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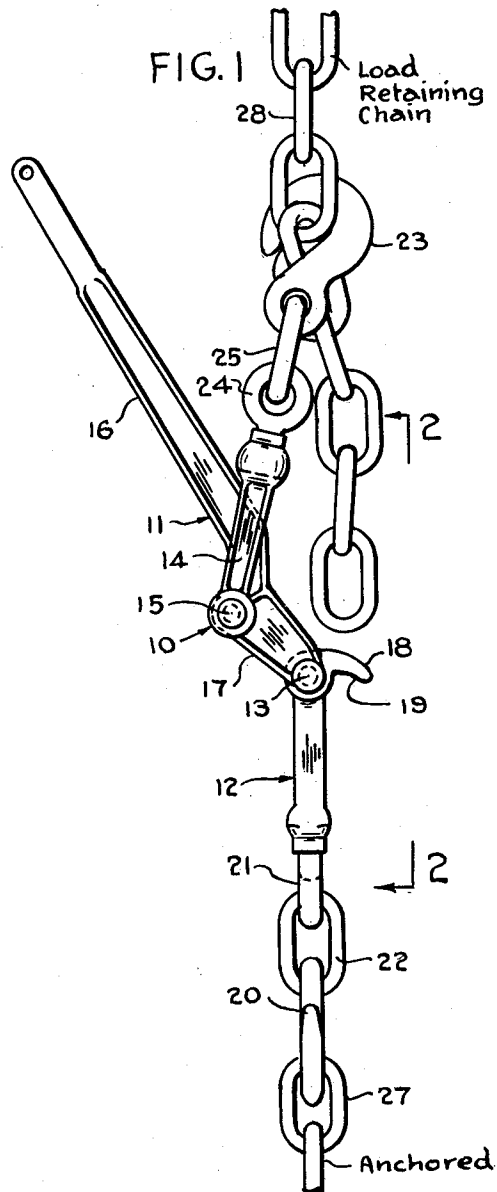
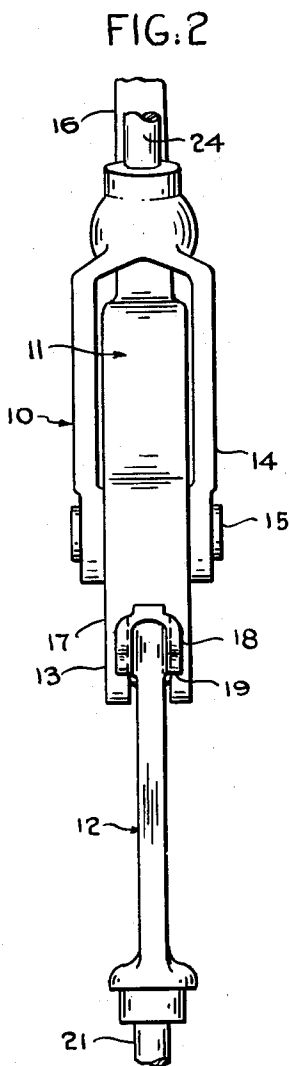
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3,149,821

CHAIN BINDER

Filed June 21, 1962

2 Sheets-Sheet 1



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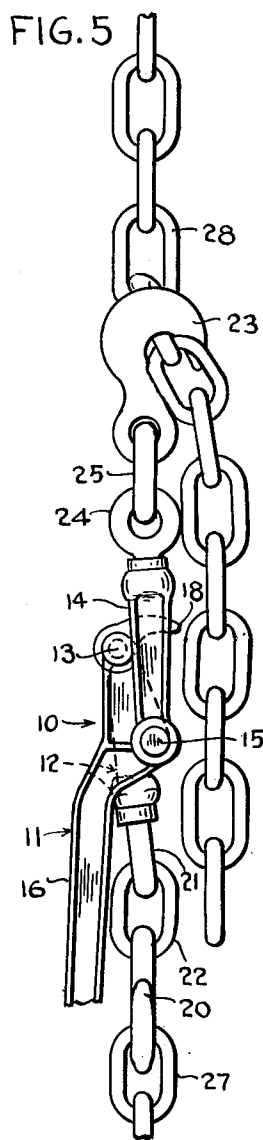
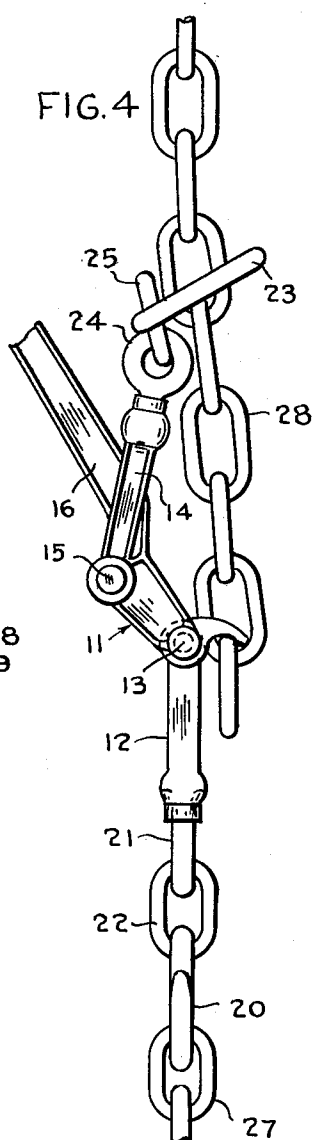
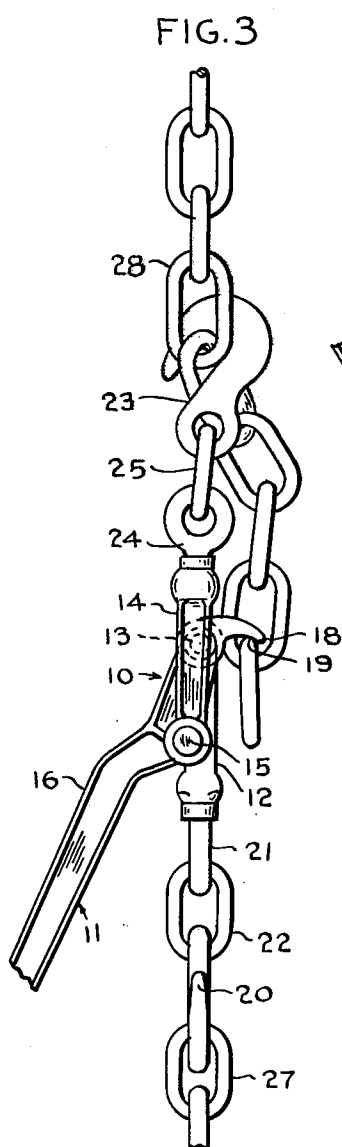
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CHAIN BINDER

