March 23, 1954 D. A. BAIRD 2,673,116

RELEASABLE HOISTING DEVICE

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Fig. 1.

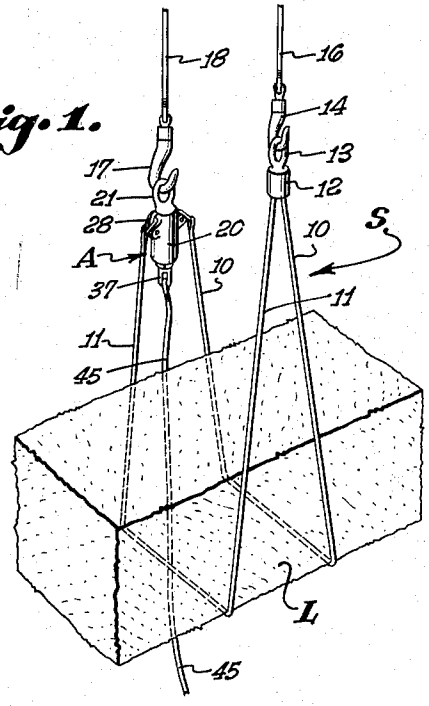


Fig. 2.

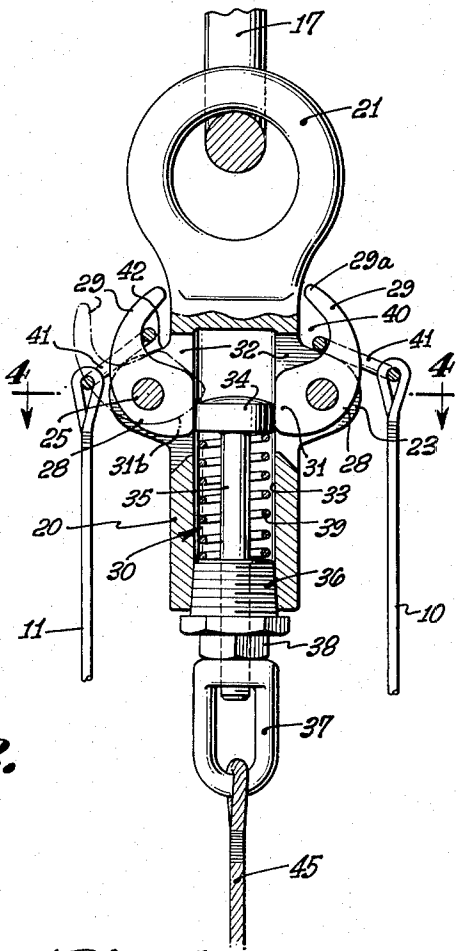


Fig. 3.

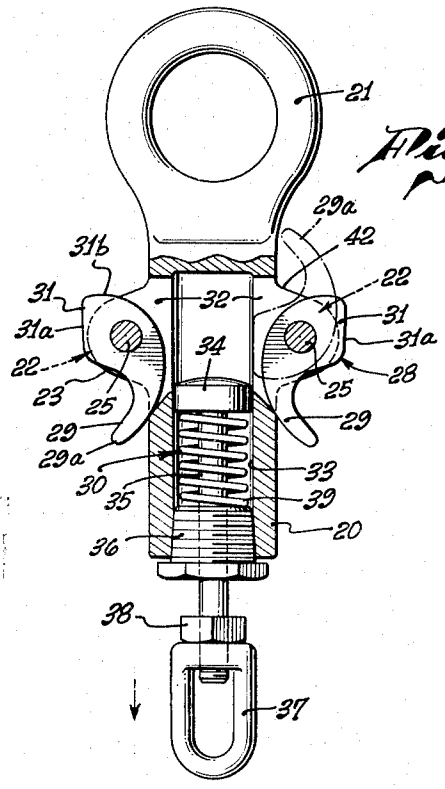
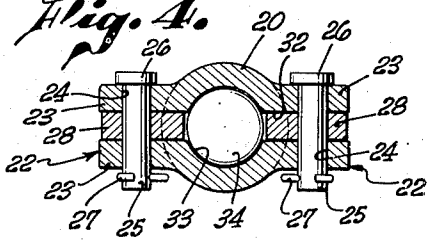


Fig. 4.



INVENTOR.

