

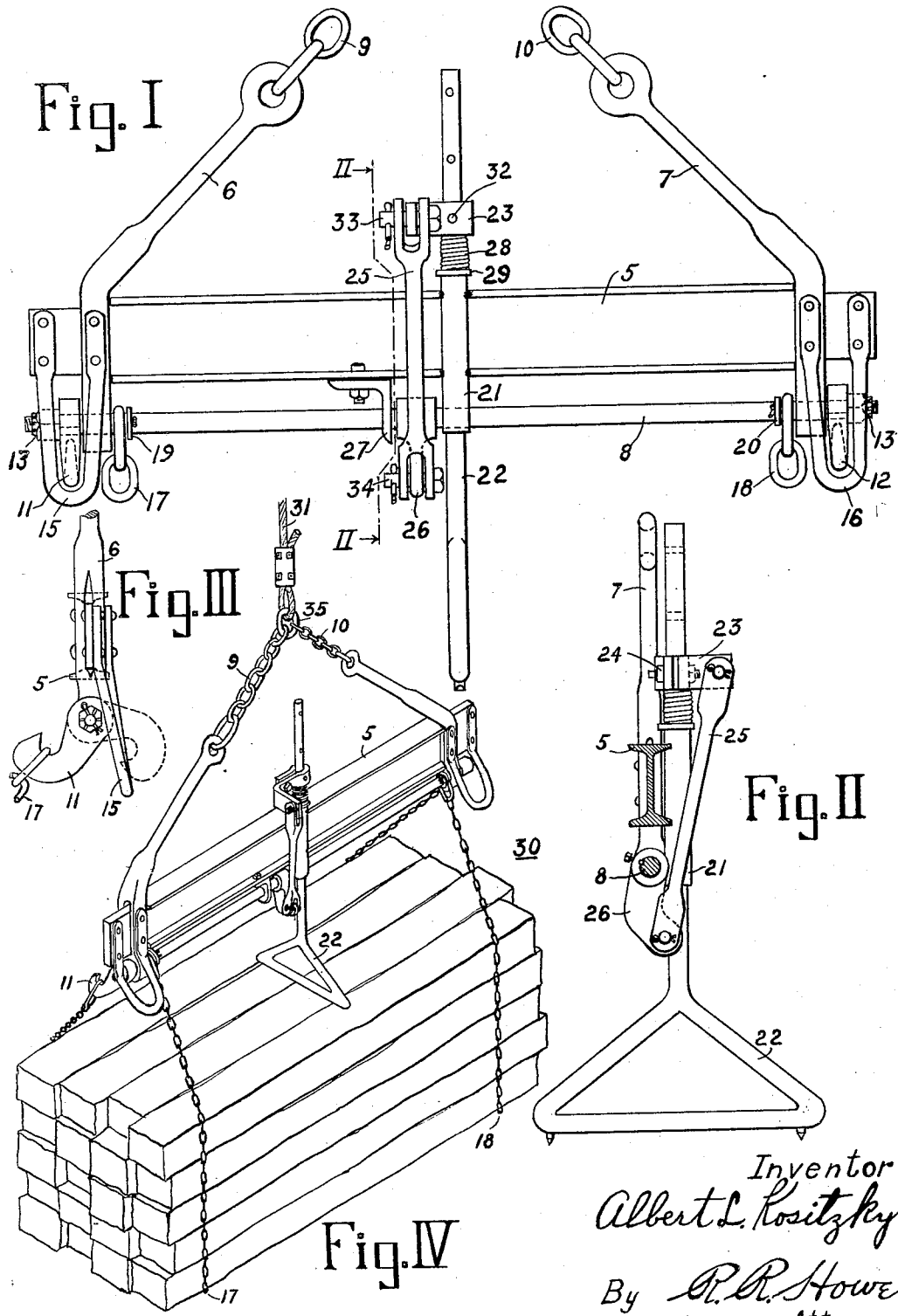
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AUTOMATICALLY RELEASING HOISTING DEVICE

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AUTOMATICALLY RELEASING HOISTING DEVICE

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This invention relates in general to hoisting apparatus and more particularly to a hoisting device provided with an improved mechanism for automatically releasing the load carried by the device when the load is lowered to a support.

