

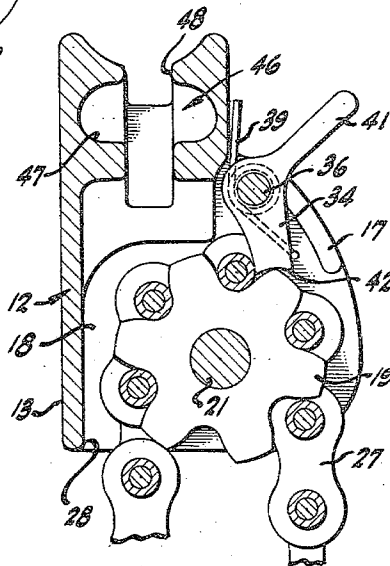
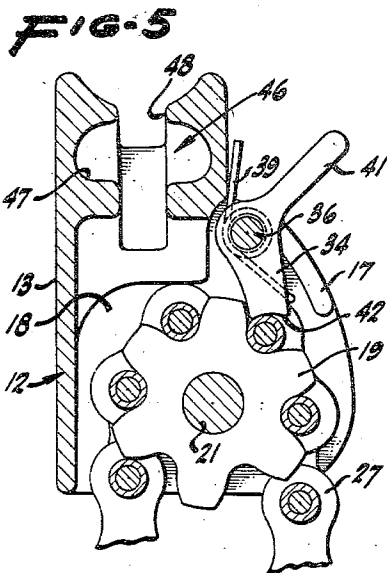
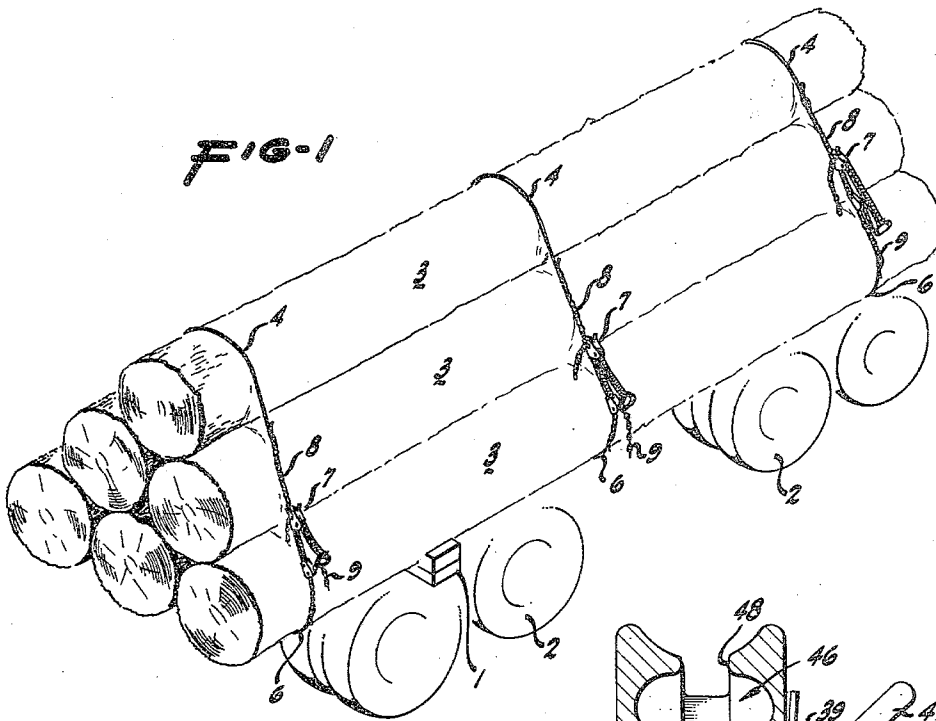
July 6, 1965