DANIEL A. BAIRD,

BY

Bernard Kriegel

ATTORNEY.

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RELEASABLE HOISTING DEVICE

Daniel A. Baird, Los Angeles, Calif.

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11 Claims. (Cl. 294—75)

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The present invention relates to hoisting devices, and more particularly to devices for releasably supporting loads.

An object of the present invention is to provide an improved hoisting device that remains positively coupled to the load until release is permitted by the operator, to enable the load itself to effect its automatic disconnection from the device.

Another object of the invention is to provide a simple, sturdy and inexpensive hoisting device for elevating and conveying loads and for releasing the loads under the positive control of the operator.

A further object of the invention is to provide a releasable hoisting device to which one or more rope, or similar, lines may be secured by a positive holding arrangement that is easily released with a minimum of effort by the operator, to enable the lines to automatically disconnect themselves from the device.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of a form in which it may be embodied. This form is shown in the drawings accompanying and forming part of the present specification. It will now be described in detail, for the purpose of illustrating the general principles of the invention; but it is to be understood that such detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

Referring to the drawings:

Figure 1 is an isometric view illustrating one manner of using the apparatus embodying the present invention;

Figure 2 is a longitudinal section, with parts in elevation, through the releasable hoisting device, with a plurality of lines secured thereto;

Figure 3 is a view similar to Figure 2, disclosing the hoisting device with its parts in released position;

Figure 4 is a cross-section taken along the line 4—4 on Figure 2.

As disclosed in Figure 1, the hoisting device forms part of a sling arrangement S by means of which a suitable load L, such as a bale of hay, may be elevated, transported to a desired location, and then released from the sling.

The sling itself may consist of a pair of lines 10, 11 suitably secured at one end to a rope socket 12 having a bail or eye portion 13 suspended from a suitable hook 14 secured to the lower end of a hoisting line 16. The rope lines 10, 11 pass

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down and under the bale of hay L, and then up along the other side of the bale, where the ends are releasably secured to the hoisting device A constituting the present invention. This device is also supported from a suitable hook 17 connected to the lower end of an elevating line 18.

When the load L is to be released from the sling S, the hoisting device A is suitably tripped, in the manner described below, to detach the ends of the lines 10, 11 from the hoisting device, allowing them to drop from the bale of hay.

The releasable hoisting device A includes a main body 20 having an upper eye or bail portion 21, for receiving the elevating hook 17 and to enable the device to be raised and lowered. Integral with and extending from the body portion in opposite directions are bifurcated ears 22, 22, the bifurcations 23 of each ear having aligned holes 24 through which a pivot pin 25 extends. The pivot pin head 26 engages one bifurcation and a cotter pin 27 extends through the other end of the pin to prevent its inadvertent withdrawal from the ear. Disposed between the bifurcations 23 of each ear is a link locking or latching arm 28 mounted on the pivot 25. This arm has a curved portion 29 of generally hook shape that is adapted to extend upwardly and inwardly toward the body 20 of the device when the arm 28 is in latched position, to prevent release of the sling line 10 or 11. Such curved portions 29 of the arms 28 are held in their latched position by engagement of a retainer mechanism 30 with the inner ends 31 of each arm, that extend through lateral body openings 32 communicating with a central longitudinal bore 33 through the body 20. The retainer device includes a retainer head 34 slidable in the bore 33 and secured to a shank 35 that extends downwardly in the body bore through a suitable spring seat and guide 36 threaded into the lower end of the body 20. A suitable bail or eye member 37 is threaded on the lower end of the shank 35, being held in position by a lock and stop nut 38 threaded on the shank.

The retainer 34, 35 is urged in an upward direction by a return spring 39 encircling its shank and bearing upon the spring seat 36 and the retainer head 34 within the body bore. This spring shifts the head 34 upwardly to a position, limited by engagement of the stop nut 38 with the spring seat and guide 36, which is in alignment and engagement with the inner ends 31 of the locking arms 28. When the retainer

head 34 is in such elevated position, the upper portions 29 of the arms are disposed above the ears 22, with their terminals 29a adjacent the body 20 forming pockets 40 for the reception of links 41 secured to the ends of the load supporting lines 10, 11.

