H. A. MYERS.

HOISTING DEVICE.

APPLICATION FILED FEB. 10, 1910.

1,014,326.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

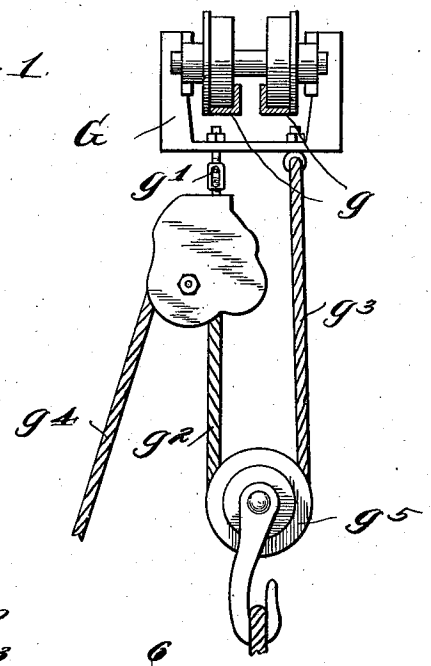


Fig. 2.

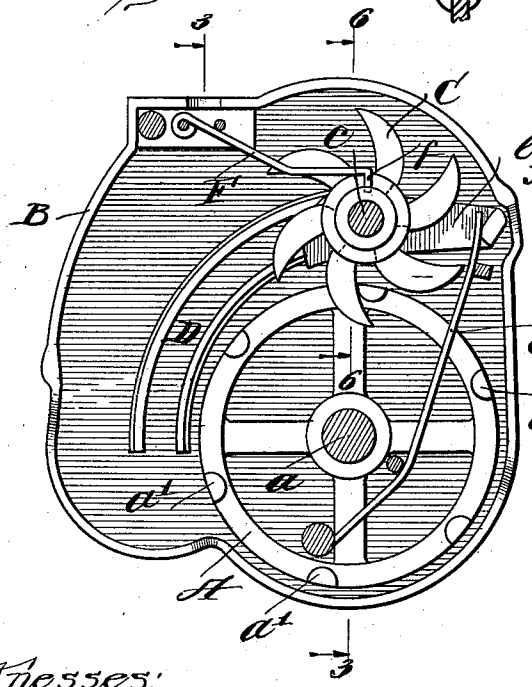
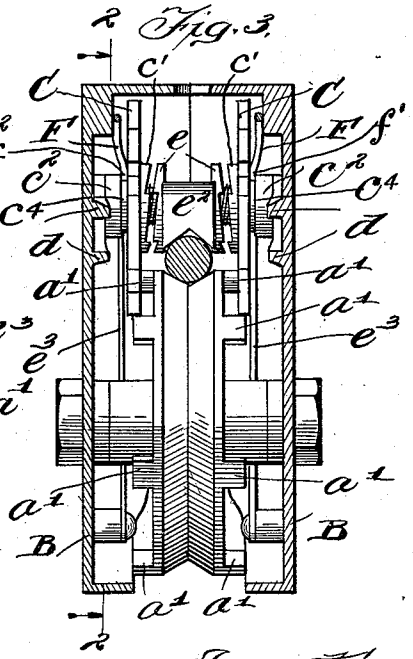


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

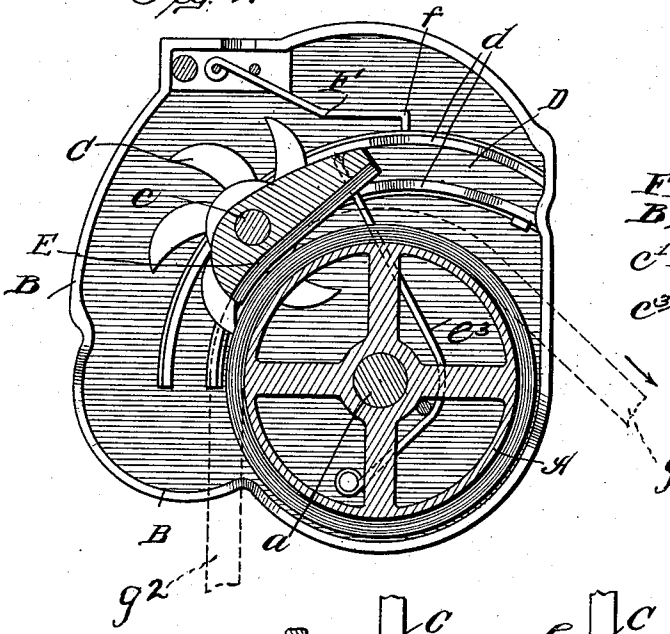


Fig. 5.