R. A. RATCLIFF ETAL
LOAD SUSTAINING DEVICE

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2 Sheets-Sheet 1



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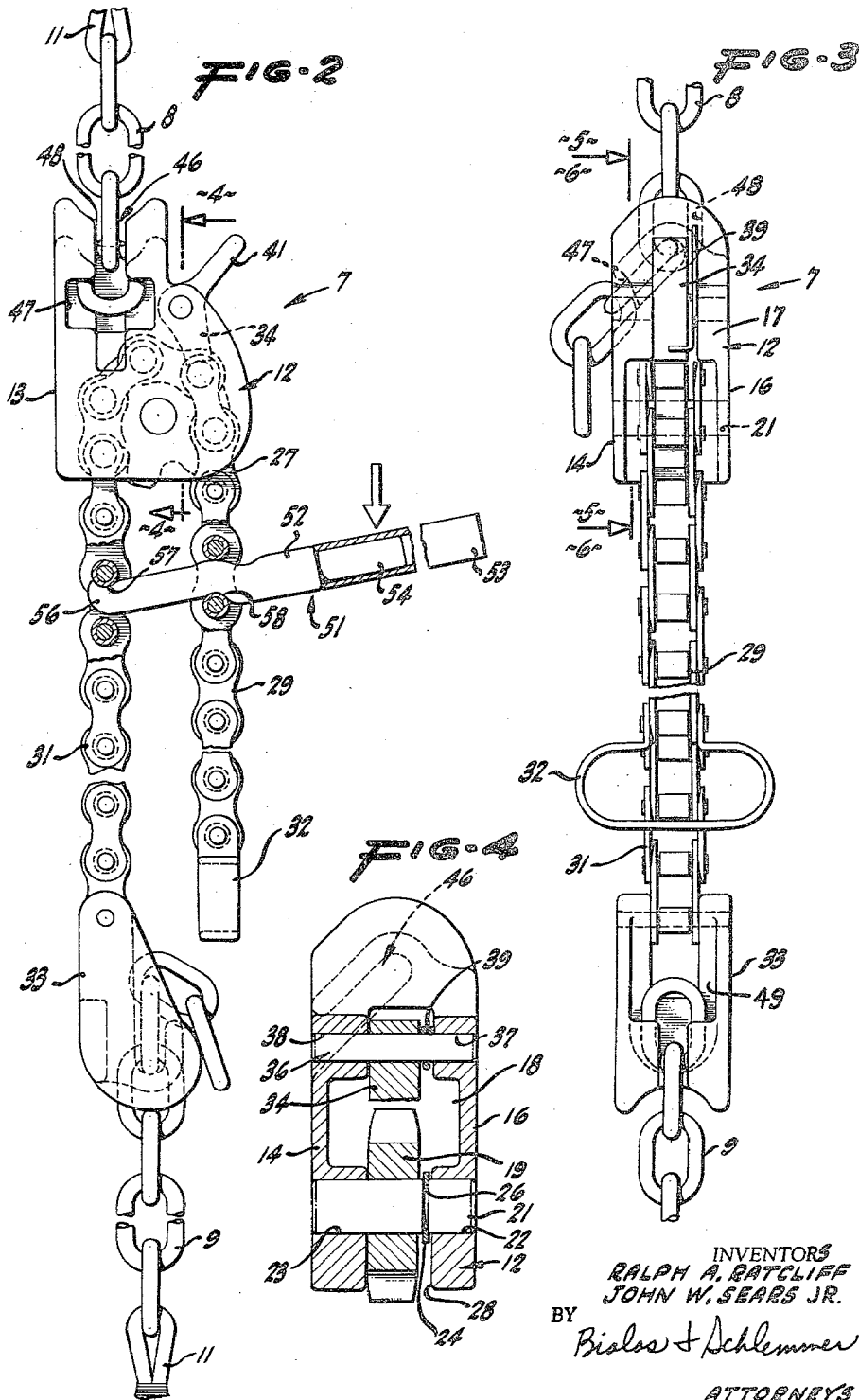
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1

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LOAD SUSTAINING DEVICE

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This invention relates generally to a load sustaining device and to a method for employing the same in supporting a load or securing a load positioned on a sustaining platform. More particularly this invention relates to a load sustaining device of the load binder type which is intended to bridge the gap between holddown elements positioned around a load on a platform and to apply tension to such holddown elements to preclude the load from shifting during movement thereof on a transporting vehicle or the like.

Still more particularly this invention relates to a light weight, portable, heavy duty load sustaining device of the load binder type which is extremely compact and simple in construction and which is extremely safe in its operating capability. In this connection, the invention further relates to the method of employing and actuating the subject device in sustaining a load engaged therewith.