In the prior art it is customary to hoist a load by passing two chains under the load and attaching the ends of the chains to two hooks which are held in spaced relation by a spreader member which in turn is supported from the hoisting cable of a crane. When the hoisting cable is raised the load will be lifted by the chains, and when the load is lowered to rest it is necessary that the ends of the chains be manually unhooked in order to disconnect the load from the hoisting device. This method of releasing the load carried by the hoisting device is hazardous, particularly when the material transferred is in the form of ties, logs, or timbers, because there is great danger of the load toppling over and falling upon the person who unhooks the chains.

It has been proposed to release the load on such hoists by utilizing the principle that a load of loose pieces such as logs or poles will spread out when lowered to a support, but hoisting devices operating on this principle fail when the load is made up of stable elements such as railroad ties, timbers, boxes, or crates which do not spread when lowered to a support.

It is an object of this invention to provide a hoisting device which automatically releases its load in an improved manner which is entirely different in principle from the above described principle.

It is another object of this invention to provide an automatically releasing hoisting device having a pair of chains or cables attached to a pair of hooks which are rotated by a depending element which strikes the load when the load is lowered to a support.

It is a further object of this invention to provide an automatically releasing hoisting device which by virtue of the features hereinafter described may be easily manufactured and may be operated with certainty and rapidity.

Other objects and advantages will be apparent to those skilled in the art from a consideration of the following description taken in conjunction with the accompanying illustrative embodiment of the invention wherein:

Fig. I is a side view of an automatically releasing hoisting device embodying the present invention;

Fig. II is an end section view of Fig. I taken on line II—II;

Fig. III is a partial end view of Fig. I showing the manner in which the hooks are rotated to release the chains;

Fig. IV is an isometric view of a hoisting device and a load operating in accordance with the principle of this invention.

Referring now to Fig. I, a spreader member 5 is preferably made from an I-beam with a portion of the flanges near the ends of the beam removed. A pair of rod members 6 and 7 are each provided at its lower end with a bearing hole for receiving rotatable shaft 8 and also with a slot into which the respective end web portions of the beam 5 are adapted to fit. The upper end of each rod member (6 and 7) is provided with an eye to which links of chains 9 and 10 are connected. Hooks 11 and 12 are slipped over the squared ends of shaft 8 and held firmly in place by suitable means such as nuts 13 and 14. A pair of U-shaped members 15 and 16 are attached to the ends of the beam 5, for example by riveting, in such a manner that the hooks 11 and 12 may rotate through the openings thereof. The end links of chains 17 and 18 are shown encircling shaft 8 and retained in place by washers and cotter pins 19 and 20, but it is to be understood that the end links of these chains may be attached to other stationary parts of the spreader member 5.

Referring now to Figs. I and II, a sleeve member 21 is welded or otherwise attached to the middle part of beam 8. A plunger member 22 is adapted to slide through sleeve 21 and is provided with a foot portion preferably in the shape of a triangle with pointed calks therein. A member 23 has a collar portion which may be clamped to plunger 22 at various points by means of bolt 24 and pin 32. A link 25 has a fork at its upper end connect-

ed to the arm portion of member 23 by means of a pin 33. Link 25 has another fork at its lower end to which a crank lever 26 is connected by means of a pin 34, noting that crank lever 26 is firmly attached to rotatable shaft 8 by a key and set screw as shown. A middle bearing member 27 is attached to beam 5 and serves to prevent bending of shaft 8. A helical spring 28 is interposed between washer 29 and member 23 and serves to balance a part of the weight of plunger member 22 and also to cushion the fall of plunger member when the load is hoisted from rest.