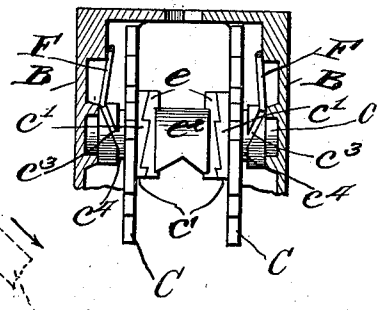


Fig. 6.

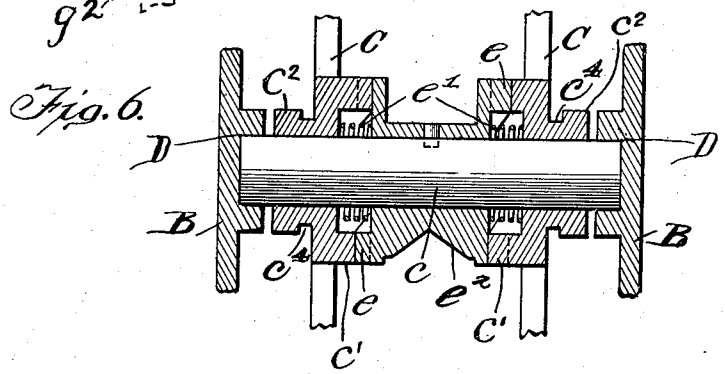
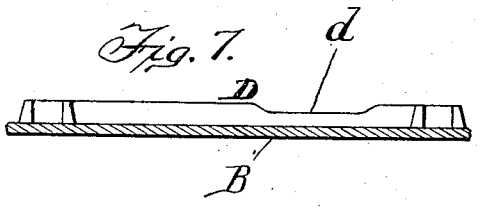


Fig. 7.



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UNITED STATES PATENT OFFICE.

HUBERT A. MYERS, OF GOSHEN, INDIANA.

HOISTING DEVICE.

1,014,326. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed February 10, 1910. Serial No. 543,089.

To all whom it may concern:

Be it known that I, HUBERT A. MYERS, a citizen of the United States of America, and resident of Goshen, Elkhart county, Indiana, have invented a certain new and useful Improvement in Hoisting Devices, of which the following is a specification.

My invention relates to hoisting devices in general, but more particularly to hoisting devices of the kind used in loading or unloading hay in a barn, or for other similar purposes.

The principal object of my invention is to provide improved means for automatically clamping the hoisting rope or cable upon the sheave, which latter is a part of the hoisting device, when the pull on the rope is discontinued, this automatic clamping of the rope to the sheave, by the improved means hereinafter described, serving at such time to prevent the load from falling.

Another object is to provide a hoisting device of this kind in which, after the pull on the rope has been discontinued, and the device for carrying the load, either loaded or unloaded, has been automatically caught and held suspended in the air, a slight forward pull on the said rope or cable will automatically place the mechanism in such condition that the device for carrying the load can then be lowered to the desired point, after which a forward pull on the rope will again restore the mechanism to normal condition, the entire control of the hoisting mechanism, both as to the locking and unlocking thereof, being accomplished by a manipulation of the hoisting rope.

Another object is to provide a hoisting device which will work with either longitudinal or side draft, or with the draft in any direction, whereby the work of loading or unloading hay, or other similar operations, may be performed under any and all conditions, and with less inconvenience to the user than was possible with the devices heretofore employed for this purpose.

From the foregoing it will be seen, therefore, that I provide an improved hoisting device for use in loading or unloading hay, or for other purposes, the operation of which is such that the entire control thereof is accomplished by the hoisting rope itself, whereby no trip or other auxiliary ropes are necessary in the use thereof.

The nature and advantages of my invention will, however, hereinafter more fully appear.

In the accompanying drawings—Figure 1 is a side elevation of the hoisting device embodying the principles of my invention, showing the same suspended from a traveling carriage commonly known as a hay car, and equipped for loading and unloading hay in a barn, or for other similar purposes. Fig. 2 is an enlarged side elevation of the said hoisting device, showing one-half of the casing thereof removed, whereby the internal parts or mechanism are brought into view. Fig. 3 is a section on line 3—3 in Fig. 2. Fig. 4 is a view similar to Fig. 2, but showing the mechanism in the condition necessary for clamping the rope to the sheave of the hoisting device. Fig. 5 is a fragmentary view of the mechanism shown at the top in Fig. 3, showing the same in a different position. Fig. 6 is an enlarged detail section on line 6—6 in Fig. 2. Fig. 7 is a detail sectional view of one side of the casing, looking downward, showing one of the cam tracks in which the clutch mechanism travels.

