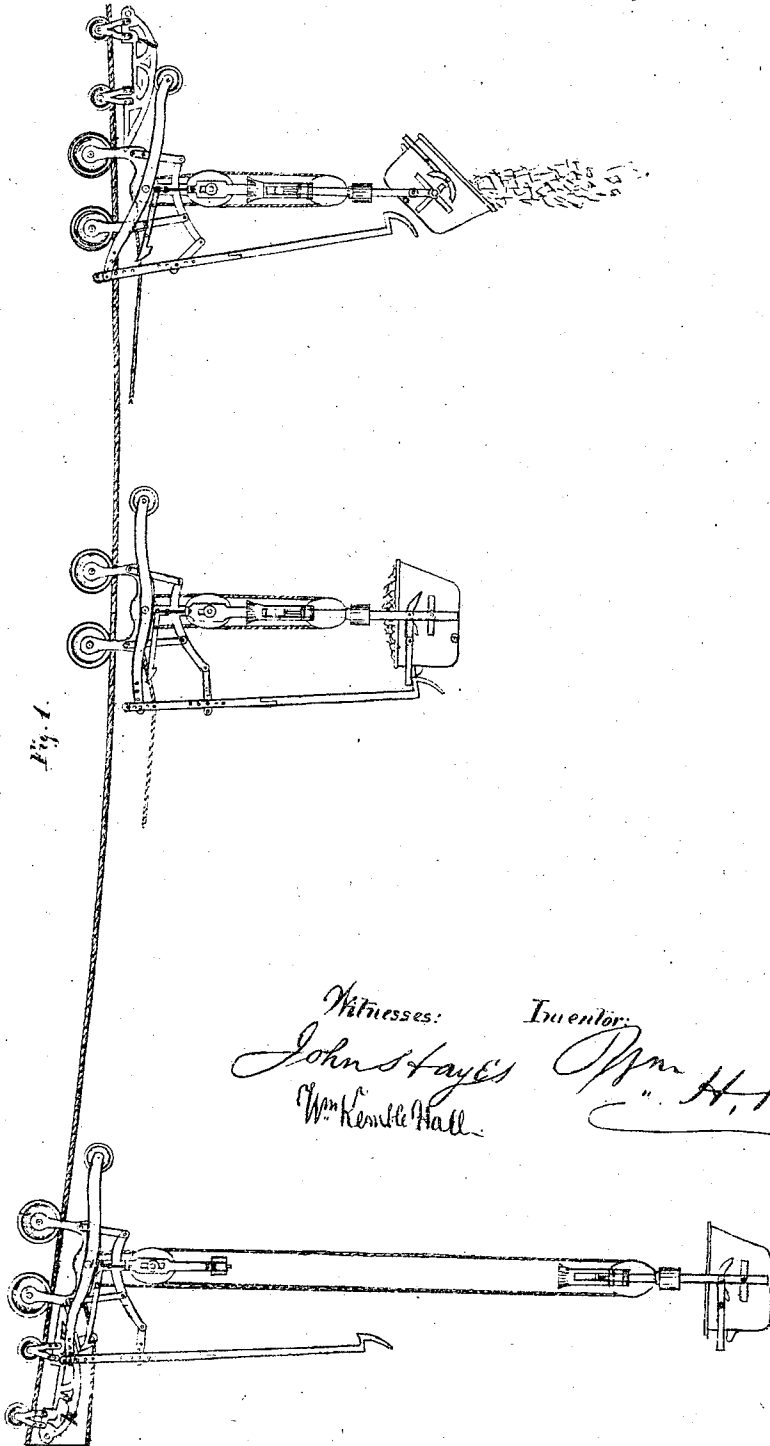


W. H. Brown,

Hay Elevator.

No. 102763.

Patented May 10, 1870.



Witnesses:
John Stayer
Wm. Kemble Hall

Inventor:
Wm. H. Brown

W. H. Brown,

2. Sheets, Sheet 2

Hay Elevator.

