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COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK M. DAUGHERTY, OF BYRON, WASHINGTON.

HOISTING APPARATUS.

1,030,771.

Specification of Letters Patent.

Patented June 25, 1912.

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To all whom it may concern:

Be it known that I, FRANK M. DAUGHERTY, a citizen of the United States, and a resident of Byron, in the county of Yakima and State of Washington, have invented a new and Improved Hoisting Apparatus, of which the following is a full, clear, and exact description.

This invention relates to hoisting apparatus for handling bags or bales, or other merchandise, and has reference more particularly to apparatus of this class which comprises a beam, means associated therewith for holding a load, means for gravitationally operating the beam to raise the load, and automatic means controlled by the load-holding means for locking the beam against movement in one direction.

The object of the invention is to provide simple, strong and efficient hoisting apparatus which can be used for handling sacks, barrels, bales, and merchandise in other packages, or in other forms, which is portable and can be easily moved from place to place, which is gravitationally operated and in which the weight of the operator can be used to raise the load, which can be adjusted to different heights and for different loads, and which has a safety attachment to prevent the sudden upward movement of the beam should the load become accidentally disengaged before it is desired to release the load.

The invention consists of the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a side elevation of an embodiment of my invention, having parts in cross section and parts broken away; Fig. 2 is a transverse section on the line 2—2 of Fig. 1, parts of the structure being broken away; Fig. 3 is an enlarged transverse section on the line 3—3 of Fig. 1; and Fig. 4 is a side elevation of the load-carrying end of the beam, having parts in cross section.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that while the hoisting apparatus is particularly useful in warehouses—for example, in stacking sacks of

grain or the like—it can also be advantageously used for other purposes in which it is to be used in lifting and transferring weights from one point to another.

Certain of the details of construction shown for example herein form no part of the invention and can be varied in accordance with individual preference or special conditions without departing from the underlying spirit of my invention as defined in the appended claims.

Referring more particularly to the drawings, I employ a base 10 which may be of any suitable form, but which consists preferably of two elongated members 11 arranged at right angles with respect to each other and halved at the middle and crossed in the usual manner. An annular socket 12 arranged at the center of the base is secured in position by means of bolts 13 which also serve to hold together the members 11. A hollow post 14 is located in the socket 12 and fastened therein by bolts 15. An inner post member 16 is slidably arranged within the member 14 and constitutes with the same a telescopic upright. It has a stop collar 17 adapted to be rigidly secured thereto at any suitable point by means of a set screw 18 so that the length of the telescopic upright can be varied as desired. The post member 14 has at the upper end a collar 19 to which are fastened suitable guys or struts 20. These have the lower ends bolted or otherwise secured in sockets 21 fastened by means of bolts 22 upon the base members 11. At the upper end the inner post member 16 has a bifurcation 23 between which is mounted to swing the beam 24, by means of a suitable pivot pin or bolt 25. The beam 24 is of any suitable form and consists preferably of a hollow member of convenient length tapered from the middle to the respective ends. At one end the beam has load-holding means of any suitable form, consisting, for example, as shown herein, of a pair of tongs 26 adapted to hold a bag of grain 27 or any like object. The tongs are connected at the upper end by means of a chain 28, and depend from a pin 29 to the lower end of which the chain is secured. The pin passes through suitable openings 30 of the beam and has at the upper end a head 31 against which presses a spring 32. The latter is arranged in a socket 33 secured to the beam and presses also upon the beam itself, thus tending normally to raise the pin 29. A bell crank lever 34 is

pivottally mounted upon the beam and has an opening 35 in one arm thereof, through which the pin 29 passes, and which serves a purpose which will appear hereinafter.

