

(No Model.)

2 Sheets—Sheet 1.

J. V. BEEKMAN.  
HOISTING APPARATUS.

No. 524,300.

Patented Aug. 14, 1894.

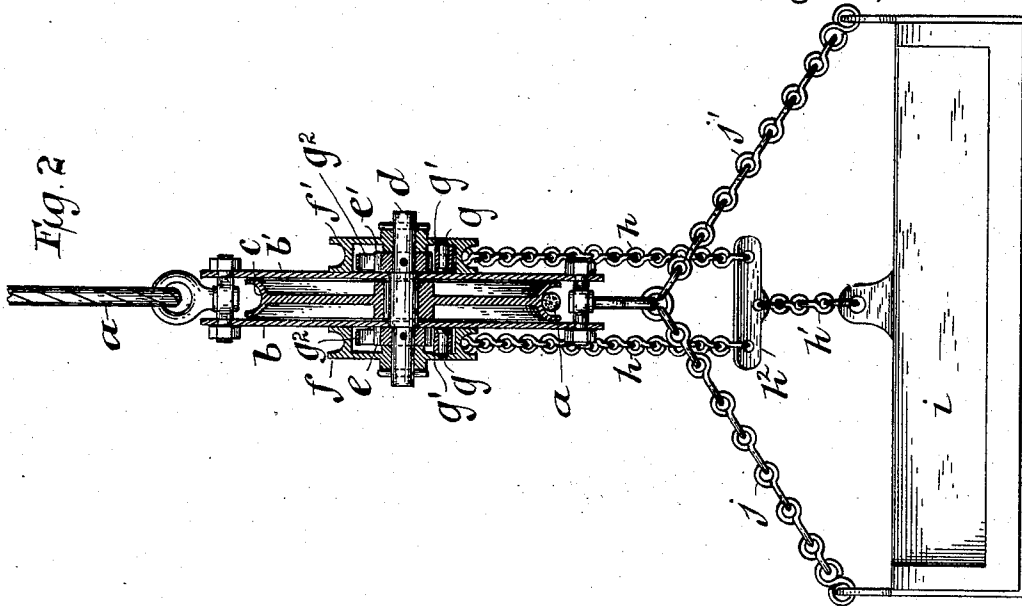


Fig. 2

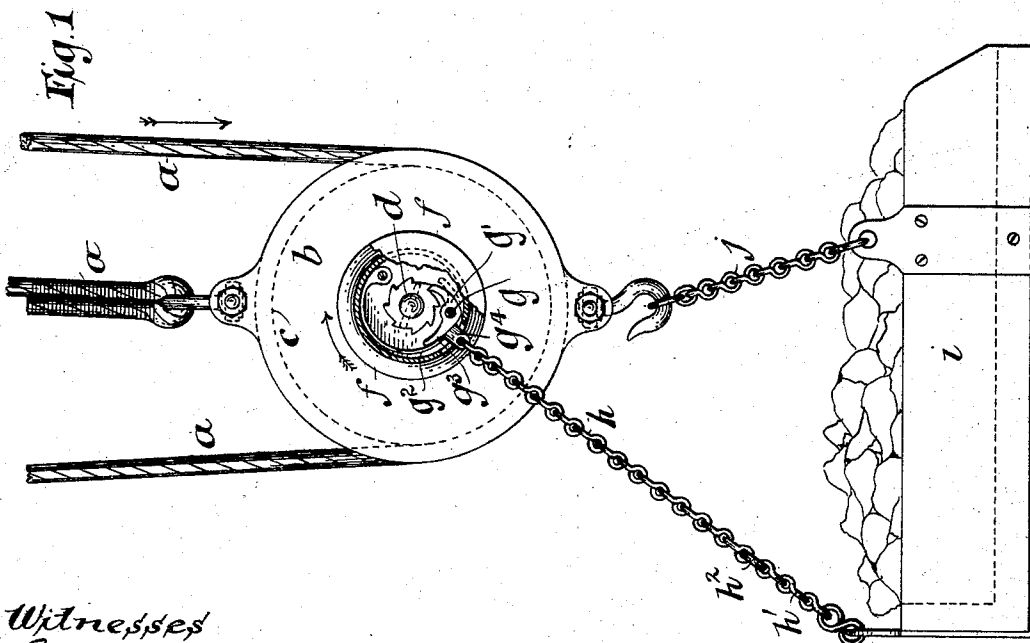


Fig. 1

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(No Model.)

