Aug. 12, 1952 J. C. WEAVER 2,606,670

LOAD BINDING DEVICE

Filed Oct. 29, 1949 4 Sheets-Sheet 1

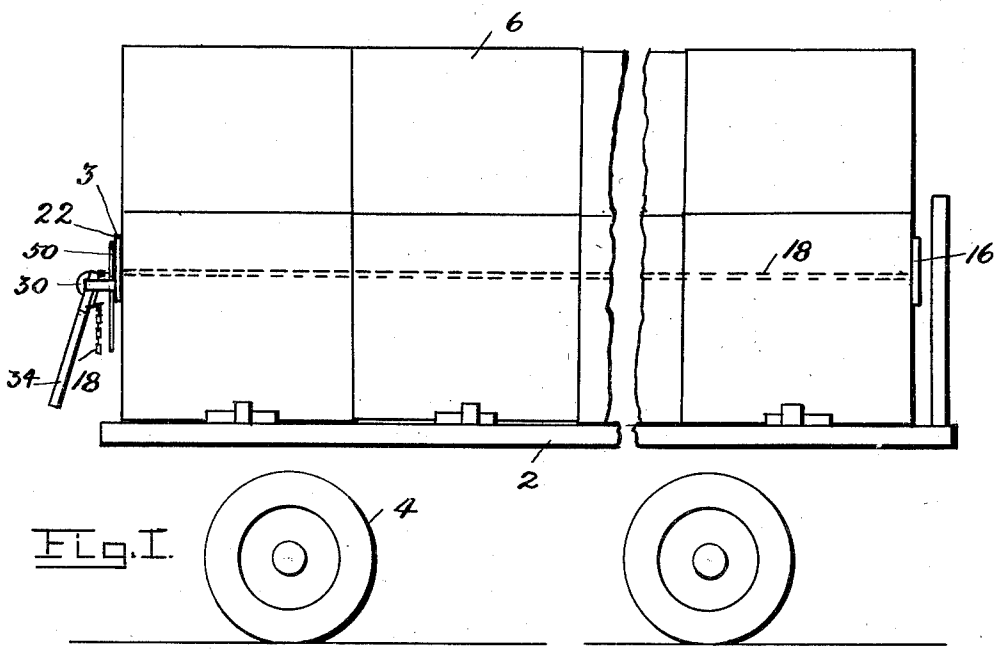


Fig. I.

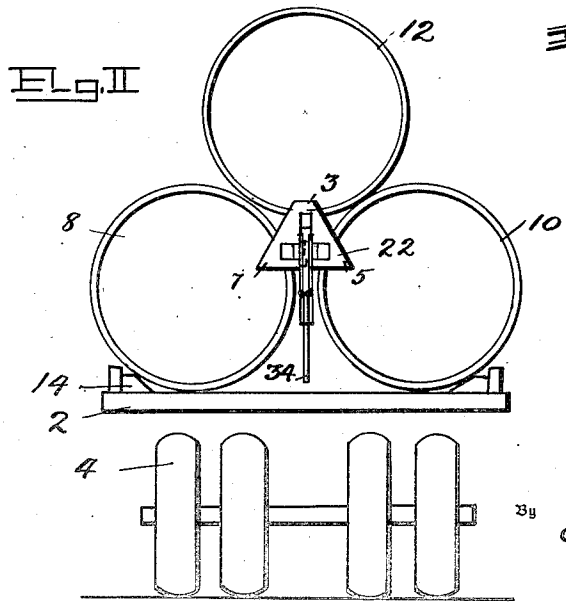


Fig. II.

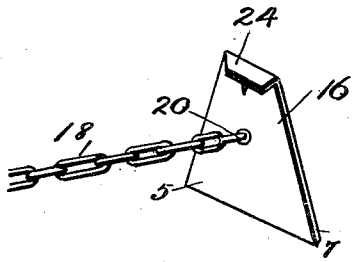


Fig. III.