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Fig. 2.

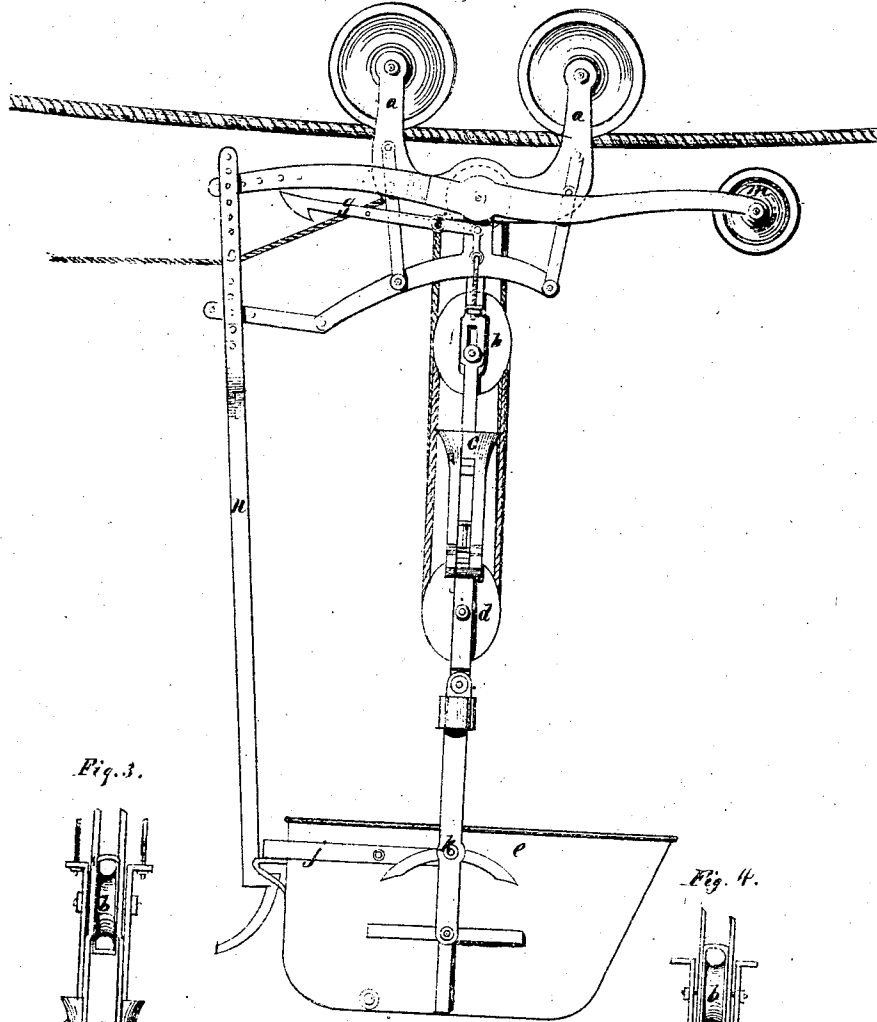


Fig. 3.

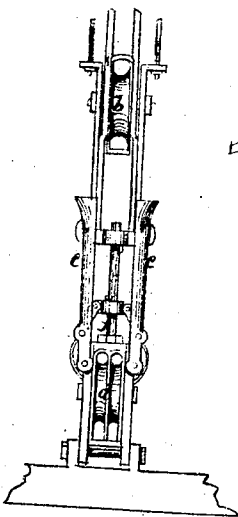
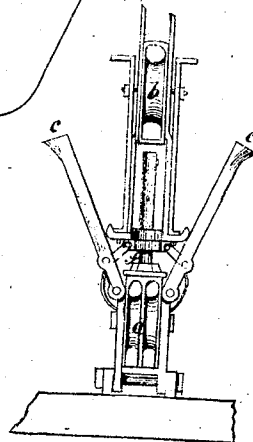


Fig. 4.



United States Patent Office.

WILLIAM H. BROWN, OF NEW YORK, N. Y.