While this invention relates primarily to load binders as is specifically disclosed herein, it should be understood that various features thereof are equally well adapted for use in other related types of load sustaining devices, such as portable hand operated chain hoists and the like, and this invention should be interpreted accordingly.

In the embodiment illustrated, the subject device is employed as a load binder for securing a given load, such as a plurality of logs, on a transporting vehicle, such as the cradle carriage or platform of a logging truck. While one specific application of the subject device has thus been illustrated, it should be understood that the subject load binder may be employed wherever presently known load binders are utilized. Furthermore, because of its novel compact construction, the subject load binder may be utilized in positions in which heretofore known load binders could not be employed because of their bulky size.

In its broad sense, the subject device is of the pawl and ratchet type in that the mechanism it employs for positively maintaining the desired tension on the hold-down elements positioned around a load preferably includes selectively disengageable pawl means in conjunction with ratchet means defined by a rotatable sheave over which a chain type load sustaining element passes. Heretofore known load binders of the pawl and ratchet type have been extremely bulky and heavy in comparison to the subject device and have embodied more complex constructions than that of the subject binder.

Load binders of lighter weight and less complex construction than the heretofore known pawl and ratchet binders also have been known heretofore. These lighter weight and less complex devices are of the well known "over-center" type which employ a toggle construction for tightening load holddown elements. By way of example, over-center load binders of the type commonly employed are illustrated at pages 27 and 28 of catalog No. 950-2 published by the Crosby-Laughlin Division of the American Hoist and Derrick Company of Fort Wayne, Indiana.

Over-center load binders have certain inherent disadvantages which frequently are overlooked in their acceptance by the trade because of the relatively low cost and relatively light weight and simple construction of such binders. By way of example, over-center load bind-

2

ers make no provision for incremental adjustment when a load is being secured as is possible with pawl and ratchet type binders. That is, the toggle construction of over-center binders makes it necessary that the binder initially be engaged accurately with respect to the holddown elements passed around the load. If the user of an over-center binder does not accurately "judge" the proper position for the binder when the same is attached to load holddown elements, the load will either be too loosely bound or it will not be possible to lock the binder toggle in a secure holding position. Additionally, over-center load binders are easily releasable in that the operating handle for the toggle arrangement of such a binder is integral therewith. Thus, vandals or mischievous persons may intentionally release such a load binder thereby creating a very dangerous safety hazard. Also, over-center load binders require substantial head room in that separate conventional grab hooks and swivels are necessary therewith to permit attachment of the binder to the holddown elements passed around a load to be secured.

The abovementioned heretofore known pawl and ratchet type load binders also have certain of the above noted disadvantages of over-center load binders, such as the requirement of separate grab hooks and swivels which increase the bulk thereof and the head room required for use; also, such binders have integral handles which are accessible to vandals or pranksters. Heretofore known pawl and ratchet type binders have the further disadvantage of numerous operating parts which make the same more complex than the binder of this invention.

The load sustaining device of this invention has the following advantages, among others, over heretofore known load binders: it is appreciably lighter in weight than heretofore known pawl and ratchet type load binders and is comparable in weight to heretofore known over-center load binders; it requires no separate hook and swivel on its casing thereby minimizing its cost and permitting the same to be used in closer quarters than binders heretofore known; it is extremely more compact than binders of the over-center and pawl and ratchet types heretofore known thereby adapting it for use in close contact with a load; its compact construction and minimum number of parts imparts extremely heavy duty capability thereto and make the same highly dependable and reliable when in use; its novel casing construction permits attachment of the same to a holddown element passed around a load to be secured without damaging by deforming, twisting or otherwise weakening the holddown element; the load secured thereby cannot be released by vandals or pranksters in that the operating handle is separate from the binder when the binder is in use; and the load is securely held by simple high strength positive holding pawl means which is selectively disengageable to permit controlled release of a load secured thereby.

