

Dec. 6, 1966

R. A. HOLMES

3,290,010

LOAD BINDER

Filed Feb. 1, 1965

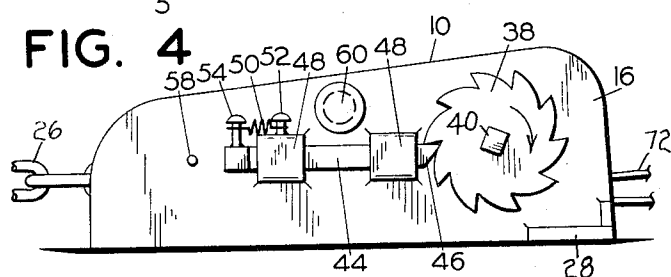
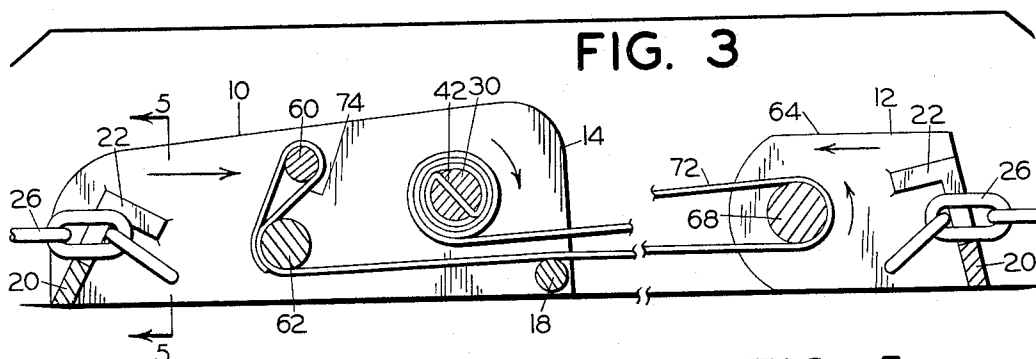
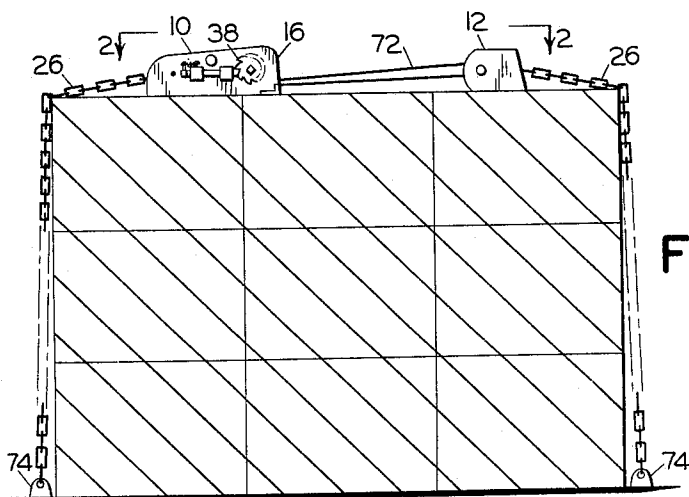
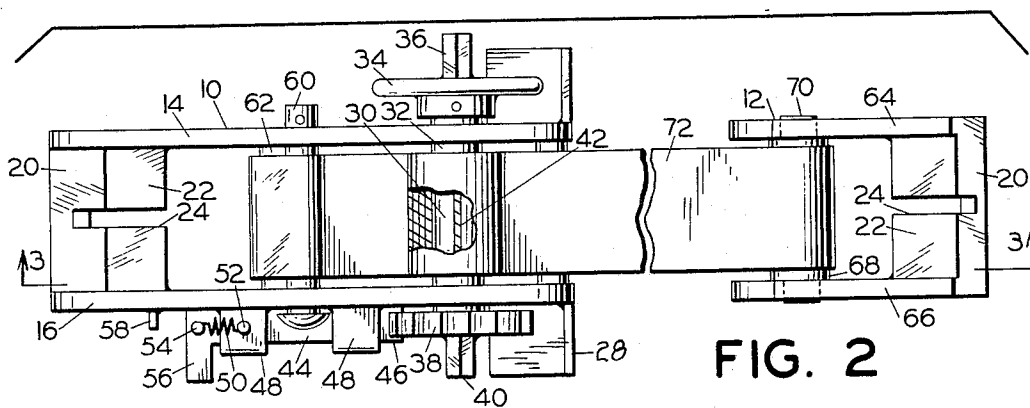
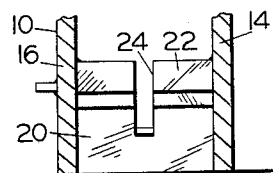


FIG. 5



INVENTOR.
RALPH A. HOLMES

BY *Eugene W. Eichelman*
ATTORNEY

1

3,290,010

LOAD BINDER

Ralph A. Holmes, % Halmac Manufacturing,

1212 NE. 63rd, Portland, Oreg.

Filed Feb. 1, 1965, Ser. No. 429,302

2 Claims. (Cl. 254-161)

This invention relates to new and useful improvements in load binders.