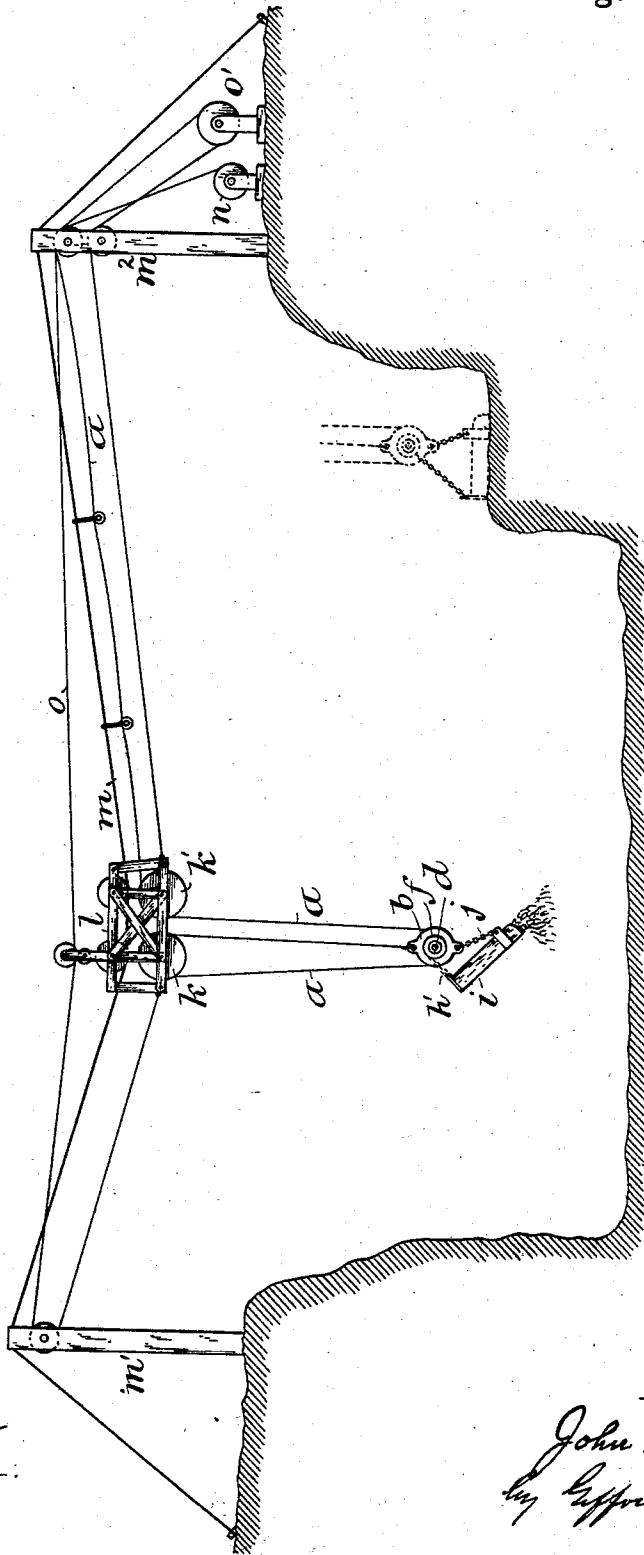
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Fig. 3



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# UNITED STATES PATENT OFFICE

JOHN V. BEEKMAN, OF PLAINFIELD, NEW JERSEY.

## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 524,300, dated August 14, 1894.

Application filed May 10, 1894. Serial No. 510,694. (No model.)

To all whom it may concern:

Be it known that I, JOHN V. BEEKMAN, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Hoisting Apparatus, of which the following is a specification.

My invention consists broadly in utilizing the movement of the fall-block sheave to drive other mechanism.

It also consists in controlling the above operation by the weight of the load.

It also consists in providing the said driven mechanism with means of connection with the load receptacle so that its movement may be used to dump the same.

In the accompanying drawings, Figure 1 shows the elevation of a fall-block and load receptacle containing my invention. Fig. 2 shows a vertical section of the same. Fig. 3 shows an elevation of a complete apparatus.

*a* is a fall-rope.

*b b'* are the two side plates of the fall-block frame.

