Aug. 15, 1950 W. H. HAMPTON ET AL 2,518,776

HOIST

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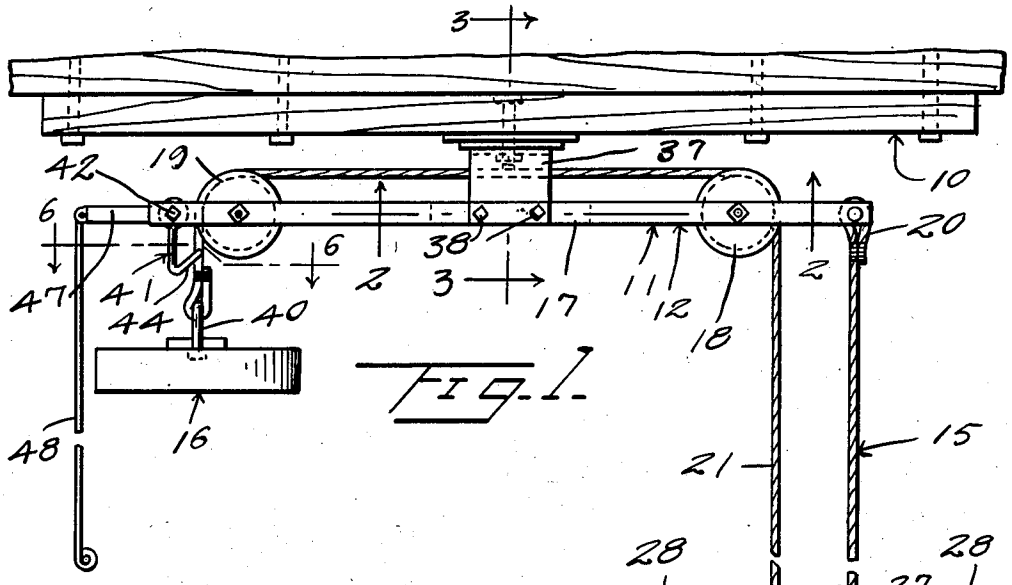


Fig. 1.

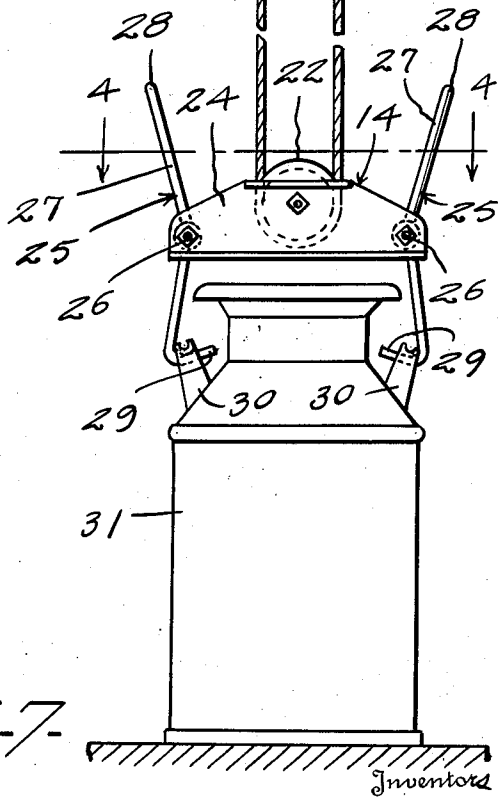


Fig. 6.

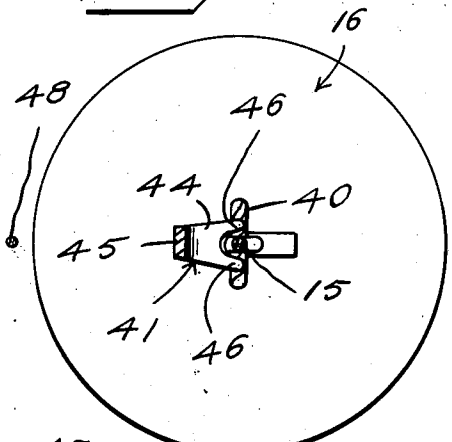
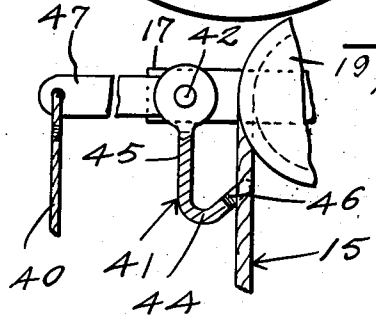


Fig. 7.



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HOIST

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Fig. 2.

