Nov. 22, 1927. 1,650,328

H. CRUMBACH ET AL

LOAD BINDER

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Fig. 1.

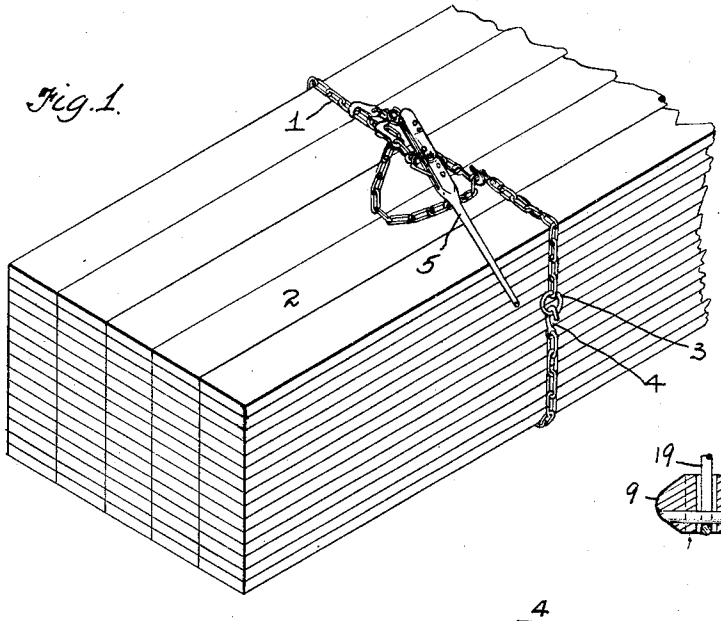


Fig. 4

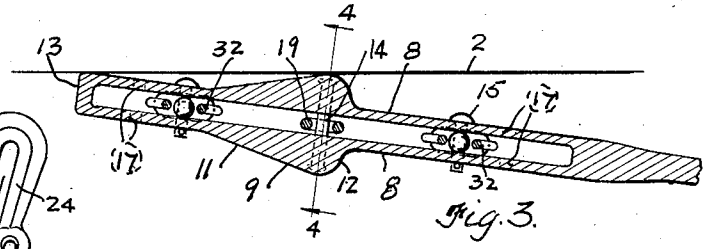


Fig. 3.

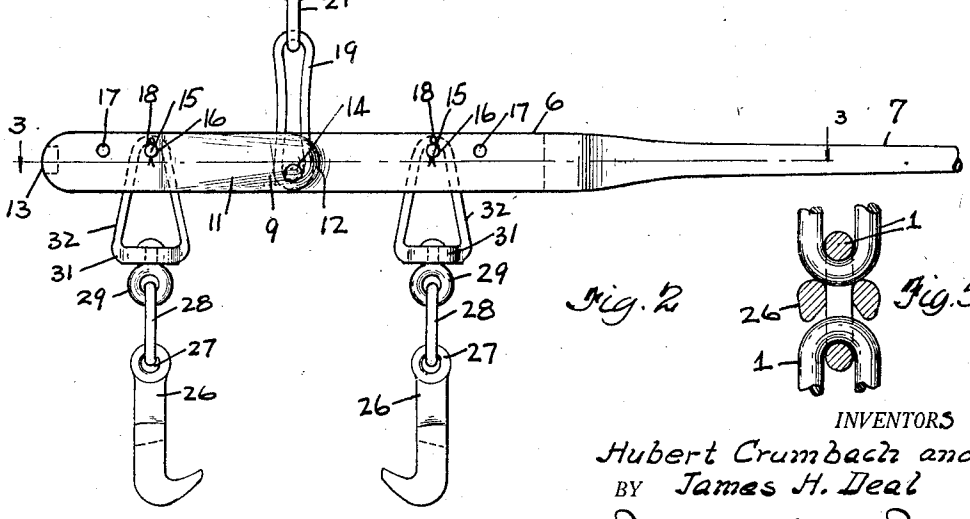


Fig. 2.

Fig. 5.

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LOAD BINDER.

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This invention, as indicated, comprises a load binder and includes means for taking up the slack in the binding elements about a load and locking the same in load securing position. It is also includes means for varying the leverage of the take up elements so that they may be disposed for greater range of action or greater relative leverage power according to the character of the work to be accomplished.

Another feature of the device provides for the angular disposition of the handle of the lever with respect to the body of the load so that satisfactory operation of the device may be had under all conditions of use.

Load binders as heretofore constructed have ordinarily included devices resting flat against the body of the load and operating by a single throw in the direction of the load to take up a predetermined amount of slack in the load binding means. Where loads of large size are to be secured, a single take up of the slack is at times inadequate to apply a sufficient degree of tension on the binding elements and in consequence the load is in danger of working loose and causing losses and damage of various kinds.