The operation of this invention is best understood by referring to Fig. IV wherein a load 30 of ties or timbers is shown as being carried in the sling formed by chains 17 and 18. The whole assembly is supported by a cable 31 attached to ring 35 and is hoisted and lowered by a crane or the like. With the load in mid-air as shown in this figure, the plunger member 22 will be held a suitable distance above the top of the load and the hooks 11 and 12 will assume a position substantially that shown by the solid lines in Fig. III. When the load is lowered to a support such as a vehicle or a floor and when the spreader member 5 and the elements carried thereby continue to travel in a downward direction the plunger member 22 will strike the load 30. The above described engagement of plunger member 22 with load 30 causes member 22 to move upwardly relative to spreader member 5 and impart a rotary motion to shaft 8 by virtue of the linkage comprising elements 23, 25, and 26. This rotary motion of shaft 8 causes hooks 11 and 12 to rotate counter-clockwise as viewed in Fig. III into the dotted position shown. Ordinarily the chains 17 and 18 will fall from the hooks 11 and 12 shortly after the hooks pass through their lowermost position, however, if this action does not occur, the U-shaped members 15 and 16 will assure positive disengagement of the chains. In this connection, it is to be noted that members 6 and 7 are rigid instead of flexible as would be chains in order that the turning moment due to the above described unlatching action will not appreciably rotate spreader member 5. As soon as the ends of the chains are released the operator can hoist away for another load. In some instances it may be desirable to hook both ends of each chain to a hook so that the chain is completely released or disconnected from the other elements of the hoisting device when the load is lowered, noting that this feature is obviously necessary where the hoisting chains are permanently attached to the load. Although the drawing shows a hoisting device provided with two hooks it is to be understood that this invention may be used in hoisting devices having more than two hooks, or even a single hook.

It is to be understood that the above described embodiment of the invention is mere-

ly representative and that many changes in form, construction and arrangement of parts may be resorted to without departing from the principle of the invention defined by the appended claims.

It is claimed and desired to secure by Letters Patent:

1. Means for hoisting and automatically releasing a load comprising sling elements adapted to encircle said load, a spreader member, means carried by said spreader member for detachably holding said sling members, and means actuated upon decrease in the distance between said spreader member and said load for causing said detachably holding means to release said sling elements.

2. Means for automatically releasing a load comprising sling elements adapted to encircle said load, a spreader member, means carried by said spreader member for temporarily holding said sling members, and means for releasing said sling members from said holding means including a plunger so connected to said holding means that said plunger strikes said load when said load is lowered to rest.

3. Means for automatically releasing a load comprising a hook, chain members attached to said load and connected to said hook, means for raising said hook to hoist said load, and means for disconnecting said chain members from said hook including a member arranged to strike said load when said load is lowered to rest.

4. Means for automatically releasing a load comprising a rotatable shaft, a plurality of hooks attached to said shaft, a plurality of chains surrounding said load and having their ends linked to said shaft and said hooks respectively, means for lifting said shaft to hoist said load, a depending member carried by said lifting means and normally out of engagement with said load during hoisting, and means for causing said member to rotate said shaft to release said chains when said load is lowered so that said member engages said load.

5. In combination, a sling member for encircling a load, a hook for catching said sling member, means for hoisting said hook, and means actuated by the engagement of said hoisting means with said load for disconnecting said hook from said sling member.

6. In combination, a sling member for encircling a load, a hook for detachably holding said sling member, means for hoisting said load with said sling member and hook, a depending member carried by said hoisting means, and means for moving said hook so as to detach said sling member from said hook when said load is lowered so that said depending member strikes said load.

7. In combination, a spreader member, a plurality of rotatable hooks carried by said spreader member, a plurality of chains each

having one end thereof connected to said spreader member and having the other end slipped over one of said hooks so as to form a sling for a load, means for hoisting said spreader member, a depending member having a foot portion normally out of engagement with said load during hoisting, means attached to said spreader member for guiding said depending member, and means for causing said depending member to rotate said hooks to unhook said other end of each chain from said hooks when said foot portion engages said load when said load has been lowered to rest.

8. In combination, a spreader member, a rotatable shaft carried by said spreader member, a plurality of hooks attached to said shaft, a plurality of chains each having one end thereof carried in fixed relation to said spreader member, and the other end hooked over one of said hooks so as to form a sling for a load, means attached to said spreader member for hoisting said load, a vertically movable member having a foot portion normally out of engagement with said load during hoisting, a sleeve attached to said spreader member for guiding said movable member, linkage means connecting said rotatable shaft with said movable members so that said hooks are caused to rotate to release said other ends of said chains from said hooks when said foot portion engages said load upon lowering of said load.

9. In combination, a spreader member, a pair of rod members attached to the ends of said spreader member, means connected to said rod members for hoisting said spreader member, a pair of rotatable hooks carried by said spreader member, a pair of chains encircling a load and having two ends connected to said hooks and two ends supported by said spreader member, and means for rotating said hooks to disconnect said chains from said load, said means comprising a member adapted to be moved upon engagement with said load when said load is lowered to rest.

In testimony whereof, the signature of the inventor is affixed hereto.

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