As thus illustrated, my invention comprises a sheave A mounted to turn on a journal *a* which is suitably supported in the sides of the housing or casing B. The said sheave or wheel is provided on its sides with laterally projecting teeth *a'*. These teeth are adapted to engage and mesh with the teeth of a pair of star wheels C, which latter are mounted loosely upon a short journal *c*, as shown in the drawings. The casing or housing B is provided on its sides with curved tracks or ways D which are eccentric to the axis about which the sheave revolves. The ends of the journals *c* travel in these tracks or ways D, so that the star wheels are nearer the sheave when in the position shown in Fig. 4 than they are when in the position shown in Fig. 2, which latter is the normal position of the said mechanism. A brake shoe E is supported upon the middle portion of the journal *c*, and is preferably rigidly secured thereto in any suitable manner. This brake shoe is provided at each side with clutch teeth *e*, which latter are adapted to mesh with and engage similar clutch teeth *c'* on the inner sides of the two star wheels. Springs *e'* are interposed between the star wheels and the intermediate brake shoe, in the manner shown in Fig. 6, whereby the clutch teeth *e* and *c'*

may be separated or drawn apart, as shown in Fig. 3. The brake shoe E has a forward portion e^2 that is engaged by springs e^3, which latter tend to hold the mechanism normally in the position shown in Fig. 2, but are adapted to yield to permit the mechanism to assume the clamping position shown in Fig. 4. The hubs c^2 of the star wheels are provided with cam grooves c^3 which are adapted to be engaged by the ends of the springs F, when the mechanism is in the position shown in Fig. 2. It will be seen that the tracks or ways D are provided with cam depressions d, which latter are so situated that they will be at opposite sides of the star wheels when the mechanism is in its normal position, or when the star wheels are in the position shown in Fig. 2.

The hoisting device thus constructed can be supported upon a car or carriage G, which may be of any suitable, known or approved construction, and which may be arranged to travel upon parallel tracks or ways g, such as those used for ordinary hay cars. The connection g' for suspending the hoisting device is preferably directly over the portion g^2 of the hoisting rope, and is preferably in the nature of a swivel, whereby the said hoisting device can be turned in any direction. The other portion g^3 of the rope may be attached to the bottom of the car or carriage, and the portion g^4 is the free end of the cable which is used for raising and lowering the load, and for controlling the mechanism of the hoisting device. A pulley or sheave g^5, equipped with any kind of means for holding the load, is supported in the loop of the cable, whereby the hoisting power is considerably multiplied. It is easily possible, however, to use my improved hoisting device without employing the sheave or pulley g^5, inasmuch as the end portion g^3 of the rope may be allowed to hang down, and the load may be secured directly thereto. The hoisting device will, however, turn readily in any direction in which the free end portion g^4 of the rope extends, depending upon the character of the work. Thus the hoisting device may be used with either longitudinal or side draft, or with the draft in any direction, depending upon requirements.

The operation is as follows: Normally, the mechanism is as shown in Fig. 2, except that the teeth e are in engagement with the teeth c', as shown in Fig. 6. In such condition the ends f of the springs F are outside of the hubs of the star wheels C—that is to say, these springs have been forced off the hubs by the diagonal grooves c^3. This leaves the star wheels C free to turn when the hoist rope g^4 is pulled down (see the arrow in Fig. 4), as the teeth c' will slide backward over the teeth e; and during this time the springs F are pressing the star wheels toward each other. Now when the rope is released or slacked off the sheave A turns in the opposite direction, and the teeth a' attempt to turn the star wheels in the opposite direction; but this cannot take place, because the teeth c' now lock with the teeth e, and the star wheels are prevented from rotating. Then the weight of the load pulls the sheave around, and this moves the star wheels along the tracks or ways D, and out of the cam depressions d. The star wheels are now held by the tracks firmly against the teeth on the shoe E, and the eccentricity of said tracks causes the shoe to bear hard upon the rope, as shown in Fig. 4. Now, by a slight pull on the rope the star wheels can be returned to a position opposite the cam depression d, and this brings the ends f of the springs F into engagement with the cam grooves c^3 on the circumference of the hubs of the star wheels. Then when the rope is again released the sheave will rotate the star wheels, causing the ends f of the springs F to travel toward the star wheels until they ride in the straight grooves c^4 which extend circumferentially of the star wheel hubs. This places the springs F under tension in such manner that they now press the star wheels away from the shoe E, keeping the clutch teeth disengaged, and permitting the star wheels to rotate freely in a backward direction, to allow the sheave g^5 to be lowered either with or without the load. Then when the rope g^4 is again pulled downward the load, or the tackle alone, will be raised, and the star wheels will rotate in a direction to cause the ends f of the springs F to ride along the grooves c^3 until they again assume a position outside of the hubs of the star wheels. See Fig. 5. This causes the spring F to again press the star wheels toward each other, and the mechanism is thus restored to normal condition.