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2 Sheets-Sheet 2



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CHAIN BINDER

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3 Claims. (Cl. 254-78)

This invention relates to a chain binder for a load retaining chain or like flexible element.

Heretofore chain binders have been provided for tightening load-retaining chains about heavy loads mounted on trucks, freight cars, and the like. No satisfactory chain binder, however, has been provided by which a load-retaining chain could be repeatedly tightened without releasing or disturbing a previously accomplished anchoring grip on the tightened chain.

One object of the present invention is to provide an improved chain binder of the character described by which a load-retaining chain may be tightened about a load, utilizing a progressive walking action first to anchor the chain at a relatively fixed point and then to tighten the chain while anchoring progressively extended portions of the chain at the same fixed point, all without retraction of the chain at the fixed anchoring point at any time during the tightening operations.

Another object of the invention is to provide a chain binder of the character described utilizing lever means for tightening the load retaining chain, but which requires no leverage action to retain the chain against retraction after each successive tightening operation.

Other objects of the invention will be manifest from the following brief description and the accompanying drawings:

Of the accompanying drawings:

FIGURE 1 is a front elevation of a chain binder illustrating in full lines, the condition thereof at the start of a chain tightening operation.

FIGURE 2 is an enlarged fragmentary side elevation of the chain binder, substantially as viewed on the lines 2-2 of FIGURE 1.

FIGURE 3 is a view corresponding to FIGURE 1, illustrating in full lines the chain binder operated to extend the load-retaining chain to position for releasable anchoring engaging of the extended chain with a relatively fixed anchoring means.

FIGURE 4 is a view corresponding to FIGURE 3, but illustrating the chain binder in condition for further extension of the load-retaining chain, while the fixed anchoring engagement of FIGURE 3 is maintained.

FIGURE 5 is a view corresponding to FIGURE 4, illustrating the final load-retaining condition of the chain binder, in which it is self-operatively locked against release of the load-retaining chain.

Referring particularly to FIGURES 1 and 2 of the drawings, the chain binder 10 comprises a lever 11; a link or elongated member 12 pivoted to a first pivotal or fulcruming point 13 at one end of the lever; a connector or clevis 14, pivoted to the lever at a second pivotal point 15 inwardly spaced from pivotal point 13. Thus, the lever includes an elongated handle portion 16 extending in a rearward direction away from pivotal point 15, and a shorter fulcruming portion 17 thereof extending oppositely or forwardly from the pivotal point 15, and terminating in said one end of the lever to which member 12 is pivoted. Extending freely forwardly of member 12, at the end thereof adjacent pivotal point 13, there may be an integral bifurcated protrusion 18 having hooked under portions 19 facing in the direction longitudinally toward the opposite end of the member, thereby to serve as a chain-anchoring means in a manner to be described later. Member 12 also may have a C-hook 20 flexibly and swivelly connected thereto, as by means of an eyelet 21 pivotally retained in the outer

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end of the member and a chain link 22 between the eyelet and the hook 20. A second C-hook 23 may be similarly swivelly connected to the outer end of the clevis 14, by an eyelet 24 pivotally retained in the outer portion of the clevis, and a chain link 25 connected between the eyelet and the hook.