From the foregoing it should be understood that objects of this invention include the provision of a load sustaining device which is extremely compact, sturdy and highly reliable; the provision of such a device which obviates the need of a separate swivel or hook in conjunction with the casing thereof; the provision of such a device which includes means for positively yet releasably sustaining a load; the provision of such a device which may be operated in step fashion to release a load under controlled highly safe condition; the provision in a load binding device of a casing which includes therein a recess for positively receiving a holddown element; the provision of such a device which does not employ an operating handle positively secured therewith; the provision for use in conjunction with a load binding device of a novel separable operating handle; and the provision of a method for employing a load binding device of the chain type to secure or support a load. These and other ob-

jects will become evident from the following description in which reference is directed to the accompanying drawings for a further understanding of the invention.

FIG. 1 illustrates generally schematically a plurality of load sustaining devices embodying the subject invention employed to bind a load to a transporting vehicle.

FIG. 2 is a side elevational view of the subject device illustrating details thereof and a procedure for operating the same to bind a load.

FIG. 3 is a front elevational view of the subject device.

FIG. 4 is a vertical sectional view through the casing of the subject device taken in the plane of line 4—4 of FIG. 2.

FIGS. 5 and 6 are vertical sectional views through the subject device illustrating two incremental steps of the holding means thereof sustaining a load.

When hereinafter reference is directed generally to a chain type load sustaining element passing through the casing of the subject device, it should be understood that term is meant to include, where applicable, other types of load sustaining elements in addition to the rollerless chain illustrated, such as coil chain or flexible wire rope or cable. These other types of elements may be employed when the exact type of load sustaining element chosen performs no functional effect with respect to operation of the device other than sustaining the load applied to the device.

Before describing details of the subject load binder, reference is directed to FIG. 1 which shows a plurality of the subject devices exemplarily employed in binding a load in place. In the logging industry it is common to pile a plurality of freshly cut logs on the cradle platform or flat bed of a trailer to be pulled by a truck or tractor. A suitable platform 1 is positioned above the wheels 2 of such a trailer in known fashion and a plurality of logs 3 to be transported to the sawmill or other location is stacked thereon.

Along the length of such an elongated load being transported are positioned a series of holddown elements 4 and 6 which extend around the load at spaced locations. It is between the adjacent free ends 8 and 9 of these holddown elements that the subject load binding devices, generally designated 7, are operatively interposed. In some instances the ends 8 and 9 of the holddown elements may be part of one continuous element passed around the load. In many cases, the respective holddown elements 4 and 6 are two discrete elements secured to the transporting vehicle in any suitable and well known manner. In any event, connecting together and applying tension to the ends 8 and 9 of the holddown elements will secure the load against shifting.

At their ends 8 and 9 the respective holddown elements generally have lengths of coil chain secured, the links of which are to be connected with the load binder selected to bind the load in place. In the illustrated embodiment of the holddown elements, the coil chain sections provided at ends 8 and 9 are secured to lengths of flexible wire cable by means of known closed eye connections 11 defined by bent and tied cable ends, as seen in FIG. 2 of the drawings. In many cases, however, the holddown elements are defined entirely by chains of the coil type.

As mentioned previously, the subject load binder is of extremely compact construction which permits the same to be used in close quarters when required. In this regard, referring to FIGS. 2 and 3, the compactness of the subject load binder is illustrated in that the binder has been shown in approximately one-half scale. Because this binder completely eliminates the need for a separate hook and swivel in conjunction with its head, the binder has extremely limited headroom dimensions so that it may be used in very close quarters.

The extreme sturdiness of the subject device is attributable to its simple construction and its compact one piece head. The head in the illustrated embodiment is defined

by casing 12, which is to be connected directly with one of the aforementioned holddown elements when the device is used to secure a load. The casing preferably is cast in one piece from a high strength metal, such as alloy steel. As will be described, the casing is operatively connected with another operative part of the device which in turn is to be connected with another holddown element.

As illustrated in FIGS. 2, 5 and 6, the casing is designed to include a rear wall 13 which has a generally flat outer face which permits the binder to be positioned snugly against a load being secured. As seen in FIG. 4, the casing also includes opposite side walls 14 and 16 which cooperate with the generally flat rear wall 13 and an apertured front wall 17 in defining an internal central chamber 18. A small diameter chain sheave 19 having a plurality of spaced teeth extending radially therefrom is rotatably mounted in the chamber 18. In this regard, the toothed sheave is mounted on a shaft 21 journaled for rotation in bores 22 and 23 provided in the opposite side walls of the casing. The side walls of the casing are of increased thickness in the areas bordering the bores and thus provide an internal bearing hub which further enhances the compactness of the casing. Preferably shaft 21 and sheave 19 are press fitted together to rotate as a unit.