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Aug. 12, 1952 J. C. WEAVER 2,606,670

LOAD BINDING DEVICE

Filed Oct. 29, 1949 4 Sheets-Sheet 2

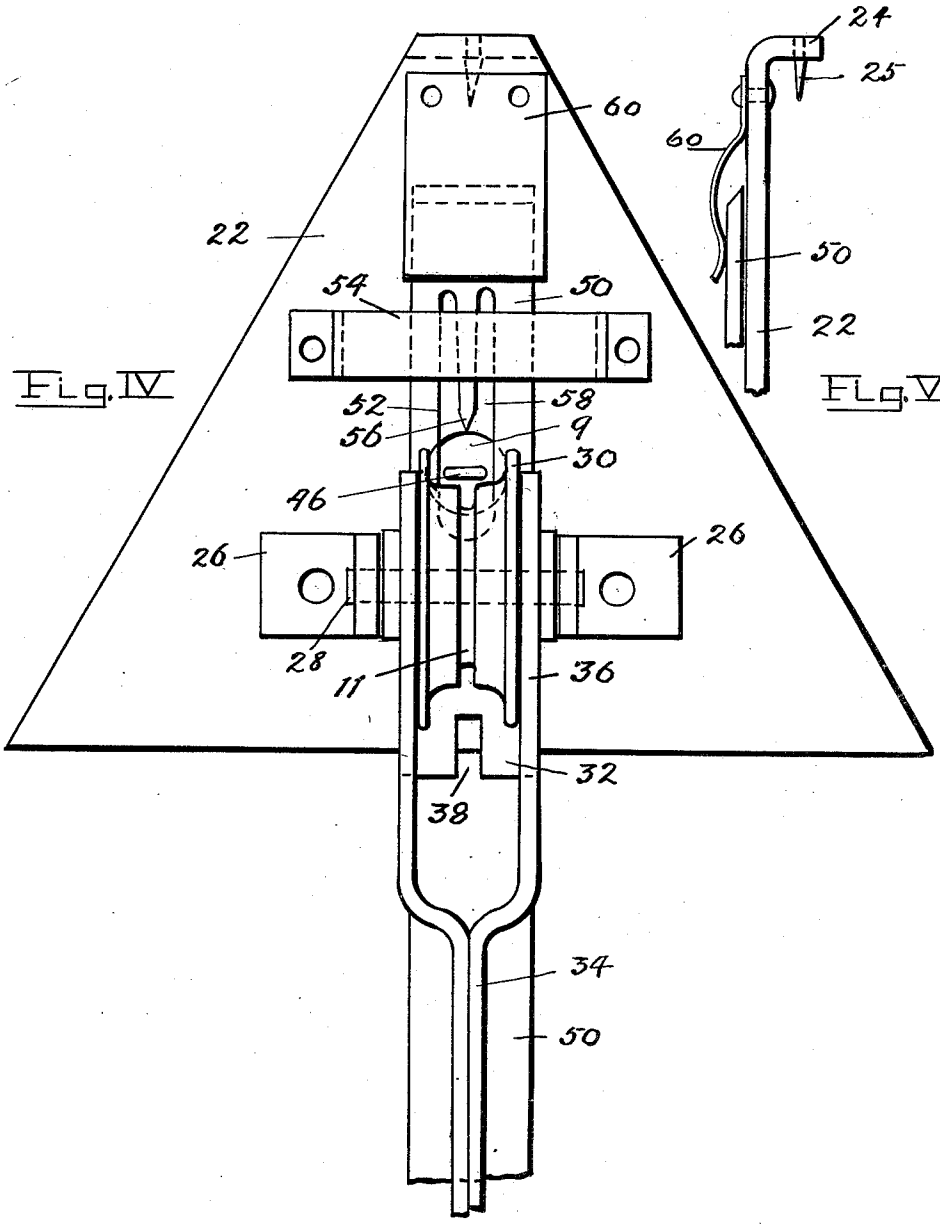


Fig. IV

Fig. V

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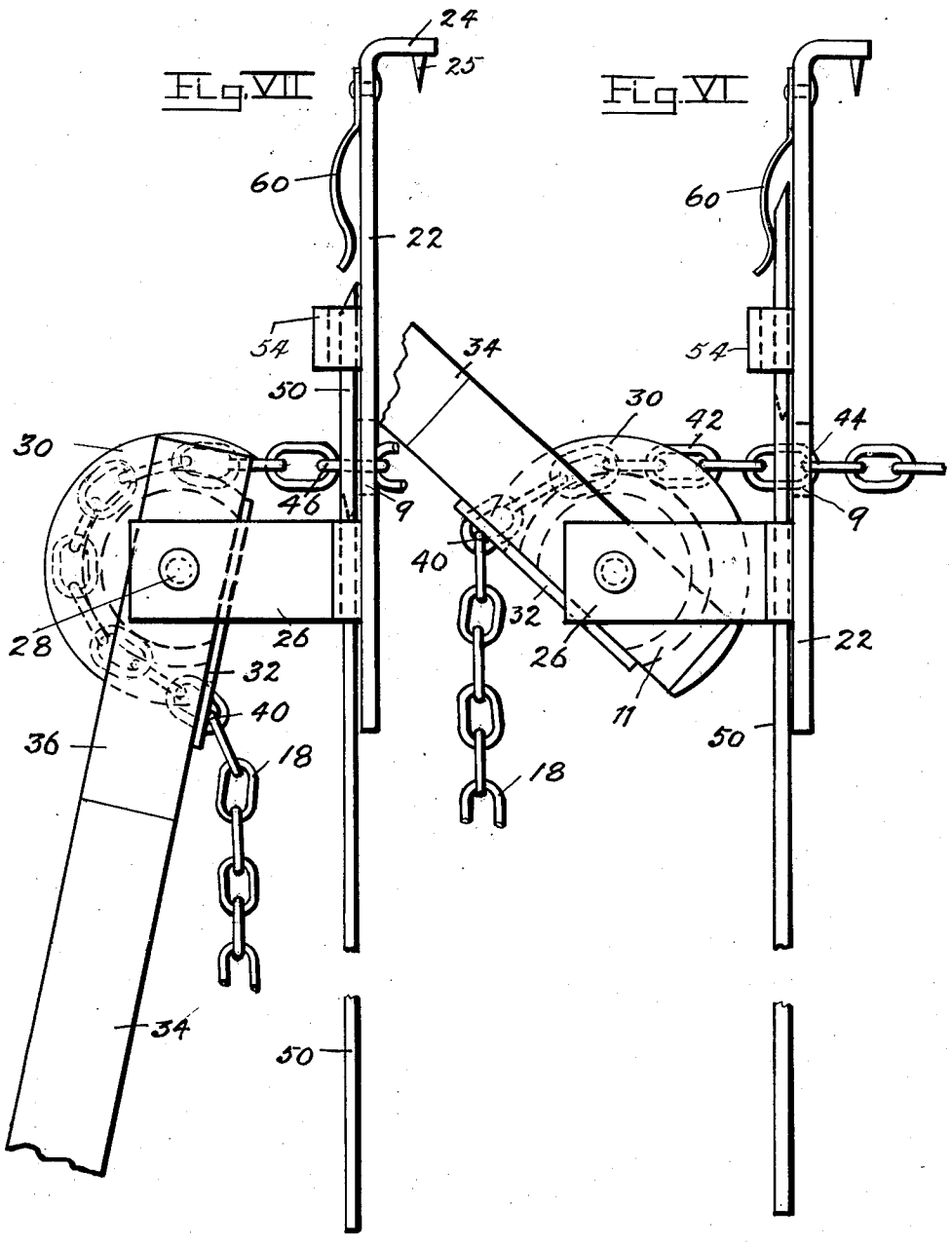
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Aug. 12, 1952 J. C. WEAVER 2,606,670

LOAD BINDING DEVICE

Filed Oct. 29, 1949 4 Sheets-Sheet 3



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Aug. 12, 1952 J. C. WEAVER 2,606,670