Letters Patent No. 102,763, dated May 10, 1870.

IMPROVEMENT IN HOISTING-APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

I, WILLIAM H. BROWN, of New York, in the county and State of New York, have invented certain Improvements in Suspended Purchases, of which the following is a specification.

Nature and Objects of the Invention.

The said invention relates to carriages traveling on cables suspended over the points at which the work required is to be done; and, for the work of piling and storing coal, for instance,

It consists of means for receiving the coal in tubs which hold about a ton, elevating it to the height required, or a little more, so that it couples upon a traveling carriage, which is then detached from the "hold-back" by the action of the weight upon it, and then permitting it to run down the incline of the cable, until it reaches the point over the place where the coal is to be delivered, where the tub is tilted and caused to deposit its load by the automatic action of the apparatus, or the method of its operation inherent in its construction. The tub then rights itself, and is drawn back with the carriage to the place of starting, where it is uncoupled and lowered by the action of the purchase-fall, for the reception of another load.

The operations of hoisting, transporting, discharging, and returning are thus effected, controlled, and regulated by the purchase-fall alone, under the manipulation of the single person who may be in charge of the hoisting-power and machinery.

Description of the Drawings.

To enable others skilled in the art to which it appertains to make and use my invention, I will proceed to describe its construction and operation, with reference to the drawings.

Figure 1 is a diagram illustrating the general operation of the machinery, and representing on the left the carriage, secured to the hold-back, and the tub being lowered for the reception of a load; in the middle the carriage, with the tub attached, is traversing the cable; and on the right, where the carriage has reached its destination, the tub is tripped or tilted, and its contents are deposited;

Figure 2 is a side elevation of the carriage, with its purchase-fall and blocks and other connecting parts pendent upon it. The lines in red indicate the changes in position of the various parts in performing their several functions;

Figure 3 is a transverse view of the purchase-blocks coupled together; and

Figure 4 is also a transverse view of the purchase-blocks as they appear when they are being uncoupled for the purpose of lowering the tub.

The carriage *a* consists of two grooved wheels

adapted to the cable, and a pendent frame with a sheave, for the reception of the purchase-fall.

The upper block *b* is hung to the carriage, and carries upon the hooks at the lower ends of its strap the slotted suspenders *c* of the lower block *d*, which in turn carries, by an ordinary bale, the tub or ship *e* for the reception of the coal.

The suspenders *c* are jointed to the lower block, and are ordinarily held in a vertical position by suitable springs, and they are also jointed to a sliding collar working on the spindle *f*, which is slotted for the reception of a retaining cross-lever and its governing spring.

On hoisting the lower block the suspenders come in contact with the hooks of the upper block, and open against their springs until they have passed over the hooks, when they are closed by the springs, and the block is settled into its place by slackening the purchase-fall.

To uncouple the blocks for the purpose of lowering the lower block, a strain is brought upon the purchase-fall that lifts the lower block until the sliding collar upon the spindle *f* comes in contact with the strap of the upper block, through a hole in which the spindle passes. The motion of the sliding collar comparatively downward upon the spindle opens the suspenders until they are beyond the hooks of the upper block, by which time the sliding collar has passed below the lower end of the retaining cross-lever within the spindle, which is accordingly passed out by its spring, and holds the collar down and the suspenders extended in the position shown by fig. 4. On then lowering the lower block, the suspenders are retained in this extended position until they have passed below the hooks of the upper block, and until the upper end of the spindle *f* and of its cross-lever pass through the hole in the upper strap, by which the projecting upper end of the lever is compressed within the spindle, and the lower end of the lever correspondingly retracted, so that the sliding collar is released, and the springs of the suspenders enable them to resume their normal vertical position in readiness for coupling when required.