The links 41 bear upon the upper surfaces 42 of the bifurcated ears, which surfaces are inclined in a downward and outward direction; so that the load tends to pull the links 41 in a downward and outward direction off the ears 22, the inclined surfaces 42 of which serve as saddles receiving the links. Such tendency for the links 41 to slide downwardly and outwardly along the ears also tends to shift the upper portions 29 of the arms 28 outwardly, swinging them to a releasing position about the pivot pins 25. This swinging tendency, however, is prevented by engagement of the inner portions 31 of the arms with the retainer head 34, which may have a generally cylindrical periphery engaging inner surfaces 31a on the link arms that are generally parallel to the longitudinal axis of the body 20 when the arms 28 are in their latched position. Accordingly, there is substantially no force being imposed by the arms 28 upon the retainer head 34, tending to shift it downwardly to ineffective position.

When it is desired to release the lines 10, 11 from the device A, the retainer 34, 35 is moved downwardly, as by pulling upon a trip line 45 suitably secured to the retainer bail 37, which will urge the head 34 in the downward position against the force of the return spring 39, withdrawing the head from engagement with the inner portions 31 of the latch arms 28. Following such withdrawal, the load L on the lines 10, 11 is effective to pull the links 41 in a downward and outward direction, swinging the arms 28 about their pins 25 toward the unlocking position shown in Figure 3, during which movement the links 41 are completely disconnected from the device.

Following release of the pull on the trip line 45, the spring 39 returns the retainer 34, 35 to its upper position, and it is then merely necessary to swing the arm portions 29 upwardly about their pivots 25, the rounded surfaces 31b of the inner portions 31 of the arms engaging the retainer head 34 and shifting it downwardly against the force of the return spring 39, until the arm portions 29 are again in their uppermost position, whereupon the spring 39 can return the retainer head 34 to its holding position, with its periphery behind the inner portions 31 of the arms. To facilitate the action of the arms in forcing the retainer head 34 downwardly during shifting of the arms 28 to latching position, the retainer head may be made rounded or convex; so that the arms can more readily cam it out of the way.

With the rope socket 12 secured to the hook 14 suspended from an elevating line 16, the sling lines 10, 11 are disposed around the bale of hay L, or other load. The link 41 on the end of each line is then placed over a latching arm 28, and the latter swung upwardly to the latched position disclosed in Figure 2, the inner portions 31 of the arms at first camming the retainer head 34 in a downward direction (dotted line position in Figure 2) until the curved arm portions 31b ride off the head, whereupon the return spring 39 can elevate the head to its retaining position behind the arms 28. The load L is then raised by lifting the hoisting lines 16, 18, the retainer 34 preventing the links from swinging the arms 28 outwardly to link releasing position. When the point is reached at which the load is to be dropped, the trip line 45 is pulled downwardly, to lower the retainer head 34 away from the locking arms 28, whereupon the load itself is effective to swing the upper portions 29 of the arms in a downward and outward direction, the links 41 being released by this action.

It is, accordingly, apparent that a releasable hoisting device has been provided to which the ends of one or more lines can be positively secured, but which may, nevertheless, be released at the will of the operator to enable the load itself to shift the latching arms 28 to an ineffective position. The device is reset in its latching position merely by swinging the latching arms back in an upward direction.

The inventor claims:

1. In a hoisting device: a body having an outwardly projecting portion provided with a downward and outwardly inclined surface; means on said body for supporting said body with the surface of said portion inclined downwardly and outwardly; a latching member swingable on said body between a position above said surface, to hold a part on said projecting portion, and a position in which the outermost end of said latching member is below said surface and out of the path of the part, to allow the part of gravitate off said projecting portion; and a retainer slidable upwardly along said body into engagement with said member to prevent its movement on said body to a position below said surface.

2. In a hoisting device: a body having an outwardly projecting portion provided with a downward and outwardly inclined surface; means on said body for supporting said body with the surface of said portion inclined downwardly and outwardly; a latching member pivoted on said portion and swingable between a position above said surface, to hold a part on said projecting portion, and a position in which the outermost end of said latching member is below said surface and out of the path of the part, to allow the part to gravitate off said projecting portion; and a retainer in said body slidable along a straight line path into engagement with said member to hold it in a location above said surface.