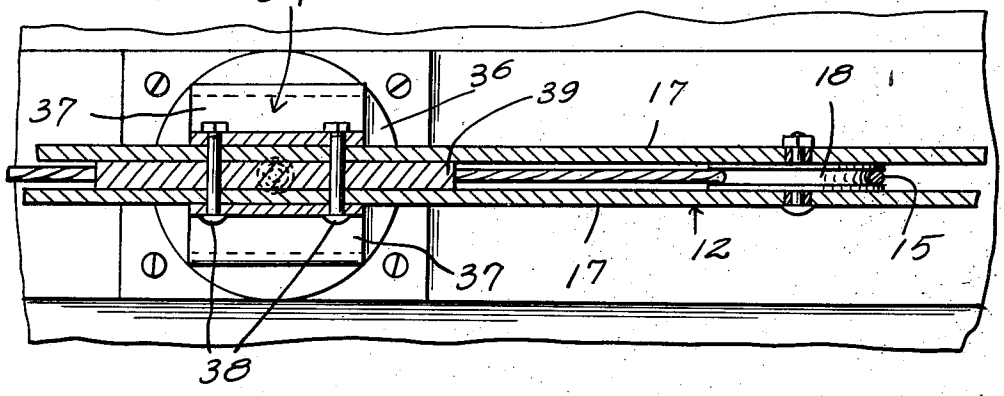


Fig. 3.

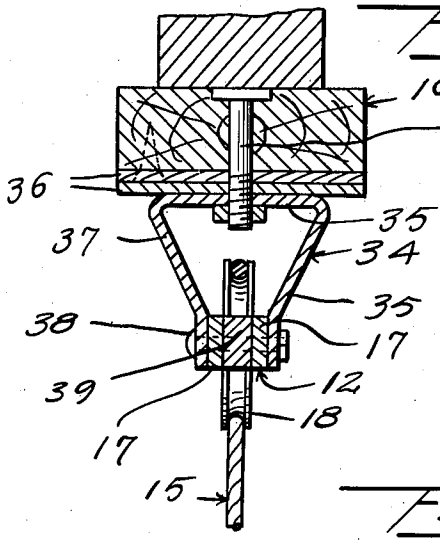


Fig. 5.

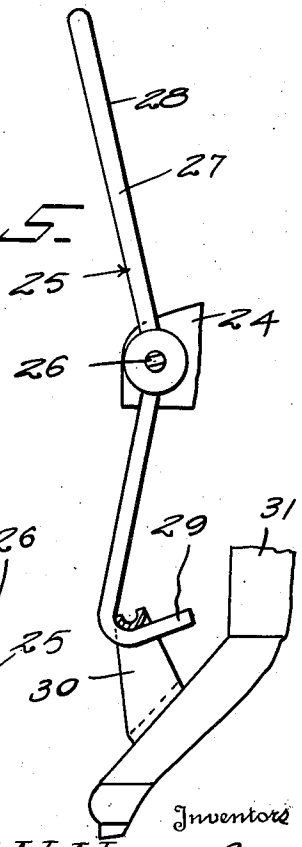
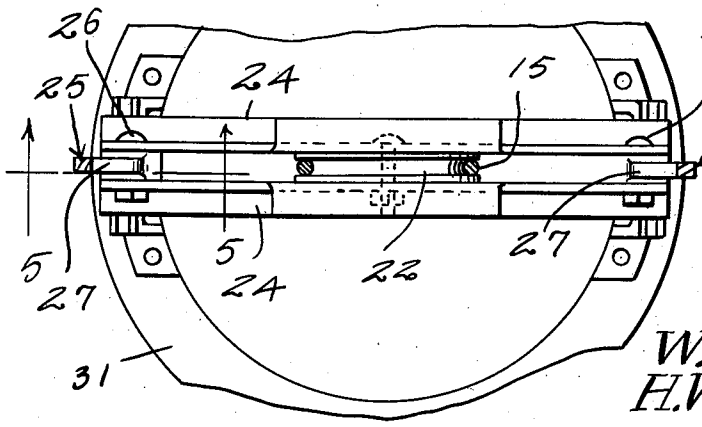


Fig. 4.



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HOIST

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Application June 16, 1947, Serial No. 755,002

6 Claims. (Cl. 212—48)

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This invention relates to counterbalanced hoists and more particularly to an improved hoist having means for securing the counterbalance weight to the beam of the hoist when the hoist is not in use.

It is an object of this invention to provide an improved hoist of the kind to be more particularly described hereinafter, which is especially adapted for use in hoisting milk cans from the cooling troughs and loading the cans on a truck.

Another object of this invention is to provide a hoist of this kind having hooks which may be readily engaged with the handles of a milk can and having a counterbalance or weight on the rope or cable substantially equal to the weight of a filled milk can so that the can may be raised from its cooler with very little effort on the part of the operator.