The coupling is accomplished by hoisting the suspenders of the lower block over the hooks of the upper one, and settling it upon the hooks by slackening the purchase-fall, and no disarrangement requiring special adjustment is required by the absence of exactitude in effecting the coupling even when the blocks are brought, two blocks together, and likewise in uncoupling the preliminary strain upon the purchase-fall, in advance of the lowering, uncouples the blocks and effects the lowering without further adjustment or manipulation.

While the carriage is over the point at which the load is received, it is held in position by the hooks of the pair of levers *g*, over a suitable pin in the "hold-back" *h*, (fig. 1, sheet 1,) which may be clamped to the cable or otherwise secured, and suitably constructed with wheels and bumper-springs.

The levers *g* are hung at *i*, and the opposite ends are connected to slides that are slotted over the sheave-pin on the sides of the upper block, and terminate at the lower ends in hooks that fit within the hooks of the block.

The levers with their connecting-slides are so balanced that the former preponderate when there is no additional weight on the hooks. When the lower block, however, is coupled, the weight on the sliding hooks draws them down into the hooks of the block, and the hooks of the levers are raised clear of the hold-back pins, and the carriage is released, so that, on the release of the purchase-fall from the hoisting-machinery, the carriage travels down the incline of the cable, and further, if necessary, until it reaches its destination. On returning to the place of starting, the levers *g* hook onto the hold-back, and retain the carriage in position when the tub is lowered by the purchase-fall.

The tub or skip in which the coal is elevated is so balanced that it is right side up when empty, and reverses itself when full, if it is not restrained. This restraint is effected by the levers *j* that are jointed to the sides of the tub, and hold it in position by means of the slotted segments catching the pins *k* on the bale of the tub at each side. When the levers are tripped by raising their outer ends, the pins *k* are released and the loaded tub permitted to reverse itself and discharge its load, and then return to its vertical position, where it is again caught and held by the levers *j*.

The tripping of the tub is accomplished by means of a cam, *l*, (fig. 1,) similar in construction to the hold-back before described. The roller *m*, which is carried between a pair of vibrating levers that are jointed to the carriage, rides the cam and lifts the opposite ends of the levers and a hanging iron, *n*, which is jointed between them, and is so adjusted, in relation to the tub, that the latter is tripped as desired, by the motion described as consequent upon contact with the cam.

The release of the roller from the cam permits the vibrating levers and hanging iron to resume their former positions, in which the hook of the hanging iron

is under the side-levers of the tub. The cam may be shifted along the cable, to produce a positive motion wherever it may be desired, as has been described, but, in working continuously with loads that vary but slightly, its use may be dispensed with and a quick checking of the purchase-fall, arranged as indicated in the drawings, will lift the hanging-iron without the intervention of the cam. Experience in the use of the apparatus renders this method of tripping the tub available in some cases, but, when a positive motion is desired, it is preferred to use the cam as described.

The hanging-iron should be double-jointed to the carriage, as shown in the drawings, and the joints of the vibrating levers, as well as of the other working parts of the apparatus, susceptible of adjustment.

Having thus described the said apparatus in detail, as used for storing and piling coal, I would here state that it may be varied in construction without material departure from the principle of the invention, in adapting it to many other forms of raising heavy weights, and for use in quarries, building and other purposes. So, also, parts of the apparatus described may be dispensed with to suit special circumstances, as the skip, for instance, and guy-tackles and blocks may be added to the carriage as required. With reference to these last, however, I prefer to employ, instead of a pair of ordinary guy-tackles, a single endless rope, secured to the carriage and traversing the cable, and driven by a supplementary pulley or pair of pulleys, attached to the hoisting-machinery, by which the carriage may be propelled to and held at any point required.

Claims.

I claim as my invention—

1. The construction, arrangement, and operation of the apparatus, substantially as described.
2. The cross retaining-lever in the spindle *f*, by which the coupling and uncoupling is effected through the agency of the purchase-fall.
3. The hold-back levers and hooks, by which the carriage is automatically detached by the load.
4. The hanging-iron and its connections, operating substantially in the manner described.

WM. H. BROWN.

Witnesses:

W. K. HALL,
JOHN HAYES.