 2, when the anchor plate is not in use it simply drops of its own weight to the position shown at 42 in FIG. 2, wherein the entire plate, including the U-shaped strap 27, lies below the general level of the floor boards 11. The plate 26, being essentially rectangular and of a greater width than the width of the slot 30 between the channels 22 and 23, is captive in the assembly and cannot fall out nor in fact can it be removed without separating the channels 22 and 23. The latter, in turn, cannot be accomplished without destroying the closure plates 24 and 25 which, as stated previously, are permanently welded to the channels 22 and 23. Thus, movement of the flat car 10 at high speed over a rough road bed can be effected without fear of losing those anchor plates 26 which are not then in use. The use of opposed spaced channels for the main structure of the assembly rather than a basic box section provides a ready-made slot, not only in the upper wall of the assembly, but also in the bottom wall of the assembly, as well. The lower slot provides a means through which dirt or the like may fall which might otherwise accumulate in the anchor assembly and interfere with the movement of anchor plate 26 therein. The anchor assemblies 13 are thus self-cleaning to a large extent, particularly over the open span between the I-beam 14 and the angle iron 17.

Although the embodiment illustrated herein is the preferred form of this invention, it is understood that the invention may take other forms, and the scope of this invention, therefore, is not to be limited to the embodiment illustrated, but is to be determined by the appended claims.

I claim:

1. A lading strap anchor assembly comprising a structure having top, bottom and side walls, said top and bottom walls having elongated slots therein, the sides of the elongated slot in the bottom wall having opposed

pairs of notches, a plate in the structure, said plate having a width greater than the width of the elongated slots in the top and bottom walls, a tongue on one end of said plate adapted to be received in a pair of opposed notches, and apertured load-holding means on the plate adapted to extend through the slot in the top wall, said plate being slidable in the structure for its reception in a selected pair of the said opposed pairs of notches.

2. A lading strap anchor assembly comprising a structure having spaced sides and top and bottom walls, a slot in one of said walls, a slide in the structure, said slide having a portion thereof reciprocable through said slot, said portion having an opening therethrough to receive a load-holding device, interfitting locking means on the slide and structure engageable when the flexible load-holding device is taut in the opening in said portion, whereby to prevent movement of the slide in the assembly, said slot being disposed in the top wall and there being a slot in the bottom wall, and said interfitting means comprising notches in the sides of the slot in the bottom wall, and a tongue on the slide adapted to be received in a notch.

3. A lading strap anchor assembly comprising a structure having spaced sides and top and bottom walls, a slot in one of said walls, a slide in the structure, said slide having a portion thereof reciprocable through said slot, said portion having an opening therethrough to receive a load-holding device, interfitting locking means on the slide and structure engageable when the flexible load-holding device is taut in the opening in said portion, whereby to prevent movement of the slide in the assembly, said slot being in the top wall and there being a slot in the bottom wall, said slide comprising a substantially rectangular plate received in said structure and having an upper surface, said portion of said slide having an opening therethrough comprising a U-shaped strap secured to the upper surface of said plate at one end thereof, and said interfitting means comprising notches in the slot in the bottom wall and a tongue on the slide adapted to be received in a notch.

4. A lading strap anchor assembly comprising spaced channel members disposed with their sides facing one another to define top and bottom walls having slots therein, means holding said channel members in such spaced relation, a slide disposed between said channel members, said slide comprising an L-shaped plate having one leg thereof disposed longitudinally of said channel members and the other leg disposed transversely of said channel members, a tongue formed in the end of said transversely disposed leg, the sides of the channel members defining a slot in the bottom wall having spaced notches to receive said tongue to lock the slide in the assembly against longitudinal movement therein, and means on the said one leg for receiving a flexible load-holding device, said means when not receiving a flexible load-holding device dropping into the slot below the level of the top wall.

5. A lading strap anchor assembly as described in claim 4, said other leg and said tongue being shorter than the distance between the top and bottom walls within the assembly, whereby said other leg may be moved upward to disengage said tongue from a notch.

6. A lading strap anchor assembly comprising a structure having spaced sides and top and bottom walls, a slot in one of said walls, a slide in the structure, said slide having a first substantially planar end portion at one longitudinal end thereof carrying a fastening element which is reciprocable through said slot, said element having an opening therethrough to receive a load-holding device, and interfitting locking means on the slide and structure engageable when the flexible load-holding device is taut and secured in the opening in said element, whereby to prevent movement of the slide in the assembly, said slide comprising a generally rectangular plate having in addition to said first planar end portion, second and third portions extending successively in different angular relationships to said first portion to provide an end region in generally right angular relationship to said first portion and which plate is received in said structure and has an upper surface, and said first end portion of said slide having an opening therethrough comprising a U-shaped strap secured to the upper surface of said plate by which said first end portion of the slide is lifted when lading is connected thereto.

7. A lading strap anchor assembly comprising a structure having spaced sides and top and bottom walls, a slot in one of said walls, a slide in the structure, said slide having a portion at one longitudinal end thereof reciprocable through said slot, said portion having an opening therethrough to receive a load-holding device, and interfitting locking means on the slide and structure engageable when the flexible load-holding device is taut and secured in the opening in said portion, whereby to prevent movement of the slide in the assembly, said structure comprising spaced channel members having webs forming side walls and side flanges facing one another in spaced and opposed relationship, and means holding said channel members in such spaced relationship, said facing side flanges forming the top and bottom walls of the structure, said facing side flanges of the top wall defining said slot, and said bottom wall being notched for engagement with a longitudinal end of said slide which is spaced from the first mentioned longitudinal end portion of the slide to comprise said interfitting locking means.

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