In all of the pivotally adjusted positions of the chain binder 10, shown in FIGURES 1 and 3 to 4, the first and second pivotal points 13 and 15, respectively, always lie within a plane extending transversely and longitudinally of the unit, and laterally centered through the same as viewed in FIGURE 2. That is, in all positions of the binder including the operative positions of FIGURES 1 to 5, the pivotal points 13 and 15, as well as a line of pull between the load-retaining chain 28 and anchoring chain 27 will always be in said plane. In the operative positions of the binder shown in FIGURES 1, 3 and 4 the first pivotal point is maintained substantially in said line of pull transversely in said plane, but in the binder-locking FIGURE 5 position, the first pivotal point 13 will have moved rearwardly in said transverse plane, to a past dead-center position of the pivotal point 13 with respect to the second pivotal point 15 and the effective line of pull between the chains 27 and 28.

In use of the improved chain binder to restrain or bind a load (not shown) mounted on a truck or other supporting object, for example, the C-hook 18 on member 12 is suitably anchored to chain 27 or other relatively fixed device on the supporting object, and the chain binder is manually supported to have the member 12 extended in direction toward load binder chain 28 engaged about said load (see FIGURE 1). While the operator uses one hand to hold the lever 11 extended generally in the same direction, he may use the other hand to attach the C-hook 23 to the binder chain 28. In other words, the binder 10 will now be self-supported in extended condition between the fixed chain 27 and the extensible binder chain 28, as shown in full lines in FIGURE 1, and the hooked protrusion 19 will now be in position to serve as a relatively fixed anchoring hook. The pivotal point 13 likewise now becomes a relatively fixed fulcrum point.

Next, the operator urges the lever handle 16 in direction toward the fixed anchor chain 27, to fulcrum the clevis 14 about the fixed pivot 13, which with mechanical advantage urges the attached hook 23 inwardly of the anchoring hook 18, until the chain 28 is sufficiently extended to anchor an extended portion thereof over hook 18, as shown in FIGURE 3.

Now the lever arm 16, with relatively slight effort, may be reversely fulcrumed about fixed fulcrum point 13 to permit re-engagement of C-hook 23 with another portion of chain 28, as shown in FIGURE 4, the previous hooked engagement of the chain 28 with anchoring hook 18 being retained at this point.

The walking action of the chain binder 10 described in connection with the steps shown in FIGURES 1, 3 and 4 may be repeated until the chain 28 is sufficiently tight about the load to be retained thereby. When chain 28 is in requisite extended condition, relatively as shown in FIGURE 3, the lever handle 16 may be reversed to slacken chain 28 sufficiently to release the hooked connection of the same with fixed anchoring hook 18, after which the lever is again fulcrumed in chain-tightening direction about fixed fulcrum point 13, until the lever end 17 swings past dead-center with respect to the tautly restrained clevis 14, as shown in FIGURE 5. This dead-center relationship of the lever and associated parts of the chain binder is completely effective to retain the chain 28 tightly about the load.

In each instance tightening of chain 28 is accomplished with the mechanical advantage of leverage action

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about fixed fulcrum point 13. Reverse operation of the lever 11 for progressive walking operation of the chain binder, however, requires little or no substantial manual effort, because the hook portion 18 on member 12 remains fixed therewith, so that there is no restraining action applied to the lever by the chain, through said hook portion.

It will be readily apparent that progressive walking action of the improved chain binder likewise may be reversely applied for safely and easily releasing the binder chain 28 from the load.

Modifications of the invention may be resorted to without departing from the spirit thereof, or the scope of the appended claims.

What is claimed is:

1. A chain binder for a chain or like flexible load retaining element having a portion to be extended in a line of pull thereof from the load, comprising: a lever; a member pivoted at a first pivotal point at a fulcrum end of said lever, said member having anchoring means thereon for anchoring the same to a relatively fixed object for extension of the member in said line of pull toward the oppositely extended element portion; a connector pivoted to said lever at a second pivotal point spaced from said first pivotal point; and attaching means on said connector for releasable attachment thereof to said oppositely extended element portion; said first and second pivotal points being in a plane extending transversely and longitudinally of the load binder and laterally centered with respect thereto, said plane including said line of pull, and said lever being manually swingable about said first pivotal point at a rearward side of said line of pull in which said second pivotal point swings in said plane; said member having a rigid protrusion affixed thereon which, in said extended position of the member, extends freely forwardly of said first pivotal point and is laterally generally centered with respect to said plane to be closely adjacent

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alignment with said line of pull; whereby in the extended anchoring position of said member said lever is manually operable at said rearward side to cause the attached connector to tighten said retaining element toward position for anchoring engagement of said element portion with said protrusion; said lever thereby being selectively reversibly operable about said first pivotal point, while maintaining said anchoring engagement of said element portion with said protrusion, selectively to permit re-engagement of said attaching means with said element portion for requisite repetitions of said manual operation of the lever to tighten the retaining element about the load.

2. A chain binder as in claim 1, said connector being a clevis adapted, in load-tightening operation of said lever, to receive within the same the fulcrum end of the lever and the pivoted end of the member rearwardly to a past dead-center position of the first pivotal point with respect to said second pivotal point and the effective said line of pull, and thereby to lock the lever in load-tightened position.

3. A chain binder as in claim 2, said protrusion in said locked position of the lever being substantially withdrawn within said clevis to be out of engagement with the tightened load-retaining element extended from said engaged attaching means.

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