3. In a hoisting device: a body having an outwardly projecting portion provided with a downward and outwardly inclined surface; means on said body for supporting said body with the surface of said portion inclined downwardly and outwardly; a latching member pivoted on said portion and swingable between a position above said surface, to hold a part on said projecting portion, and a position in which the outermost end of said latching member is below said surface and out of the path of the part, to allow the part to gravitate off said projecting portion; a retainer in said body engageable with said member to hold it in a location above said surface; and yieldable means urging said retainer toward an upward position in engagement with said latching member.

4. In a hoisting device: a body having a plurality of outwardly projecting portions, each portion having a downward and outwardly inclined surface; means on said body for supporting said body with the surfaces of said portions inclined downwardly and outwardly; a latching member pivoted on each portion and swingable between a position above said surface, to hold a part on said projecting portion, and

a position in which the outermost end of said latching member is below said surface and out of the path of the part, to allow the part to gravitate off said projecting portion; and a single retainer in said body selectively slidable into and out of engagement with all of said latching members to prevent said members from swinging to positions below said surfaces.

5. In a hoisting device: a body having a plurality of outwardly projecting portions, each portion having a downward and outwardly inclined surface; means on said body for supporting said body with the surfaces of said portions inclined downwardly and outwardly; a latching member pivoted on each portion and swingable between a position above said surface, to hold a part on said projecting portion, and a position in which the outermost end of said latching member is below said surface and out of the path of the part, to allow the part to gravitate off said projecting portion; a single retainer in said body selectively slidable into and out of engagement with all of said latching members to prevent said members from swinging to positions below said surfaces; and spring means engaging said retainer to hold it in a position engaging said members.

6. In a hoisting device: a body having a bore, a lateral opening communicating with said bore, and an outwardly projecting portion having a downward and outwardly inclined surface; means on said body for supporting said body with the surface of said portion inclined downwardly and outwardly; a latching member pivoted on said portion and extending into said opening and swingable between a position above said surface, to hold a part on said projecting portion, and a position in which the outermost end of said latching member is below said surface and out of the path of the part, to allow the part to gravitate off said projecting portion; and a retainer movable in said bore selectively into or out of holding engagement with said member to secure said member in a position above said portion or to allow swinging of said member to said position below said portion.

7. In a hoisting device: a body having a bore, a plurality of lateral openings communicating with said bore, and a plurality of outwardly projecting portions adjacent said openings; a latching member pivoted on each portion and extending into an opening; and a retainer movable in said bore selectively into or out of holding engagement with all of said members.

8. In a hoisting device: a body having a bore, a plurality of lateral openings communicating with said bore, and a plurality of outwardly projecting portions adjacent said openings; a latching member pivoted on each portion and extending into an opening; a retainer movable in said bore selectively into or out of holding engagement with all of said members; and spring means engaging said retainer to hold it in a position engaging said members.

9. In a hoisting device: a body having an upper bail portion, a central bore, a plurality of lateral openings communicating with said bore, and outwardly projecting portions adjacent said openings, each portion having an upper surface inclined in a downward and outward direction; a latching member pivoted on each portion and extending into an opening; a retainer slidable in said bore selectively into or out of holding engagement with said member; spring means urging said retainer in an upward direction to a position in holding engagement with said members; and means externally of said body for moving said retainer downwardly to a position out of engagement with said latching members.

10. In a hoisting device: a body having an upper bail portion and a central bore below said bail portion, said body also having lateral openings communicating with said bore and outwardly projecting portions having upper surfaces inclined in a downward and outward direction; a latching member pivoted on each of said portions and extending into an opening; a retainer head engageable with said members to hold said members in a position above said surfaces; a spring seat secured to the lower end of said body; a shank secured to said head and extending through said seat; a spring surrounding said shank and bearing upon said seat and head to urge said head in an upward direction in engagement with said members; and means secured to said shank for moving said head downwardly in said body out of holding engagement with said members.

11. A hoisting device as defined in claim 10; wherein the upper end of said retainer head is rounded to be shifted downwardly upon being engaged by a latching member during upward swinging movement of the latching member.

DANIEL A. BAIRD.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
701,268	Howard et al.	May 27, 1902
820,383	Ashland	May 15, 1906
973,598	Westad	Oct. 25, 1910
1,504,715	Russell et al.	Aug. 12, 1924
2,429,769	Petouhoff	Oct. 28, 1947

FOREIGN PATENTS

Number	Country	Date
354,239	Italy	Nov. 16, 1937