LOAD BINDING DEVICE

Filed Oct. 29, 1949 4 Sheets-Sheet 4

Fig IX

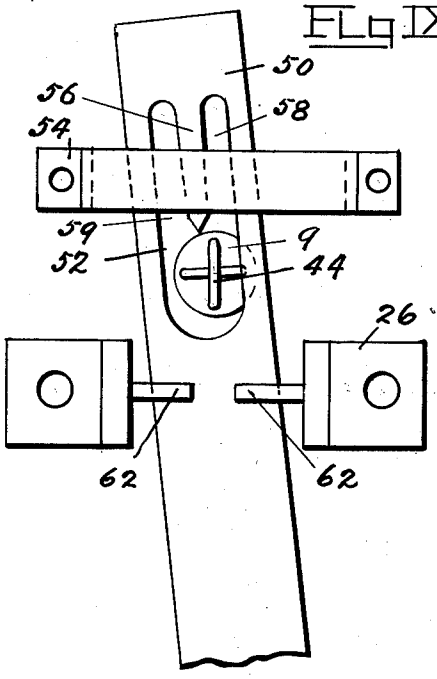
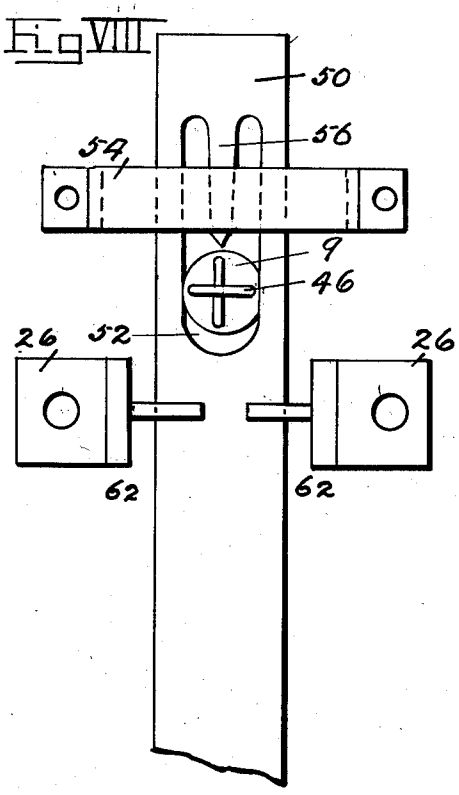


Fig VIII



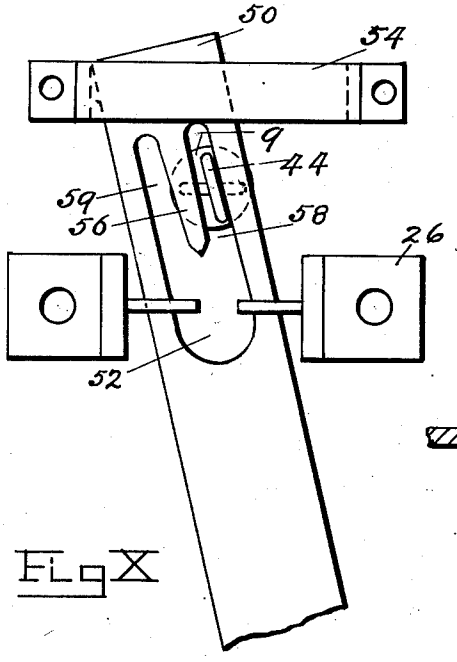


Fig X

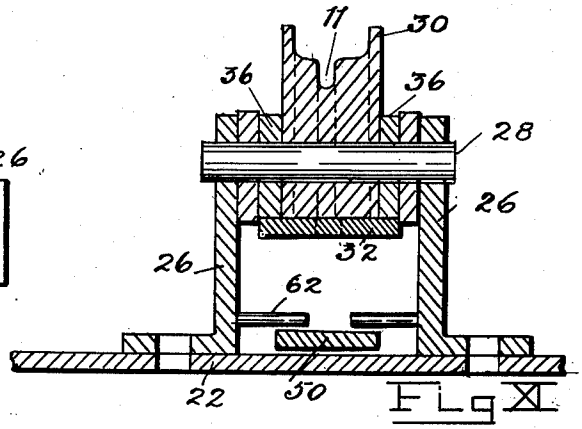


Fig XI

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Patented Aug. 12, 1952

2,606,670

UNITED STATES PATENT OFFICE

2,606,670

LOAD BINDING DEVICE

James C. Weaver, Richmond, Va.

Application October 29, 1949, Serial No. 124,417

4 Claims. (Cl. 214—10.5)

1

My invention relates to load binding devices; and particularly to the binding together of the parts of a load to check possible shifting during transportation by rail, road, or water.