A primary objective of the present invention is to provide a load binder having means to operate a belt or strap in cinching a load.

A more particular object of the present invention is to provide a load binder which utilizes a belt as a binding link and which employs novel winch and pulley mechanisms arranged to be connected to load binding elements for tightening the latter on the load.

Another object is to provide a load binder which is operative to cinch up a load by means of a flat, slightly resilient belt to perform an improved load binding function wherein the belt is capable of more efficiently holding a load in the event that said load should shift or compact.

Another object is to provide a load binder which has novel means for connecting a load binding chain thereto.

The invention is embodied in a pair of binder parts, one of which includes a winch housing and the other of which includes a pulley housing. Each of these two binder portions has structure capable of connecting a load binding chain thereto, and each is arranged for connecting a binding belt therebetween. One end of the belt is connected stationarily to the winch housing and the belt is reeved over a pulley in the pulley housing, the other end of the belt being connected to a winch in the winch housing whereby upon operation of the winch the belt may be slackened or tightened as desired. The structure described and the use therewith of a slightly elastic belt for binding a load has many advantages as will be set out hereinafter. Furthermore, the invention will be better understood and additional objects will become apparent from the following specification and claims, considered together with the accompanying drawings, wherein the numerals of reference indicate like parts.

In the drawings:

FIGURE 1 comprises a transverse sectional view through a load and shows the present load binder in cinching position on the load;

FIGURE 2 is a top plan view of the present load binder, taken on the line 2-2 of FIGURE 1;

FIGURE 3 is a longitudinal, vertical, sectional view taken on the line 3-3 of FIGURE 2;

FIGURE 4 is a fragmentary, side elevational view of the winch portion of the binder; and

FIGURE 5 is a cross sectional view taken on the line 5-5 of FIGURE 3.

Referring now in particular to the drawings, the present binder comprises a winch housing 10 and a pulley housing 12. With regard first to the winch housing 10, such apparatus comprises a pair of side plates 14 and 16 maintained in rigid parallel relation principally by a cross bar 18 at the lower front end thereof and a chain connector 20 at the rearward end, the front end of this housing being open. As best viewed in FIGURES 2 and 3, the connector 20 comprises a forwardly angled plate having a top flange 22 extending forwardly and downwardly at substantially a right angle to the plate 20. A longitudinally disposed slot 24 extends downwardly through the flange 22 and through an upper portion of the plate 20.

The chain connector 20 provides a positive connection of the housing with a chain in that one link of the chain may be manipulated into the slot 24 while in parallel relation therewith and the next link toward the end of

2

the chain is placed under the flange 22. Since said last mentioned link extends crosswise to the slot 24 the chain cannot become disengaged from the connector 20 unless it is intentionally disengaged. The positive connection will be maintained through all tightened and semi-tightened conditions of the chain and in most instances in loose conditions of the chain.

The housing 10 has a pair of oppositely projecting front support plates or feet 28 integrally connected in a suitable manner to the side plates of the housing.

Rotatably mounted between the side plates 14 and 16 adjacent the front of the winch housing is a winch drum 30 keyed or otherwise secured on a shaft 32 projecting at both its ends through the side plates of the winch housing. The shaft carries a hand wheel 34 on one projecting end thereof and also has a non-round end 36 adapted for engagement by a turning wrench. The drum 30 thus is arranged to be turned by operation of the hand wheel 34 or by engaging end portion 36 with a suitable wrench.

The opposite projecting end of the shaft 34 from the hand wheel carries integrally thereon a ratchet wheel 38. Furthermore, this end of the shaft projects beyond the ratchet wheel and has another non-round portion 40 for turning engagement by a wrench. The drum 30 has a diametral slot 42 for a purpose to be described hereinafter.

Operative with the ratchet wheel 38 is a sliding pawl 44 a beveled end 46 of which is adapted to engage the teeth of the ratchet for controlling a wind-up rotation of the ratchet and the drum in one direction. Pawl 44 is slidably mounted in a pair of guides 48 projecting integrally from the outer surface of the winch housing side wall 16. The pawl 44 is urged forwardly into engagement with the ratchet wheel 38 by a spring 50 connected to a pair of anchor pins 52 and 54 secured respectively on the guide 48 and a rearward projecting end of pawl 44. The rearward end of the pawl 44 has a lateral projection 56 which serves as manual means for manipulating the pawl particularly in releasing movement. Thus, the spring 50 will urge the pawl normally into engagement with the ratchet wheel 38 and when it is desired to release the pawl the latter may be pulled rearwardly either by grasping the projection 56 or by striking said projection with a hammer or the like. A stop pin 58 is secured to the housing wall 16 to limit rearward movement of the pawl.