The principal object of the present invention is to avoid the disadvantages referred to and to provide an improved type of load binding implement which may be used in various positions about a load to secure the binding elements firmly across the body of the load. Another object of the invention is to provide a load binding device capable of successive take up action and in addition having features enabling the same to be locked in load securing position. A further object of the invention is to provide a load binder having supporting points for the take up means adjustable with respect to the fulcrum of the lever so that greater range of action for the device may be obtained or a reduced range of action with greater leverage. Other objects of the invention will appear in the course of the following description.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

Fig. 1 is a perspective view showing a portion of the load with a load binding chain about the same and a load binder embodying the principle of the invention applied in operative relation thereto; Fig. 2 is a side elevation showing my improved load binder; Fig. 3 is a longitudinal sectional view taken along the line 3—3 shown in Fig. 2 looking in the direction of the arrows; Fig. 4 is a transverse sectional view taken along the line 4—4 shown in Fig. 3 looking in the direction of the arrows, and Fig. 5 is a detail view showing the manner of engagement of the claw hooks with the links of a load securing chain.

As is clearly shown in Fig. 1 of the drawing, a load securing chain 1 is placed transversely around a load 2 comprising a pile of lumber. The ends of said chain are provided with a ring 3 and hook 4 whereby they may be connected in the usual manner. In order to remove the slack in the chain and hold the chain firmly about the circumference of the load, the load binder 5 is applied thereto.

The construction of the load binder is more particularly shown in Figs. 2 to 4 inclusive wherein is disclosed a lever having an enlarged slotted body portion 6 and a solid handle portion 7. The body portion of the device presents a pair of parallel side walls 8 spaced from each other and having integral enlargements 9 at the central point thereof. Each of these enlargements preferably is of a modified semicircular cross section as is shown in Fig. 4 and is provided with a long tapering face 11 extending toward the forward end of the lever and an abruptly curved rearward face 12 closely adjacent its point of maximum width. The forward ends of the parallel side walls are joined by an integral cross web 13 which greatly adds to the rigidity and strength of the body portion of the lever, the central portion of which presents a slotted area of considerable extent.

At an approximately central point, the body portion of the lever is provided with a transversely extending pin 14 which is inserted through aligned apertures formed in the respective side walls. These apertures are preferably positioned slightly below the central median line of the lever in order to provide a greater unbroken area of side wall structure above the position of said pin to resist severe strains applied in that direction. At points between the posi-

tion of said central pin 14 and the ends of the slotted portion of the body of the lever, a pair of take up hook supporting pins 15 is provided. The aligned openings through the side walls for receiving the last mentioned pins are preferably located on the upper side of the median line through the lever in order to provide a greater area of side wall structure below the position of said pins to resist severe strain in a downward direction against said side walls. The pin 14 may be made removable but preferably is permanently riveted in position. The pins 15 may be similarly riveted in position but as shown in Figs. 2 and 3, it has been found desirable to provide a plurality of openings 16 and 17 through which said pins may be secured according to the character of the work in hand. The openings 16 are positioned approximately centrally between the ends of the slotted portion of the body and the pin positioned centrally across said slot while the aligned openings 17 are preferably positioned somewhat closer to the ends of said slot than the other pair of openings. The pins 15 have enlarged heads and at their opposite ends are provided with transverse apertures through which cotter pins 18 of suitable size may be inserted.

Upon the central pin 14, an elongated link 19 is supported, said link being connected by means of a smaller link 21 with the supporting hook 22. The supporting hook as is shown in Fig. 2 is provided with an elongated opening 23 and the body portion of said hook is formed with beveled sides 24, 25. This construction makes it possible to apply the hook transversely of a single link of a heavy load binding chain without in any way sacrificing the strength of the hook. The beveled faces 24 on the opposite sides of the body portion of the hook afford ample clearance from the rounded ends of the chain links forwardly and rearwardly of the chain link across which the supporting hook is engaged, and the length of the slot insures against accidental displacement of said supporting hook during the operation of the device.

Upon each of the pins 15, the take up hooks are adapted to be suspended. These take up hooks 26 are formed as bifurcated or claw hooks at their lower ends and at their upper ends are provided with integral eyes 27. The take up hooks are of heavy construction and have short nose portions sharply tapered and on their under sides, as shown in Fig. 5, are cut away to provide adequate clearance from the rounded end of the link of the load securing chain positioned rearwardly of the link of said chain against which the take up pressure is to be applied. Links 28 serve to connect said hooks through said eyes with swivel eyes 29 supported in swivel yokes 31. The swivel yokes have elongated upper portions 32 of narrow width which are adapted to be inserted between the side walls of the body portion of the lever and engaged over the respective supporting pins 15.