Thus I provide a hoisting device which is locked and unlocked automatically, without the use of trip ropes or the like, the entire control being exercised by a manipulation of the hoist rope. Furthermore, and even with a load on the device, the hoist-rope can be so manipulated, as explained, that the tackle will be lowered without causing the brake shoe to act on the rope. Moreover, as explained, the hoisting device is on a swivel or pivot which makes it free to turn in any direction the rope may take.

With my improved hoisting device many different operations are now possible that were heretofore impossible with one and the same device.

What I claim as my invention is:

1. In a device of the class described, a sheave, a rope thereon, a brake shoe, a pair of curved tracks or ways that follow the curve of the rope, but eccentric to said

sheave, and means for connecting the sheave with said brake shoe, operative to move the latter along said ways, regardless of whether the rope is loaded or running light, whereby the sheave and ways coöperate to put the brake on the rope.

2. In a device of the class described, a sheave, a rope thereon, a brake shoe, adapted to bear on the rope, a pair of curved tracks or ways that follow the curve of the rope, but eccentric to said sheave, a connection between the sheave and the brake-shoe, operative to move the latter along the said tracks or ways regardless of whether the rope is loaded or running light, whereby the sheave and ways coöperate to put the brake on the rope and means for automatically controlling said connection.

3. In a device of the class described, a sheave, a rope thereon, a brake shoe, means operated by the sheave for bringing the brake shoe into locking engagement with the rope, to clamp the rope to the sheave, operative either with or without a load on the rope, and means controlled by the rope for permitting the loaded or unloaded portion thereof to descend at will.

4. In a device of the class described, a sheave, a rope thereon, automatic means for locking the rope to the sheave when not loaded, to prevent return motion thereof, by clamping the rope to the sheave, and means controlled by the rope for unlocking the sheave and rope.

5. In a device of the class described, a sheave, a brake shoe, mechanism operated by the sheave for causing the brake shoe to bear hard upon the rope, when the latter is loaded and allowed to run backward, to clamp the rope to the sheave, and means controlled by the rope for rendering the mechanism inoperative, whereby a load may be lowered.

6. In a device of the class described, a sheave, a rope thereon, a brake shoe, mechanism operated by the sheave for causing the brake shoe to bear hard upon the rope, when the latter is allowed to run backward for a short distance, to clamp the rope to the sheave, operative whether the rope is loaded or running light, and spring means controlled by the rope for rendering said mechanism inoperative, to permit lowering of the rope, adapted to be controlled by the rope to restore the mechanism to operative condition.

7. In a device of the class described, a sheave, a brake shoe, mechanism operated by the sheave for causing the brake shoe to bear hard upon the rope, when the latter is allowed to run backward for a short distance, to clamp the rope to the sheave, and means controlled by a short pull on the rope to render said mechanism inoperative, so that the rope may run backward, adapted by a further pull to restore the mechanism to normal condition.

8. In a device of the class described, a traveling carriage, a sheave supported by a vertical swivel on said carriage, a rope on said sheave, automatic mechanism also carried by said swivel for clamping the rope to the sheave, controlled by the rope to permit lowering of the load, said mechanism comprising ways that curve eccentrically around the periphery of the sheave, with a brake shoe that slides in said ways, said swivel permitting said sheave to swing around in any direction the rope may assume, means for securing the upper end of the rope, and a sheave in the bend of the rope.

9. In a device of the class described, the combination of a sheave, a rope thereon, a brake shoe for said rope, means including a clutch on the brake shoe for connecting the latter with the sheave, means for bringing the brake shoe into engagement with the rope, and means for automatically opening and closing said clutch, when the rope is moved one way or the other, whereby the rope is either locked by the brake shoe or allowed to run free.

10. In a hoisting device, a sheave, a rope therefor, a brake shoe adapted to bear upon the rope to clamp the latter and the sheave against movement, and a clutch controlled by the forward and back rotation of the sheave, independently of the load, whereby the operation of the brake shoe is governed entirely by the rope, said shoe adapted to clamp the rope to the sheave.

11. In a hoisting device, a sheave, a hoist rope on said sheave, and a brake shoe mechanism controlled by the rope through the medium of the rotation of the sheave in opposite directions to prevent or permit at will the lowering of the load, said mechanism comprising a shoe that clamps the rope to the sheave.

Signed by me at Goshen, Indiana, this 5th day of February, 1910.

HUBERT A. MYERS.

Witnesses:
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