In the use of counterbalanced hoists of this kind, when the milk can is removed from its hooks, the counterweight will drop and requires as much effort of the operator to hold it up for securing a second can as it would to actually raise the can. It is, therefore, an object of this invention to provide a latch on the beam and weight to hold the weight in its raised position independent of the supporting cable or rope so that the second can may be hooked on the hoist with little effort.

Still another object of this invention is to provide a means for releasing the weight from the beam to counterbalance the weight of the loaded milk can. The release is so constructed and arranged that it may be readily accessible to the operator.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a side elevation, partly broken away, of a counterbalanced hoist constructed according to an embodiment of this invention,

Figure 2 is a longitudinal section taken on the line 2—2 of Figure 1,

Figure 3 is a transverse section taken on the line 3—3 of Figure 1,

Figure 4 is a horizontal section taken on the line 4—4 of Figure 1,

Figure 5 is a fragmentary enlarged detail view, partly in section, of an article gripping hook,

Figure 6 is a horizontal section taken on the line 6—6 of Figure 1,

Figure 7 is an enlarged fragmentary view, partly in section, of the weight supporting hook.

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Referring to the drawings, the numeral 10 designates generally a stationary support for a counterbalanced hoist particularly adapted for raising milk cans or the like from their cooling vats, and for loading the cans on a truck.

The counterbalanced hoist 11 is formed with a beam 12 having an article gripping member 14 supported on a flexible member 15 at one end of the beam, and a weight 16 on the flexible member at the other end of the beam, for counterbalancing the weight of the milk cans or other articles to be raised by the article gripping means 14.

The beam 12 is formed of a pair of horizontally spaced apart beam members 17 having a pulley 18 rotatably supported between the members 17 at one end. A second pulley 19 is rotatably supported between the beam forming members 17 at the opposite end thereof. A flexible member 15 is trained about the pulleys 18 and 19 and extends downwardly on each end of the beam. One end of the rope or cable 15 is fixed to the beam 12, as at 20. The cable 15, extending downwardly between the pulley 18 and the fixed end 20, forms substantially a loop as 21.

The article gripping member 14 is formed with a pulley 22 about which the cable 15 engages in the loop 21, to provide additional leverage for raising the milk can or other article. The weight 16 is fixed to the other end of the rope or cable 15 and may be one-half the weight of the article to be raised by the member 14. The article gripping member 14 is formed of a pair of spaced apart plates 24, having the pulley 22 rotatably supported therebetween. The plates 24 are elongated and extend outwardly from each side of the pulley 22.

Article gripping hooks 25 are pivotally supported between the plates 24 at each end thereof. The hooks 25 are pivotally mounted by a bolt or pin 26 extending through the plates 24 and engaging the shank 27 of the hook intermediate its length. The upper ends 28 of the hooks 25 provide handles therefor and are bent outwardly relative to the lower end of the hooks.

The bills 29 of the hooks 25 extend inwardly and upwardly for engaging the handles as 30 of a milk can 31. In this position the weight of the bills and hook below the pivot 26 is sufficient to normally bias the bills 29 inwardly relative to the member 14.

The beam 12 is rotatably supported from the fixed supporting member 10 in the drawings, but it is understood that the beam may also be ro-

tatably supported from a suitable track or other device whereby the entire hoist 11 may be moved.

In the drawings, a bolt 32 extends through the fixed support 10 and a U-shaped hook or attaching member 34' is rotatably mounted on the lower end of the bolt, the beam 12 being fixed to the lower end of the U-shaped member 34. The bolt 32 engages through the center of the bight 35 of the member 34 and a pair of washers or bearing plates 36 are loosely mounted about the bolt 32 between the bight 35 and the supporting member 10.

The downwardly extending arms 37 of the member 34 are fixed to the members 17 by bolts 38 extending through the lower end of the arms 37 and the beam 12. For holding the beam members 17 in spaced apart relation at the center the same as at the ends, a spacer as 39 may be fixed by the bolts 38 at this point.

The weight 16 is provided with a centrally disposed hook as 40 to which the flexible member 15 is fixed or attached. For holding the weight 16 in the raised position when no weight is carried by the member 14, there is provided a hook 41 pivotally carried by the beam 12 adjacent the pulley 19 for engagement with the hook or eye 40 of the weight 16. The hook 41 is pivotally mounted between the beam members 17 by a pivot pin 42 outwardly of the pulley 19. The bill 44 of the hook 41 is disposed inwardly relative to the shank 45 thereof for engagement with the eye or hook 40 of the weight 16.

The bill 44 is substantially flat and inclined upwardly and inwardly. The bill 44 is bifurcated, providing fingers 46 at the outer end thereof which are adapted to engage about the flexible member 15 in the normal hanging position of the hook 41. In this manner the cable or rope 15 is adapted to freely pass between the fingers 46 in the operation of the hoist, and when the eye or hook 40 of the weight 16 is moved upwardly, the engagement of the upper edge of the hook 40 with the lower surface of the bill 44 will rock the hook 41 outwardly until upon further movement of the eye 40 the bill will engage within the hook 40.