5 Underneath the bifurcated part 23 the member 16 has an opening 36 through which extends a curved ratchet bar 37. A tapered lug 38 projects into the opening 36 and is adapted to engage the teeth of the ratchet
10 bar when the latter is in a depressed or lowered position indicated in dotted outline in Fig. 1. One end of the ratchet bar is pivotally mounted by means of a transverse bolt or pin 39 within the beam and extends
15 through a suitable opening of the latter. The free end of the ratchet bar passes through another suitable opening of the beam and projects at the top of the same, where it is pivotally connected to a bell
20 crank lever 40 movably mounted upon the beam and connected by means of a link 41 with the similar bell crank lever 34. At the end of the beam remote from the load-holding means is pivotally mounted a bell crank
25 operating lever 42 operatively connected with the lever 40 by means of a link 43. The arrangement is such that when the pin 29 is in a depressed position under the gravitational influence of the load, the bell crank
30 lever 40 is positioned so that the ratchet bar is inoperative relative to the lug 38 and the beam can swing freely. If, however, the load should accidentally be released, the pin 29 would be forced upward under the influence of the spring 32 and the ratchet bar
35 would thus be brought into operative engagement with the part 38 so that the beam would be held against upward movement. This automatic safety arrangement is of advantage under various circumstances. For
40 example, if the hoisting apparatus is used in a shed or other structure, the sudden upward movement of the beam might injure the roof or other parts of the building. The end of the beam remote from the load-holding means is provided with a plurality of openings 44 adapted to receive a stud or pin
45 of a counterweight 46 which can thus be positioned at different points of the beam. This end of the beam, also, has secured thereto a ladder 47 preferably fashioned from chains 48 and pipe metal rungs 49. The ladder is secured at its upper end by means of
50 a bolt 50 to the end of the beam. The latter also has a grip or handle 51 to assist in its manipulation.

The safety device permits the beam to be operated so that the load-carrying end thereof can be depressed to bring the load-gripping means into engagement with a sack
60 or other object. To raise the object, the operator applies his own weight at the other end of the beam and this can be advantageously done by means of the flexible ladder. The beam can thus be raised; it can

also be swung around as the member 16 is movably supported within the hollow post 14. A movable weight 46 permits the device to be adjusted for use with loads of different sizes. It will be understood that the safety
70 device can also be rendered inoperative when desired, from the manipulating end of the beam by means of the operating bell crank lever 42.

Having thus described my invention, I 75 claim as new and desire to secure by Letters Patent:

1. Apparatus of the class described, comprising a beam, means associated therewith for holding a load, means for gravitation- 80 ally operating said beam to raise the load, and automatic means controlled by said load-holding means for locking said beam against movement in one direction.

2. Apparatus of the class described, comprising a movable beam adapted to be gravitationally operated, means associated therewith for holding a load, and an automatic safety device and means whereby said device is controlled by said load-holding means for 90 locking said beam against movement when the load is released.

3. Apparatus of the class described, comprising a beam mounted to swing, means associated therewith for holding a load, means 95 for applying a weight to said beam to raise the load, means controlled by said load-holding means for automatically locking said beam against movement in one direction, and means for manually operating said last- 100 mentioned means.

4. Apparatus of the class described, comprising a base, a telescopic post, a beam pivotally mounted thereon, load-holding means associated with said beam, an adjustable 105 weight mounted upon said beam, means for applying an additional weight to said beam, and an automatic safety device controlled by said load-holding means for securing said beam against movement in one direction 110 when the load is released.

5. Apparatus of the class described, comprising a support, a beam pivotally mounted thereon, load-holding means associated with said beam, means for applying a weight to 115 said beam to raise the load, a movable ratchet bar, a fixed lug adapted to cooperate with said ratchet bar to hold said beam against movement in one direction, and means controlled by said load-holding means for mov- 120 ing said ratchet bar.

6. Apparatus of the class described, comprising a support, a beam pivotally mounted thereon, a spring-pressed pin carried by said beam at one end thereof, load-holding means 125 depending from said pin and tending to depress the same gravitationally against the tension of said spring, means for applying a weight to said beam to raise the load, a pivoted ratchet bar carried by said beam, a 130

fixed lug carried by said support and adapted to be engaged by said ratchet bar to hold said beam against movement in one direction, and an operative connection between
5 said pin and said ratchet bar.

7. Apparatus of the class described, comprising a support, a beam pivotally mounted thereon, a spring-pressed pin carried by said beam at one end thereof, load-holding means
10 depending from said pin and tending to depress the same gravitationally against the tension of said spring, means for applying a weight to said beam to raise the load, a pivoted ratchet bar carried by said beam, a
15 fixed lug carried by said support and adapted to be engaged by said ratchet bar to hold said beam against movement in one direc-

tion, a bell crank lever pivoted upon said beam and adapted to be moved by said pin when the load is released from said load-
20 holding means, a second bell crank lever pivoted upon said beam and operatively connected with said ratchet bar, a link connected with said bell crank levers, and means
25 for manually releasing said ratchet bar from said lug.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK M. DAUGHERTY.

Witnesses:

C. W. NESSLY,
CORA J. NESSLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."