F. A. CLARKSON.

HOISTING AND CONVEYING APPARATUS.

No. 190,742. Patented May 15, 1877.

Fig. 1

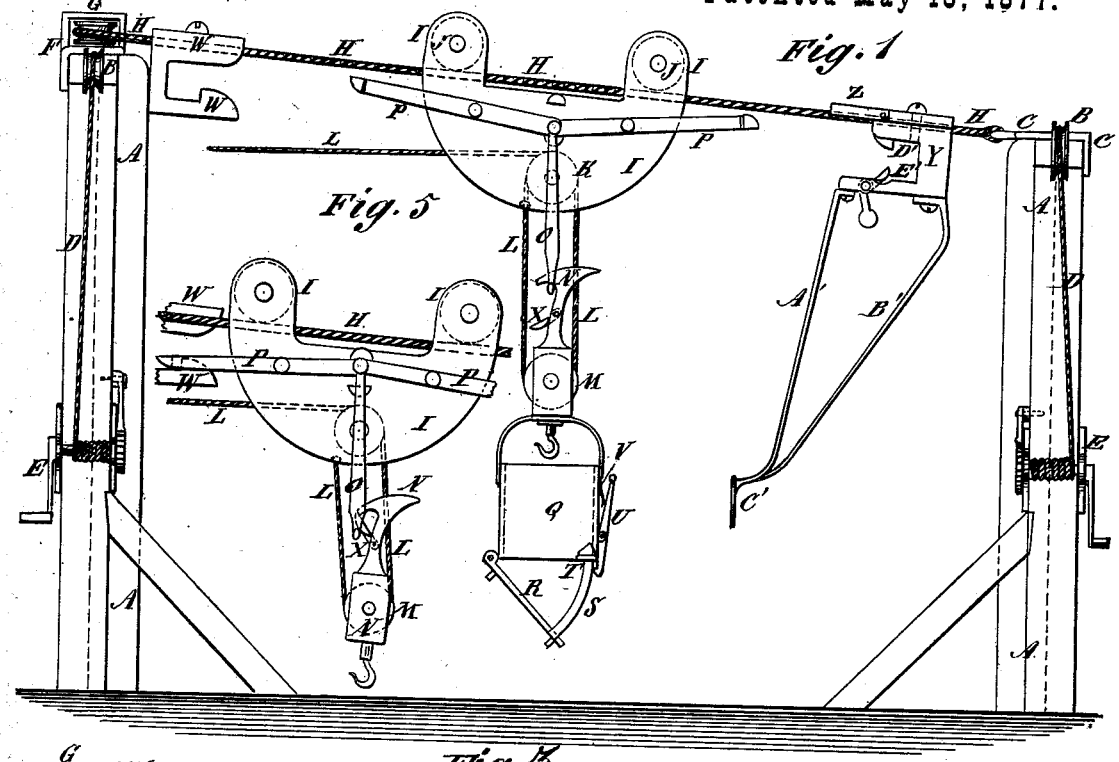

Fig. 5

Fig. 3

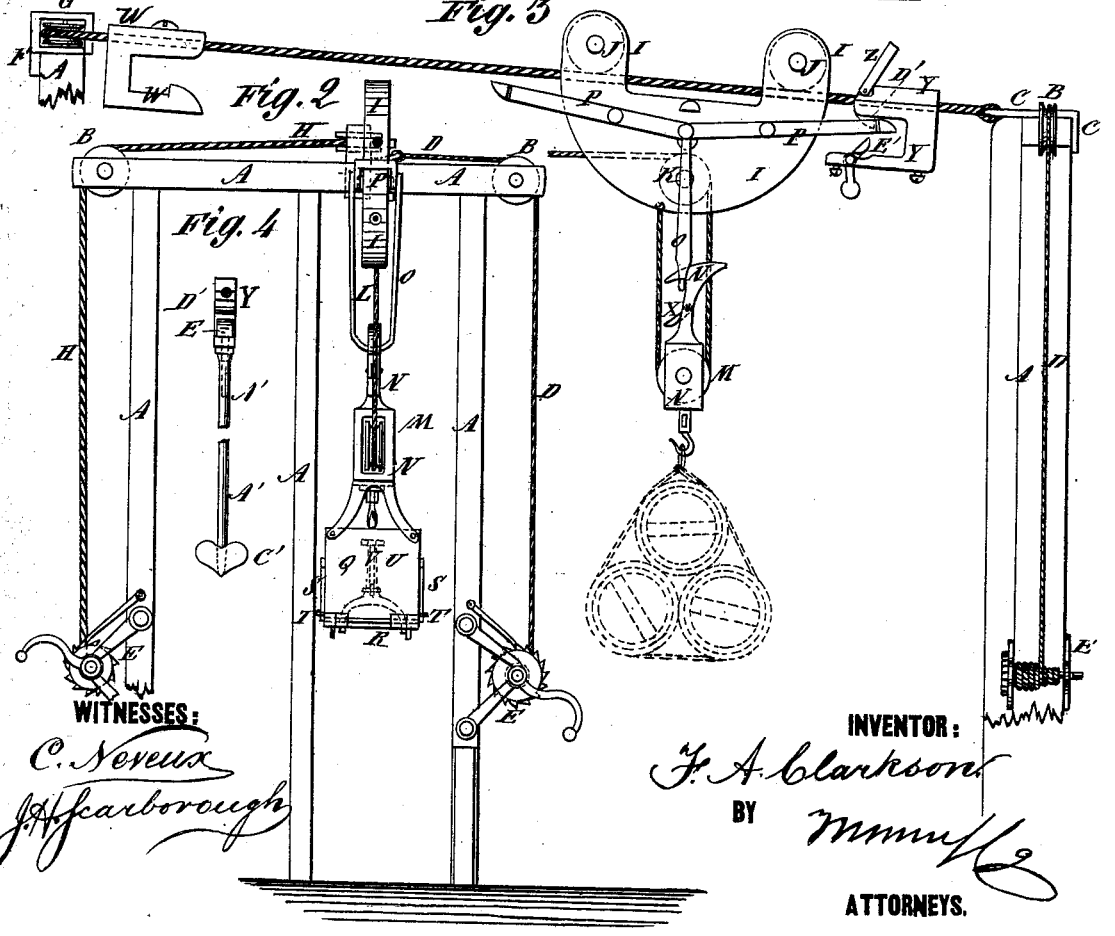

Fig. 2

Fig. 4

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IMPROVEMENT IN HOISTING AND CONVEYING APPARATUS.

Specification forming part of Letters Patent No. **190,742**, dated May 15, 1877; application filed February 26, 1877.

To all whom it may concern:

Be it known that I, FRANCIS A. CLARKSON, of Black Brook, in the county of Clinton and State of New York, have invented a new and useful Improvement in Hoisting and Conveying Apparatus, of which the following is a specification:

Figure 1 is a side view of my improved apparatus, shown as arranged for hoisting and conveying coal, ore, &c. Fig. 2 is an end view of the same. Fig. 3 is a side view of the same, shown as arranged for hoisting and conveying barrels, boxes, &c. Fig. 4 is a detail view of the dumper. Fig. 5 is a detail view, illustrating the mode of lowering the hook to receive the load.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved apparatus for hoisting and conveying coal, casks, and other articles, which shall be so constructed that it may be shifted laterally, as may be required, and which shall be simple in construction, strong, durable, convenient in use, and not liable to get out of order.

The invention consists in the combination of the two timber-bents, of unequal height, and provided with pulleys at the ends of their top bars, and with windlasses upon their outer posts, the chair, the chair provided with a pulley, the three shifting-ropes, and the wire track-rope, with each other; in the combination of the carriage, provided with the three pulleys, the two pivoted loop-latches, and the suspended pivoted bail, the hook, provided with the pulley and the pivoted arm, and the hoisting-rope with each other, with the wire track, and with the two catch-hooks; in the combination of the hinged arm and the dumper with the hook-catch, the carriage, and the bucket; in the combination of the drop-catch and the pivoted catch with the upper and lower arms of the hook-catch, to enable the carriage and bucket to be manipulated by operating the hoisting-rope, as hereinafter fully described.