From the description of the construction of the device, its operation it is believed will be readily apparent. The load binding device is engaged upon the load securing chain at a point which is most convenient for the operation of the lever as well as in a place where the load binder itself will form no obstruction. In large logging loads, it may be found desirable to operate the load binder at a point where the cross chains pass about the body of the platform upon which the load is supported. In the case of a load of lumber, the most desirable place for the application of the load binder is usually found to be at the top of the load as is shown in Fig. 1 of the drawing. When the place for the application of the load binder has been selected, the supporting hook 22 is engaged across the body of a single chain link and one of the claw hooks is engaged behind the rounded end of a chain link spaced from the point of engagement of the supporting hook a distance which in the judgment of the operator will result in the taking up of a fair portion of the slack in said load securing chain. The lever handle is then moved in the opposite direction to that in which it was first positioned and a second take up hook is then similarly engaged with the rounded end of a link of a load securing chain. If the single take up movement of the lever has tightened the chain to an adequate degree, the load binder may then be left in load securing position; the engagement of the second take up member thus having served as a lock for the lever. When, however, the initial movement of the load binding lever has been inadequate to take up the slack in the load securing chain, a second take up action of said lever is necessary and the lever is then moved in the opposite direction to that in which it was first moved and the claw hook of the first referred take up member is disengaged from its first position and engaged upon a chain link at a point further removed from the supporting hook than that with which it was first engaged and on the opposite side of the point of engagement of the second claw hook. Here again, it may be found that the amount of slack in the load securing chain has been adequately taken up and the device may be left in load binding locked engagement at this point under such circumstances. Where loads of great size are being secured, it may be necessary to repeat the take up operation of the device a number of times before the proper tension upon the load securing chains has

been applied. In such cases, it is usually desirable to have as great a leverage available for the user of the device as is possible and the pins 15 therefore are positioned in the inner pair of holes 16 of the body of the lever.

Where relatively light tension is to be applied, when the elasticity of the load binding elements or the characteristics of the load is such that a large amount of take up action will be required before the load securing elements are supplied with an adequate degree of tension, it is desirable to shift the pins 15 to the outer pair of aligned openings 17. Thus much more rapid progress may be made in securing the load.

By forming a slotted body portion on the lever, it has been found that a device of exceedingly great strength can be secured with the use of a minimum amount of metal for the lever. This construction has the further advantage of removing projecting links and fastening elements from the outer faces of the lever which would seriously interfere with its proper operation. This is particularly true when in place of removable pins 15, rivets having counter-sunk heads are provided. With such construction perfectly smooth side faces for the body portion of the device may be provided.

However, the replaceable pins 15 present no obstruction to the proper operation of the device when the same is provided with integral enlargements 9 adjacent the center portion of the body of the lever. These enlargements serve to position the handle portion of the lever at an angle to the body of the load as is clearly shown in Fig. 3. Such construction provides for substantially two points of contact with the load. Through proper manipulation of the lever by pressing the handle portion thereof in a direction toward the body of the load, it is possible to relieve the pressure of the forward end of said lever against the load and thus operate the device about the enlargement 9 as a bearing point. It is obvious that through the provision of an enlargement upon each side of the body portion of the lever, it is possible to operate the lever from either side of the load and in practically any position of attachment.

Other modes of applying the principle of our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. In a load binder, the combination of a hand lever, a supporting element pivoted at a point spaced from one end of said lever, a take up element positioned in spaced relation on either side of said supporting element, and enlargements on the sides of said lever adjacent the pivot for said supporting element, and having tapering forward faces, for disposing the handle portion of said lever at an angle to the body of the load.

2. In a load binder, the combination of an integral hand lever having a slotted body section adjacent one end with a lateral enlargement on each side thereof, a pin extending across the central portion of said slotted body section, an elongated supporting hook flexibly connected with said central pin, and having beveled sides to permit engagement across a link of a binder chain intermediate the rounded ends of adjacent links, a pair of pins positioned transversely at an intermediate point between said central pin and the ends of said slot, and a bifurcated take up hook swivelly connected with each of said transverse pins and extending from said frame in a direction opposite to that of the supporting hook, said bifurcated hooks being adapted to engage behind the rounded ends of the links of the load binder chain.

3. In a load binder, the combination of an integral hand lever having a slotted body section adjacent one end with a lateral enlargement on each side thereof, a pin extending across the central portion of said slotted body section, an elongated supporting hook flexibly connected with said central pin, and having beveled sides to permit engagement across a link of a binder chain intermediate the rounded ends of adjacent links, a pair of pins adapted to be alternatively placed in a plurality of positions through pairs of aligned apertures formed through the body section of said lever on either side of said central pin, and a bifurcated take up hook swivelly connected with each of said transverse pins and extending in a direction opposite to that of the supporting hook, said bifurcated hooks being adapted to engage behind the rounded ends of the links of the load binder chain.

Signed by us this 8 day of December, 1924.

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