An object of my invention is to bind together heavy parts of a load on trailers, to prevent shifting during transportation; and especially to prevent shifting and possible throwing of parts of the load when transporting hogsheads of tobacco loaded in layers on trailers. I do not restrict myself to this particular use; for my binding device can be used for other purposes; such, for instance, as binding loads of logs or of lumber, not only to themselves, but also to the trailer on which they are loaded. My invention consists of two plates; one at the front of the load, and the other at the rear; each one adapted to contact opposite parts of the load; with chain, or rope-and-chain, means secured to the front plate; and a chain tightening and holding means on the rear plate. The novel part of my device lies in this tightening and holding means.

In the drawings which accompany this specification: Figure I is a side view of a load of hogsheads or barrels on a trailer; Figure II is an end view of the same, from the rear; Figure III is an enlarged perspective of the front holding plate and attached chain; Figure IV is an enlarged front elevation of the rear plate and chain tightening device; Figure V is an enlarged fragmentary side elevation of the rear plate; Figures VI and VII are enlarged side elevations of the the rear plate, showing the means for tightening the chain in progressive positions; Figure VIII is an enlarged front elevation of the chain holding device; Figure IX is an enlarged front elevation of the chain holding device in position to engage a vertical chain-link; Figure X shows the chain holding device having engaged the said vertical link; Figure XI is an enlarged horizontal section through the chain tightening means.

In Figures I and II the numeral 2 represents the body of a trailer, supported on wheels 4. A load of hogshead or barrels of tobacco is shown at 6 upon the deck of the trailer. This load, when of tobacco hogsheads, is often made up in two lower rows, shown at 8 and 10, and one row, 12, resting upon the two lower rows. Each row may consist of up to seven hogsheads with the hogsheads of the rows arranged in tiers. When not secured otherwise than by the chocks shown at 14, shifting of the load is possible, particularly when covering rough ground, and in turning bends in the road at relatively high speed. To prevent such shifting, a plate 16 (Figure III), which may be of triangular or of other outline, is held by an elongated flexible element such as a chain 18 against the forward end of the load; the plate being held against the three hogsheads in the first tier; and the chain passing rearward below the upper row of hogsheads, and between the two lower rows, which are usually a few inches apart. Preferably the chain is swiveled to the front plate, and its connection may be of any suitable character, such as by an eye-bolt 20, or by passing the end of the chain through an orifice in the center of the plate, and securing it at the front. At the rear of the load, the chain is tightened and secured to a rear plate 22 in abutment with the rearmost tier of hogsheads.

2

The rear plate 22, which carries the tightening means, is placed against the rear end of the load, and in contact with the rearmost tier of the upper and the two lower rows of hogsheads. The plate 22 and the plate 16 each have a hook or lip 24 at their upper margin, designed to rest upon the inside of the rim of the contacted hogshead or barrel in the upper row; and to prevent the slipping of this lip from the said rim, I weld to, or pass through this lip a spike 25, or a similar projection, designed to securely engage the said rim. See Figures IV and V.

If the plates 16 and 22 are made triangular in shape, their upper corners will lie against the lower part of the rims of the foremost and the rearmost hogshead in the upper row; as in Figure II at 3; and the lower corners of the plates will lie against the upper part of the rims of the foremost and rearmost hogsheads in the two lower rows, as at 5 and 7.

The binding chain 18 is secured to the front plate 16 at a point substantially at its center (Fig. III); and the other end of the said chain passes through an opening or orifice 9 approximately at the center of the rear plate 22 (Figs. IV, VI and VII). The load is bound by tightening the chain at the plate 22; the tightening of the chain drawing the plates 16 and 22 toward one another.

On the face of plate 22, and below the orifice 9, there are secured two brackets, 26, 26; which brackets support a shaft 28; and on this shaft is rotatably mounted a chain pulley 30. A part of this chain pulley is cut away (Figs. VI, VII, and XI), as it does not cooperate with the chain, and in order that a seat may be furnished for

the chain holding notched plate 32; to which seat this plate may be welded or bolted.

At 34 is a forked lever. The arms 36 of this forked lever are secured, by welding or other suitable means, to either side of the pulley 30; so that by pulling down on the lever the pulley may be rotated on the shaft 28. The arms 36 also are secured to the plate 32 so that the lever also pulls down on this plate, in which is the notch 38 for engaging and holding a link of the chain (Figs. IV, VI and VII), but through which the chain cannot pass. The pulley 30 essentially is a part of the lever 34, and could be integral therewith, as it merely forms a curved bearing surface for the chain passing to the notch 38 in the plate 32.