A are two timber-bents, one of which is higher than the other, and which are securely braced in an erect position.

To each end of each of the top bars of the bents A is pivoted a pulley, B.

Upon the top bar of the lower bent A is placed a chair, C, which is so formed as to hook over the lower part of the outer side of the said top bar, so as to be kept securely in place while being allowed to slide freely upon said top bar.

To the opposite side edges of the chair C are attached the ends of two ropes, D, which pass over the pulley B, pivoted to the ends of the top bar, and their ends are attached to the shafts of two windlasses, E, which are attached to the side posts of the bent, so that by slacking one of said ropes D, and tightening the other, the chair may be moved upon the top bar of the bent, as may be required.

Upon the top bar of the higher bent A is placed a chair, F, similar to the chair C, except that it is provided with a rope, D, upon only one side, which rope is attached to a windlass, E, in the same manner as the ropes D of the other chair C, and except that it has a pulley, G, pivoted to its top.

H is a wire rope, one end of which is attached to the chair C. The rope H passes around the pulley G, pivoted to the chair F, and its other end is attached to the fourth windlass E, so that it may serve as a fourth rope, D, for shifting the chairs, and also for adjusting its own tension.

The windlasses E are provided with ratchet-wheels and pawls to hold the ropes D in place when adjusted.

The wire rope H serves as a track for the carriage I, which may be made in the form of a semicircular case with its middle part notched, as shown in Figs. 1, 2, and 5, or it may be made in the form of a skeleton frame.

To the ends of the upper part of the carriage I are pivoted two grooved rollers, J, which rest and roll upon the wire rope H.

To the lower part of the carriage I, directly beneath its center is pivoted a grooved pulley, K.

L is the hoisting-rope, one end of which is attached to the carriage I at the side of the pulley K, toward the higher bent A.

The rope L passes around a pulley, M, pivoted in a recess in the shank of the hook N,

passes over the pulley K, and through the end of the carriage I, toward the higher bent A, and is attached to the power. The hook N is held in an erect position by its own weight and by the rope L, which passes through a hole in its head. The hook N is thus kept in proper position and is kept from turning and fouling the rope L.

The end or head of the hook N is rounded off or inclined, so that as it is raised it may strike, push forward, and catch upon the bend of the bail or loop O. The arms of the bail O pass up upon the opposite sides of the carriage I, and their ends are pivoted to the overlapping ends of the arms of the loop-latches P.

The ends of the loop-latches P have short slots formed in them to receive the pivoting-bolt, so that the ends of the three loops O P P may move freely upon each other. The bends of the loop-latches P project at the opposite ends of the carriage I to catch upon the catches hereinafter described.

When coal, ore, and similar substances are to be hoisted and moved, a bucket, Q, is attached to the lower part of the hook N. The bucket Q is made with a rigid forked bail, so that it cannot tilt, and with a loose bottom, R, hinged at one edge, and provided with curved arms S near its forward corners, which pass through keepers T formed upon or attached to the sides of the bucket Q, to prevent the bottom from opening too far, and to guide it into the right position when being closed.

The bottom of the bucket Q is held in place when closed by catching upon the shoulders or catches formed upon the forked lower end of the lever U, pivoted to the front of the bucket Q, and held in position by a spring, V, attached to the said front, so as to press the upper arm of said lever U outward.

To the wire-rope track H, toward the higher bent A, and directly over the place whence the substance is to be moved, is clamped a hook-catch, W. As the hoisting-rope L is drawn upon, the carriage I moves along the rope-track H until the forward end of said carriage strikes against the end of the upper arm of the hook-catch W. As the hoisting-rope L is further drawn upon, it raises the hook N from the bail O, which allows the outer end or loop of the loop-latch P to drop and engage with the hook-catch W. When the hook N has been raised so high as to raise the hinged arm X above the bend of the bail O, the hoisting-rope L is slackened, which allows the hook N to descend.