As also seen in FIG. 4, the shaft and sheave are retained in operative position in the casing by means of a split ring 24 positioned in an annular groove 26 formed in the shaft inwardly from one end thereof. Thus, inadvertent separation of the shaft and the sheave from the casing is positively precluded.

A load sustaining element 27 extends through the casing and is operatively engaged with the sheave. In the embodiment illustrated the load sustaining element is a link chain of the rollerless type. In this regard, while reference hereinafter will be directed to a rollerless chain passing through the casing, it should be understood that other equivalent types of chain, such as a roller chain also could be employed if preferred.

Chain 27 passes over and generally around the sheave in the casing with the teeth of the sheave engaged between the chain links as seen in FIGS. 5 and 6. The chain projects or depends from the bottom of the casing through a suitable slot or opening 28 therein in two parallel runs or reaches 29 and 31. To the free end of the no-load chain reach 29 is secured a grip ring 32. This grip ring may take various forms and in the illustrated embodiment comprises an oval loop secured to the last link of the chain reach by riveting or the like. The grip ring performs the dual function of precluding passage of chain reach 29 completely through the casing and also provides means graspable by an operator to facilitate removal of slack from the chain during operation of the load binder as will be described.

At the free end of the load sustaining chain reach 31 is secured means for operatively connecting the load binder with a holddown element positioned around a load to be secured. In the embodiment illustrated, the means thus provided comprises a hook member 33 designed to receive in secure engagement therewith one of the links of the coil chain end 9 of the aforementioned holddown element 6. The hook 33 is designed to straddle the link grasped thereby for the purpose to be described.

Also mounted on the casing partially within the chamber 18 mentioned previously and partially externally of the casing for access by the operator of the load binder is means for positively sustaining the load connected with chain reach 31 of the binder. Such means performs its intended function by positively restraining rotation of the sheave 19 in one direction. In FIGS. 2, 5 and 6 rotation of the sheave is precluded in the counterclockwise direction when such means is engaged with the sheave or a link of chain 27. The rotation restraining means precludes rotation in only one direction so that slack may be easily removed from the chain 27 after attachment of the load

5

binder to the holddown elements around a load upon pulling downwardly on the grip ring 32. Upon such pulling, rotation of the sheave in a clockwise direction as viewed in FIGS. 2, 5 and 6 is permitted in that the rotation restraining means merely rides over the sheave and chain and does not interfere with movement thereof in the clockwise direction as described.

The rotation restraining means illustrated comprises a single spring urged pawl 34 pivotally mounted on a pin 36 passing through and press fitted in bores 37 and 38 provided in the side walls of the casing generally above the aforementioned sheave mounting shaft 21. Spring means is employed in conjunction with the pawl for urging the same normally into rotation restraining engagement with the sheave 19 and the links of chain 27 passing thereover. In the illustrated embodiment such spring means comprises a coil spring 39 which surrounds the pawl mounting pin 36 and has one end thereof engaged with the pawl internally of the casing and which has its other end engaged with the casing exterior, as perhaps best seen in FIGS. 3, 5 and 6.

Pawl 34 also includes a handle portion 41 which projects from the apertured front wall 17 of the casing and is readily accessible externally of the casing. Upon pressing inwardly on the handle portion 41 the pawl may be rotated about the axis of pawl pin 36 in a counterclockwise direction as viewed in FIGS. 5 and 6 so that the pawl may be disengaged from the sheave and chain if the load binder is not under load. In this connection, the inner end of the pawl 34 is provided with a concave seat 42 designed to mate in slip proof close conformity with both the bushings of the chain links of chain 27, as seen in FIG. 5, and with the sides of the teeth of the sheave, as seen in FIG. 6.