In Figure VI the lever is shown turned upward, almost to the limit of its throw; and the chain 18 passes over the pulley 30, and is caught at 40 in the notch 38 of plate 32. If a downward pull be now exerted on the lever 34, the chain 18 will be pulled through the orifice 9 in plate 22, as seen in Figure VII. In order to tighten the chain still more, the link at 40 must be freed from the notch 38 in plate 32, and a hold then taken on the chain several links higher up. Before this can be done: the chain must be secured; and this is done at the orifice 9 in the plate 22.

In Figure VI the chain 18 is shown with alternate links lying in a horizontal plane and with the intervening links disposed in a vertical plane. This position may be held to some extent by providing a groove 11 (Fig. XI) around the pulley 30 into which the vertical links will fall. But though the link at 42 may be in a vertical plane, and be so held by the groove 11 in pulley 30; the link at 44 projecting partly through orifice 9 in plate 22, may not be quite vertical, because, though link 42 is held vertical, a small amount of twist can be put in the chain from link to link. For the same reason: the links on either side of link 44 may lie in a plane a little inclined from the horizontal. Furthermore it cannot be foretold before tightening the chain, whether the link at orifice 9 in plate 22 will be a horizontal link or a vertical link, or a link slightly inclined from the horizontal plane or from the vertical plane, or in which direction from the vertical plane.

In Figure VII a horizontal link 46 is shown partly through the orifice 9. In Figure VI the vertical link 44 is shown at the orifice 9. In either case, the link which is at the plate 22—that is, link 44 or link 46—must be held from any backward or chain slackening movement before the lever is released to free the link 40 from the notch 38 in plate 32.

Refer now to Figure VIII, together with Figures VI and VII. Adapted to slide upon the face of plate 22; between the brackets 26 and inwardly of the pulley 30, and extending downward to form a long handle, is the chain holding device 50; which will be referred to hereinafter as the latch-bar. This latch bar 50 is provided in its upper portion with an elongated opening 52 through which the chain 18 extends, and is held in closely spaced relation to the plate 22 by means of a pair of oppositely disposed, aligned pins 62 secured to the brackets 26 and located below the opening 9, and a bridge bar 54 secured to the plate 22 and located above the opening 9. The bridge bar 54 and pins 62 will prevent the latch bar 50 from falling away from the plate 22 but will permit a limited sidewise movement as indicated in Figures IX and X. Likewise, due to the passage of the chain 18 through the opening 52, the latch bar will be prevented from dropping in a vertical plane except within the limits of the opening 52.

Formed integrally with the upper end wall of the opening 52 is a centrally disposed, downwardly extending pin 56 which divides the opening into narrow side portions 58 and 59 substantially longer than the central portion thereof. With this construction, the chain may be engaged by the latch bar to prevent retrograde movement of the chain upon release of the lever 34 therewith, regardless of whether a horizontal link or a vertical link is disposed within the openings 9 and 52. If a horizontal link is so disposed, a lowering of the latch bar will pass the pin 56 therethrough, and if a vertical link is so disposed, a slight lateral shifting and lowering of the latch bar will cause such link to be received in one of the narrow portions or slots 58 or 59, depending on which direction, if any, the link is inclined from the true vertical, and to the direction that the latch bar is shifting laterally. In any case, engagement with either a vertical or horizontal link located in the opening 9 will prevent retrograde movement of the chain so the lever 34 may be released, and the chain may be engaged with the latch bar regardless of whether a horizontal or vertical link is located at the openings 9 and 52.

Though the latch-bar 50 is held upon the face of the plate 22 by the chain passing through the orifice 9 and then through the opening 52 in latch-bar 50; still it must be held free of the chain during the tightening operation. This may be done manually; but preferably by some form of lock or catch, or by roughened or corrugated surfaces. I have shown a simple means for holding the latch-bar free of the chain in Figures IV, V, VI, and VII, wherein 60 is a flat spring riveted or bolted to the face of plate 22 above the latch-bar 50. It might also be riveted to the bridge 54. To hold the latch-bar in its upper position, the bar is pushed upward, so that the end of the bar comes under spring 60, and is held by it against plate 22. The plate 22 being six feet or more from the ground when in place against a load of hogsheads: the latch-bar 50 and the lever 34 are preferably made of such a length that they will be within convenient reach of a man standing on the ground. When it is desired to shift the latch bar laterally so as to position one of the slots 58 or 59 properly with respect to the chain link located in the openings 9 and 52, the bar may be moved about the holding spring 60 as a pivot.