As the bottom R of the bucket Q comes in contact with the ground, it is closed and latched by the weight of the descending bucket, and the said bucket is ready to receive its load. The hinged arm X is made of such a length that when turned up it will close the mouth of the hook N, and rest upon its end, as shown in Fig. 5.

As the load is raised by drawing upon the hoisting-rope L the hook rises above the bend of the bail O, so that, when the rope L is slackened, it will rest upon the said bail O. As the weight comes upon the bail O it raises the loop-latch P, which releases the carriage I, and allows it to run down the wire-rope track H to the place where the load is to be discharged.

To the wire-track H, over the place where the load is to be deposited, is clamped a hook, Y, to the upper arm of which is hinged an arm, Z, which may be turned down forward to lie upon the wire-track H for the carriage I to strike against and be stopped.

To the lower arm of the hook Y is bolted a downwardly-projecting arm, A′, which is strengthened by a brace, B′, and has a plate, C′, attached to its lower end.

The device A′ B′ C′ is made of such a length that, as the carriage I strikes the end of the hinged arm Z, the plate C′ will strike the upper end of the lever-catch U, and operate it to drop the bottom R of the bucket Q, and discharge the load, and the device is drawn back for another load.

When the substance to be handled is of such a kind as not to require the bucket Q, the said bucket is detached from the hook N, the dumper A′ B′ C′ is detached from the hook Y, and the arm Z is turned back out of the way. In this case the grapnel rope or chain that secures the load is hung upon a hook formed upon the lower end of the hook N.

In a slot in the upper arm of the hook Y is pivoted a catch, D′, which drops by its own weight. In a slot in the lower arm of the hook Y, and a little in front of the catch D′, is pivoted a bent lever, E′, in such a way that its upper part that serves as a catch can swing forward only to a vertical position, but can swing backward into an inclined position, so that the loop-latch P can readily pass it.

The lower end of the lever-catch E′ is weighted, so that when left free it will always stand with its upper end or catch inclined outward, or from the carriage, as shown in Figs. 1 and 3.

With this arrangement, when the carriage I is released from the hook-catch W, and runs down the wire-rope track H, the loop-latch P enters the hook Y, passes the catch E′, and raises and passes the drop-catch D′, which drops into its loop, and thus locks the carriage. The hoisting-rope L is then tightened and the hook N raised until the arm X passes above the bend of the bail O, and is then slackened to lower the hook N and its load to the ground. As the tightening of the rope L raises the hook N from the bail O the loop-latch P drops from the drop-catch D′, but is caught and held by the lever-catch E′. When the load has been detached the rope L is tightened, and the hook N is raised and hooked upon the bail O, the rope L being slackened momentarily to let the weight of the hooks N come upon the bail O, which

raises the loop-catch P from the lever-catch E′, and allows the carriage to be drawn to the hook-catch W to receive another load.

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

1. The combination of the two timber-bents A A of unequal height, and provided with pulleys B at the ends of their top bars, and with windlasses E upon their outer posts, the chair C, the chair F, provided with a pulley, G, the three shifting-ropes D and the wire-track rope H with each other, substantially as herein shown and described.

2. The combination of the carriage I, provided with the pulleys I J K, the pivoted loop-latches P P, and the suspended pivoted bail O, the hook N, provided with the pulley M, and the pivoted arm X, and the hoisting-rope L with each other, with the wire-track H, and with the catch-hooks W Y, substantially as herein shown and described.

3. The combination of the hinged arm Z and the dumper A′ B′ C′ with the hook-catch Y, the carriage I, and the bucket Q, substantially as herein shown and described.

4. The combination of the drop-catch D′ and the pivoted catch E′ with the upper and lower arms of the hook-catch Y, to enable the carriage and bucket to be manipulated by operating the hoisting-rope L, substantially as herein shown and described.

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