In either instance, positive restraint against rotation of the sheave and movement of the chain through the casing in a counterclockwise direction is precluded when the pawl is thus engaged. The pawl is thus arranged to engage in alternate steps of fine adjustment a bushing of chain link and a tooth of the sheave. Thus short increments of adjustment are obtainable so that maximum effectiveness in tightening and securing a load may be accomplished. It should be understood in this regard, referring to FIGS. 2, 5 and 6, that to tighten a load by applying tension to holddown elements engaged with the binder the sheave and chain must move relative to the casing in a clockwise direction thereby drawing the hook member 33 upwardly closer to the casing. For each increment of movement of the chain and sheave, reverse movement thereof is positively precluded by the pawl 34 snapping into positive holding engagement with the next succeeding chain bushing or sheave tooth.

To release a load sustained by the binder, it is merely necessary to take the load momentarily off the pawl 42 by rotating the chain and sheave slightly in a clockwise direction to permit the concave end 42 of the pawl to clear its associated chain bushing or sheave tooth. Thereafter, by depressing the handle portion 41 of the pawl, the pawl may be disengaged from the chain or sheave to permit letting off of the load one increment. By repeating this procedure, the load may be let off a sufficient number of successive increments until the load is fully released (i.e. tension is removed from the holddown elements) to permit the pawl to be held disengaged from the chain and sheave. Then the chain and sheave may be rotated freely in a counterclockwise direction to provide sufficient play in the chain to permit disengagement of the load binder from the holddown elements.

As will be described hereinafter, a novel feature of this invention includes a novel operating procedure and method for tightening or releasing a load sustained by the binder.

As noted previously an important feature of this invention resides in the fact that the casing of the subject load binder is so formed that the need for a separate grab hook

6

and swivel attachment of the type commonly required heretofore to permit attachment of a load binder to a holddown element is completely obviated. In this regard, the casing is provided adjacent its top with a holddown element receiving recess, generally designated 46. It is in such recess that links of the coil chain end 8 of the holddown element 4 are slidably receivable yet securely retainable when all slack is removed from the chain 27 of the binder. Thus the holddown element may be engaged directly with the casing rather than with a separate hook and swivel as heretofore required.

The chain receiving recess 46 in the illustrated embodiment comprises a pair of narrow slot-like communicating channel portions which permit the coil links of chain 8 to be easily inserted into the recess and positively retained therein when the binder is under load. In this regard, recess 46 includes a first channel portion 47 which extends inwardly and upwardly towards the top of the casing from the side wall 14 thereof. Channel portion 47 communicates internally and generally centrally of the casing with a second channel portion 48 which extends generally upright to and through the top of the casing. Channel portion 48 also is open to the side of the casing defined by wall 14 as seen best in FIG. 2.

Thus, as shown in FIGS. 2 and 3 the chain 8 is receivable in positive non-slip fashion in recess 46 with one chain link engaged in the generally laterally extending channel 47 while another and adjacent link is received in the upright channel 48. The recess thus is contoured to receive the coil chain link therein.

The upper portion of the casing in effect comprises an integral hook formed in one piece with the casing to completely eliminate the need for a separate swivel arrangement and grab hook as in prior constructions. Because the novel hook providing recess construction is formed in the casing directly and straddles the chain links in claw fashion, no twisting, turning or other deformation of the chain 8 is produced as usually results with binders employing grab hooks and swivels. Thus, chain damaging torques and twisting moments necessarily encountered with prior binders are precluded.

In this regard, it should be noted, as shown in FIG. 2, the holddown chain 8 is directly in line with the axis of the load sustaining reach 31 of chain 27 on which the load supporting hook 33 is positioned. Thus the binder is connected directly in line with the direction of stress of the load sustained thereby.

Preferably hook 33 employed on the end of the load sustaining chain reach 31 is provided with a chain link receiving recess 49 defined by a pair of communicating first and second channel portions generally of the type described previously with respect to the recess 46 formed integral with the binder casing. Thus, as seen in FIGS. 2 and 3, the hook member 33 may be securely engaged in straddling relationship with adjacent links of the holddown chain 9 without imparting twisting or torsional bending to the chain. This similarly precludes damage to the chain and prevents inadvertent and accidental breakage due to twisting or distortion thereof of the type encountered with prior devices employing grab hooks and swivels on the load sustaining chain reach of a binder.