For releasing the weight 16 from the retaining hook 41 when a sufficient weight is supported by the member 14, an outwardly extending arm as 47 is provided. The arm 47 is fixed to the hook 41 at the pivot thereof and extends at right angles outwardly relative to the shank 45.

A rod 48 is loosely carried by the outer end of the arm 47 so that by upward movement of the rod 48 the arm 47 will be rocked upwardly about the pivot 42 and the hook 41 will be moved outwardly to move the bill 44 outwardly and free from engagement with the hook or eye 40.

In the use and operation of this counterbalanced hoist, the hooks 25 of the member 14 are adapted to be engaged in the handles 30 of a milk can or the like for raising the milk can from its cooling tubs. The weight of the milk can 31 is substantially counterbalanced by the counterbalance weight 16 so that vertical movement of the can can be readily effected by an operator by raising the member 14 by grasping the handles 28 of the hooks 25. The milk can may then be freely moved to any desired position as for loading it on a truck or the like.

While the milk can 31 is depending from the beam 12, the weight 16 may be fixed to the beam 12 at the opposite end so that it will not fall free when the hooks 25 are disengaged from the handles 30. By moving the milk can downwardly or applying sufficient downward force on the flexible member 15, the weight 16 will be raised to its maximum upper position whereupon the hook 41 will engage within the eye 40. For releasing the weight 16 when it is again desired to utilize the weight as a counterbalance for the milk can, the tension between the hooks 40 and 41 may be released by sufficient force on the flexible member 15 at the opposite end of the beam and the rod 48 moved upwardly to disengage the hooks 40 and 41.

We do not mean to confine ourselves to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

What we claim is:

1. A counterbalanced hoist comprising an elongated horizontal beam, means rotatably supporting said beam intermediate the length thereof, pulleys at each end of said beam, a flexible member trained over said pulleys and extending downwardly therefrom, article engaging means carried by said member at one end of said beam, a counterweight on said flexible member at the other end of said beam, a hook eye on said weight, a depending hook pivotally mounted on said beam for engagement with said hook eye, an upwardly inclined bill on said hook engageable with said eye for rocking said hook upon upward movement of said weight, and means biasing said hook to eye engaging position.

2. A counterbalanced hoist comprising an elongated beam, means rotatably mounting said beam to a support, a pulley on each end of said beam, a flexible member trained over said pulleys and extending downwardly therefrom, oppositely disposed inwardly biased article engaging hooks on said member below one end of said beam, a counterweight on said member below the other end of said beam, and correlated interengaging hook members carried by said counterweight and said beam for supporting said counterweight independently of said flexible member.

3. A counterbalanced hoist as set forth in claim 2 wherein one of said hook members is pivoted, an inclined bill on said pivoted hook member for engaging the other hook member upon upward movement of said weight for initially rocking said pivoted hook, and means biasing said hook members into interconnected engagement upon further movement of said counterweight.

4. A counterbalance as set forth in claim 2 including means for disengaging said hook members.

5. A counterbalanced hoist comprising an elongated beam, means rotatably mounting said beam to a support, a pulley on each end of said beam, a flexible member trained over said pulleys and extending downwardly therefrom, one end of said member being fixed to said beam, oppositely disposed inwardly biased article engaging hooks on said flexible member between one pulley and the fixed end of said member below one end of said beam, a counterweight on said flexible member below the other end of said beam, correlated interengaging hook members carried by said counterweight and said beam for supporting said counterweight independently of said flexible member, one of said hook members being fixed, the other of said hook members being pivoted, a bifurcated bill on said pivoted hook member, the fingers thereof engaging about said flexible member on opposite sides thereof, said bifurcated bill being inclined whereby initial engagement of said hook members on upward

movement of said counterweight will effect rocking of said pivoted member, and means biasing said pivoted member into interconnecting engagement with said fixed hook member upon further movement of said counterweight upwardly.

6. In a counter balanced hoist including a beam, pulley means on said beam, a flexible member trained over said pulley means, a counterweight, and means attaching said counterweight to one end of said flexible member including an eye on said counterweight, a hook pivotally mounted on said beam, an upwardly inclined bifurcated bill on said hook, the fingers of said bill being adapted to normally engage on opposite sides of said flexible member, an elongated angularly extending arm on the upper end of the shank of said hook and adapted to bias said bill towards said flexible member whereby upper movement of said weight to engage said eye with said inclined bill will rock said pivoted hook from the normal position thereof and further upward movement of said weight will allow engagement of said hook in said eye.

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