In this specification, and in the claims, I have used the word "chain" to designate the means by which when tightened the load may be bound together. Part of this tightening means may be wire rope, and only the after part, at plate 22, chain. This would reduce the weight. In Figure III the chain 18 is shown attached to the plate 16 by an eyebolt 20. Usually an eyebolt is held tightly to its seat by a nut drawn up tightly on the shank of the bolt on the other side. In this case I prefer not to draw the nut up tight, but to leave it partly drawn up; then fixing it on the shank by spot welding or other means, so that the eyebolt shank, between the eye and the nut, is free to turn in the plate 16. This makes a swivel connection which is an advantage when coiling or handling the chain or wire rope which is attached to the eyebolt and to the plate 16.

I claim:

1. A load binding device for binding together units of a load during transportation and comprising plates placed at opposite points on the load; a chain attached to one of the plates and passing between units of the load and through an orifice in the other plate, chain tightening means mounted on said other plate and engaging the chain at a point spaced from the plate, and means at the said other plate to hold the tension on the chain, the said holding means comprising a normally vertical bar transversely displaceable from the vertical to an acute angle on either side of the vertical, said bar having slots on opposite sides of its longitudinal center for selective engagement with a link of the chain disposed at an acute angle to the vertical, said spaced slots forming a pin disposed between the slots at the longitudinal center of the bar for insertion through a substantially horizontal link of the chain.

2. A load binding device for binding together units of a load, comprising two plates placed against units of the load at opposite points; a chain passed through an opening in one of the plates and having one end connected to the second plate; a lever mounted on the first plate, and adapted by downward pull to pull the chain through the opening in the first plate to tighten the chain between the plates; and means for holding the tightened chain, the said means comprising a bar adapted to slide on the face of the first plate and having a perforation to permit the passage through it of the free end of the chain, the side portions of the perforation being substantially longer than the central portion to form a pin extending from the upper extremity of the perforation toward the center thereof and adapted when the bar is slid on the face of the plate to extend through a substantially horizontal link of the chain to hold it at the plate.

3. A load binding device comprising two plates placed against units of the load at opposite points, one plate having an orifice adjacent its center; and the second plate having a swivel connection adjacent its center; a chain passed through the orifice in the first plate and connected by one end to the swivel on the second plate; means mounted on the first plate adapted to pull the chain through the orifice to tighten the chain between the two plates; and means for holding the tightened chain at the first plate, the said holding means comprising a slotted bar adapted to slide upon the face of the plate, the slot having a relatively wide portion permitting the passage of the chain through it, and the said slot further having a relatively narrow portion adapted when the bar is slid upon the plate to engage a substantially vertically disposed link of the chain to hold it at the plate when such vertically disposed link is located in the plate orifice, said bar further having a downwardly projecting pin adjacent the narrow portion of said slot adapted when the bar is slid upon the plate to engage a substantially horizontally disposed link of the chain to hold it at the plate when such horizontally disposed link is located at the plate orifice.

4. A load binding device for binding together units of a load comprising two plates for placing against units of a load at opposite points, one of said plates having an opening, a chain connected to the other plate and having one end projected through said opening, tightening means for grasping the projected end of the chain and forcibly pulling it through the opening, and a holding member slidable upon the plate and having a pin adapted when the member is slid upon the plate to pass through a substantially horizontally disposed link of the chain to prevent return movement of the chain through the plate when such horizontally disposed link is located at the plate opening, said member further having a slot adjacent the pin adapted when the member is slid upon the plate to span a substantially vertically disposed link of the chain to prevent return movement of the chain through the plate when such vertically disposed link is located at the plate opening.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
433,799	Mason	Aug. 5, 1890
504,127	Ebert	Aug. 29, 1893
728,057	Warner	May 12, 1903
2,344,320	Nidiver	Mar. 14, 1944
2,476,753	Miller	July 19, 1949