As noted previously, a further important feature of this invention resides in the fact that the same has a built-in safety feature when a load is secured which precludes tampering by unwarranted persons. This is accomplished by separating the operating handle from the remainder of the load binder construction so that the operating handle is not accessible to unauthorized persons when the binder is employed in a tie down arrangement such as illustratively shown in FIG. 1. Because there is no operating handle positioned at the binder and operatively secured thereto, and because the holding pawl 34 may not be disengaged while the binder is under load, intentional or accidental release of the load by unauthorized persons is precluded.

The subject binder includes as an important but separable operating part thereof an operating handle. A handle 51 of the type shown in FIG. 2 is designed for use with the illustrated binder and is well suited for its intended purpose. For simplicity in manufacturing, it is preferred that the operating handle 51 is formed in two parts comprising solid chain engaging end portion 52 and an elongated tubular graspable portion 53 press fitted or otherwise secured over a reduced projecting neck 54 of the end portion 52. It has been found that a tubular graspable portion of about 14" in length secured to a solid end portion of approximately 4" in length will provide adequate leverage required for operation of the binder.

The end portion 52 is generally rectangular in cross section and, as seen in FIG. 2, is dimensioned to fit through chain links and extend between the parallel reaches 29 and 31 of the chain 27. At one end 56, handle end portion 52 is provided a concave chain engaging seat 57 in its upper surface. This seat is contoured in conformance with the curvature of the bushings of the chain 27 passing through the binder casing. Thus, the end 56 of the handle portion 52 has a somewhat hook shape appearance.

Spaced inwardly from end 56 a distance generally equal to the spacing between the two reaches of the chain as determined by the size of the chain sheave 19 is a second depressed seat 58 formed in the bottom surface of the handle end portion 52. Seat 58 similarly is contoured to conform closely with the rounded periphery of the bushings of the chain 27 with which the handle is to be employed. In FIG. 2 several side plates of the chain have been omitted in the vicinity of the operating handle to show details thereof.

The operating handle is employed to tighten or release a load sustained by the binder in the following manner. To tighten a load (that is, to move the two reaches of the chain 27 relative to each other in opposite directions, to draw hook member 33 upwardly toward the casing and to move grip ring 32 downwardly away from the casing, with attendant rotation of sheave 19 in a clockwise direction) it is merely necessary to apply downward force in the direction of the arrow in FIG. 2 to the tubular end portion of the operating handle. Thus, the seat 58 of the handle end portion cooperates with the chain link bushing engaged thereby so that the seat 58 and bushing together serve as a fulcrum about which the end 56 of the handle portion 52 may rotate upwardly to thus carry the chain reach 31 and the load sustained thereby upwardly therewith.

Under normal conditions, each time the operating handle is positioned through the parallel reaches of the chain, the chain may be moved through several increments of engagement with the pawl 34. It should be understood that no manipulation of the pawl is required when the load is being tightened in the manner described because the pawl merely rides over the chain and sheave. Depending upon the amount of play to be taken up in the holddown elements, the handle may be employed in one position as shown in FIG. 2, removed from the chain, and reinserted if required at another appropriate position, and the operation just described repeated. It also should be understood of course that prior to employment of the handle as described that all play possible has been taken out of the chain merely by pulling on the grip ring 32 at the free end of chain reach 29 as described previously.

When it is desired to release a load sustained by the load binder, handle 51 is positioned as shown in FIG. 2 and the load is taken temporarily by exerting downward pressure on the handle with one hand until the lower end of the pawl 34 may be freed by the other hand from the sheave tooth or chain bushing engaged thereby. Upon such pawl being thus freed, the operator simultaneously lets upon the handle 51 to permit the chain and the sheave to move in a counterclockwise direction as viewed in FIG. 2 under the stress imposed thereon by the load

until the pawl engages another sheave tooth or chain bushing to restrain further rotation. By thus repeatedly taking and letting off on the load with one hand while simultaneously manipulating the pawl with the free hand, the operator may loosen the load the amount required until tension is removed from the holddown elements surrounding the load so that the chain 27 may be pulled freely through the casing of the binder when the pawl is held disengaged. Thereafter, it is a simple matter to slide the chain ends of the holddown elements from engagement with the casing and hook members 33 to separate the binder from the load.