Winch housing 10 also has a pair of cross pins 60 and 62 interconnected integrally between the walls thereof, the pin 60 comprising an anchor pin and the pin 62 comprising a guide pin. These pins are disposed in substantially vertical relationship and are located intermediate the chain connector 20 and the winch drum 30.

The pulley housing 12 comprises a pair of side walls 64 and 66. Rotatably mounted between the side walls is a shaft 68 having end stub shafts 70 suitably journaled in said side walls. Pulley housing 12 also has a chain connector 20 at one end thereof which is similar to the chain connector on the winch housing, having an inwardly and downwardly angled flange portion 22 and a top opening slot 24 for receiving a chain 26 in locked relation.

Associated with the winch housing 10 and the pulley housing 12 is a belt 72 of substantial width. Although the width of this belt may vary, widths of four to six inches have been found satisfactory for binding loads. One end of the belt 72 has a loop 74 therein, this loop being formed by side stitching or other suitable means. The looped end of the belt is mounted on the cross pin 60 and the belt from this end then extends around the rear of cross pin 62, forwardly out through the open front end of the winch housing 10, and then around the shaft 68. The free end of the belt is connected to the winch

drum 30, such connection being made by inserting said end in the diametral slot 42 and then rotating the drum sufficiently in the desired direction to form a self binding wrapped connection.

The belt 72 is preferably of nylon construction since such material has great tensile strength and also has some elastic qualities. Other belt constructions may be utilized, but as will be seen hereinafter, it is desirable that it be somewhat elastic to provide for the automatic take-up of slack which may develop in the load during transportation.

To bind a load with the present apparatus, the two load binding chains 26, after being suitably secured to connectors 74 on the load hauling device, are attached to the chain connectors 20 on each of the winch housing 10 and pulley housing 12. The winch drum 30 is first backed off, however, by suitable operation of the pawl 34 and ratchet wheel 38 to provide a belt length between the winch housing and the pulley housing sufficient to bind the load tightly and yet maintain a substantial reach between the two housings 10 and 12.

Upon operation of the winch drum in a winding direction, as by operation of the hand wheel 34 or by a suitable wrench operation of shaft ends 36 or 40, the load is bound tightly. It has been found by the use of the present construction, wherein a portion of the binding element comprises a belt and the belt reach between the housings 10 and 12 is of substantial length, that there is sufficient elasticity in the binding to take up normal slack which may develop in the chains 26 as a result of shifting of the load during transportation. Such comprises a substantial improvement over the usual all-chain bindings since the latter are immediately loosened if the load should shift together or otherwise compact itself during transportation.

It is apparent that by the wrap of belt around the shaft 68 a 2-1 ratio or single pulley arrangement is accomplished, and thus an extremely tight bind can be accomplished on the load.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to

without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A load binding apparatus comprising a belt, a winch housing having forward and rearward ends and having a pair of parallel side walls spaced apart a distance greater than the width of said belt whereby the latter can extend freely in a flatwise position in said housing, an anchor pin mounted in said side walls crosswise of said housing intermediate the forward and rearward ends of the latter, a guide pin also mounted in said side walls crosswise of said housing intermediate the forward and rearward ends of the latter, said belt being secured at one of its ends to said anchor pin and then extending around said guide pin to lead out the forward end of said housing, a pulley housing, a pulley in said pulley housing, said belt being reeved over said pulley, a winch drum in said winch housing, the other end of said belt leading from said pulley and being secured to said winch drum whereby upon selected operation of said winch drum the belt is tightened to draw said winch housing and said pulley housing together, and means on each end of said winch housing for attachment thereto of a load binding element.

2. The load binding apparatus of claim 1 wherein said anchor pin and said guide pin are disposed in substantially vertical relation and said winch drum is disposed forwardly in said winch housing relative to said anchor and guide pins.

References Cited by the Examiner

UNITED STATES PATENTS

1,855,641	4/1932	Marschall et al.	254—164
2,449,600	9/1948	Geiger	248—36
2,816,342	12/1957	Hyre	24—269
3,020,021	2/1962	Story	254—161
3,108,785	10/1963	Slinden	254—161
3,120,370	2/1964	Sause	248—361
3,180,623	4/1965	Huber	254—164
3,193,253	7/1965	Ratcliff et al.	254—74

WILLIAM FELDMAN, *Primary Examiner.*

MILTON S. MEHR, *Examiner.*