By thus employing a separate operating handle, a simple arrangement employing the chain itself as an operating fulcrum is provided which has the additional tamper proof safety advantages mentioned previously. The fact that the subject load binder has no integral handle operatively connected therewith when the handle is not in use is further important in that it minimizes the weight which must be manipulated when an operator is positioning a binder to secure a load.

Having thus made a full disclosure on this invention reference is directed to the appended claims for the scope to be afforded thereto.

We claim:

1. A load binding device separable from the ends of adjacent lengths of coil chain holddown elements to be interconnected thereby, said device comprising a casing, a sheave rotatably mounted in said casing, a load sustaining chain elements separate from said holddown elements engaged with and passing over said sheave and projecting from said casing in generally parallel reaches, a holding pawl pivotally mounted on said casing adjacent the front thereof and normally spring urged into engagement with said sheave and with said load sustaining element for positively precluding rotation of said sheave and movement of said load sustaining element through said casing, said casing adjacent its top having a recess therein contoured to receive adjacent links of one of said holddown elements therein, said recess adapting said device to be directly connected with said one holddown element so that the need for a separate hook and swivel arrangement in conjunction with said casing is obviated, said recess being defined by first and second communicating channel portions, one of said channel portions extending generally upright in said casing and opening generally to the top of said casing, the other of said channel portions extending generally laterally of said casing and opening generally to a side of said casing in a direction generally away from said pawl, whereby said one holddown element may be engaged directly in said recess from said side of said casing without becoming fouled with or contacting said pawl, and means on one of said chain reaches engageable with the other of said holddown elements.

2. The device of claim 1 in which said sheave has spaced teeth thereon, and in which said load sustaining element comprises a rollerless type link chain passing over said sheave with said sheave teeth projecting between adjacent links of said chain so that said pawl is engageable directly and alternately with each link of such chain and with each tooth of said sheave, whereby fine incremental adjustment of said device may be obtained.

3. The device of claim 2 wherein said pawl has its inner end normally positioned within said casing, said inner end being formed with a generally concave seat, said seat being contoured generally in conformity with the configuration of the links of said chain element and said sheave teeth to be engaged thereby to minimize the possibility of accidental disengagement of said pawl therefrom when said device is in use.

4. The device of claim 1 in which said pawl includes a handle portion projecting freely beyond said casing at the front thereof which is readily accessible externally of said casing without interference from said one holddown element.

5. The device of claim 1 in which said means on said one chain reach includes a hook having a recess therein contoured to straddle links of said other hold down element so that the need for a swivel to attach said hook to said one chain reach is obviated, said hook recess being defined by first and second communicating channel portions adapted to receive said links of said other hold-down element therein in twist free fashion.

6. The device of claim 1 which includes an operating handle separate from said casing which is selectively insertable between the links of said parallel reaches of said load sustaining chain element for effecting movement of said reaches of said chain element in opposite directions and rotation of said sheave during operation of said device, the end of said handle being contoured in accordance with the links of said chain element to be received therein.

7. A load sustaining device interposable between and separable from adjacent ends of holddown elements to be interconnected thereby, said device comprising a casing, a sheave rotatably mounted in said casing, a load sustaining element which is separate from said holddown elements passing over said sheave and projecting from said casing in generally parallel reaches, holding means pivotally mounted on said casing adjacent the front thereof engageable with said sheave and with said load sustaining element for precluding movement of said load sustaining element through said casing, said casing adja-

cent its top having a recess therein contoured to receive an end portion of one of said holddown elements directly therein, said recess adapting said device to be directly connected with said one holddown element so that the need for a separate hook and swivel arrangement in conjunction with said casing is obviated, said recess extending between the top of said casing and a side thereof spaced from said pivotally mounted holding means whereby said end portion of said one holddown element may be engaged in said recess without becoming fouled with or interfering with operation of said holding means, means on one end of said load sustaining element engageable with the other of said holddown elements, and handle means separate from said casing and engageable with said load sustaining element for effecting rotation of said sheave.

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