*c* is the fall-rope sheave fixed upon the shaft *d*, between the side-plates *b b'*. Upon the shaft *d* outside of each side plate is fixed a ratchet wheel *e* and *e'*. Upon the shaft *d* outside of each ratchet wheel is loosely mounted a reel *f, f'*. Thus, either of the reels *f, f'* may be considered as one form of a member moving on the frame, and either of the ratchets *e, e'* and pawls *g, g'*, may be considered as one form of mechanism whereby said sheave and said member are operatively connected, the fall-rope sheave *c*, the shaft *d* and the two ratchet-wheels *e* and *e'* are fixed and move together while the shaft *d* is free to move as the reels *f* and *f'* remain stationary.

Each of the reels carries a pin *g* upon which is mounted a pawl *g'* in position, as shown in Fig. 1, to engage with the ratchet wheel. In Fig. 1, the position in which the pawl engages with the ratchet wheel is shown in full lines and its disengaged position is shown in dotted lines. The pawl is normally held in its disengaged position by the pressure of the spring *g<sup>2</sup>* secured to and carried by the reel *f* or *f'* as the case may be, which spring presses inwardly upon the tail *g<sup>3</sup>* of the pawl. To the tail of the pawl is secured an eye *g<sup>4</sup>* which serves as a means of attachment for the sus-

pender *h* so that when the suspender *h* is loaded, it will overcome the pressure of the spring *g<sup>2</sup>* and force the pawl into engagement with the ratchet wheel, as shown in Fig. 1 in full lines, and the reel will be compelled to turn with the fall-rope sheave *c*; but when the suspender is unloaded, the pressure of the spring *g<sup>2</sup>* will hold the pawl, as shown in dotted lines, out of engagement with the ratchet wheel and the reel will remain stationary as the sheave turns. Thus the sheave (acting as a driving mechanism) and the reel (a driven mechanism) are connected by the ratchet and the pawl which are controlled by the weight of the load.

*i* is the load receptacle or bucket, or tray, or skip the front portion of which is supported from the lower portion of the frame *b b'* by the suspenders *j j'*. The rear of the load receptacle is supported by the suspender *h'* which is connected with the two suspenders *h h* by the yoke *h<sup>2</sup>*. Therefore, the rear of the load receptacle is supported by the tails of the pawls *g'* to which the suspenders *h h* are connected. Each of the eyes *g<sup>4</sup>* extends through the periphery of the reel at the bottom of the groove thereof, as shown in Fig. 1, so that as the reel is turned, the suspender *h* will be reeled up in the groove thereof.

The fall-rope may be suspended from any contrivance, but in Fig. 3 I have shown it as suspended from the sheaves *k k'* of the carriage *l* which runs upon the cable *m* spanning the space between the towers *m'* and *m<sup>2</sup>*. The fall rope is connected with the drum *n* by which the hoisting and lowering is controlled. The travel of the carriage is controlled by the endless rope *o* actuated by the drum *o'*.

The operation is as follows: Suppose the load receptacle to be loaded in the position shown in dotted lines in Fig. 3; it is next hoisted by the fall rope to the extent desired. As it is hoisted, although loaded, the reels *f* and *f'* are not turned because the pawls and ratchet wheels act only in one direction and not as the fall-block is being hoisted. The carriage is next run out on the cable by the operation of the drum *o'* into the position shown in Fig. 3; the fall-rope being at the same time paid out by the drum *n* to keep pace with the outward travel of the carriage and maintain the fall-block at a uniform level.

When the load receptacle has reached the point, as shown in Fig. 3, where it is desired to dump, the drum *o'* will be stopped so as to hold the carriage stationary and the fall-block will be lowered by the drum *n*. As this lowering takes place, the fall-rope *a* and sheave *c* will move in the direction of the arrows, Fig. 1, and the weight of the load will hold the pawls in engagement with the ratchet wheels, as shown in full lines in that figure, compelling the reels to turn with the sheave *c* and reeling in the suspenders *h h* until the rear side of the load receptacle is lifted and the dump is effected, as shown in Fig. 3.

Although I have, in illustrating my invention, shown the connection of the fall-block sheave as the lowering of the load takes place, with dumping mechanism; yet I do not wish to limit myself to this since it might be connected with other mechanism. The point is, that there are two moving mechanisms; that one of them is actuated as the fall-block rises or descends; that between the two is an interposed mechanism which communicates the motion of one to the other when the fall-block is moving in one direction.

The application which is made of the motion for the purpose of dumping the load, although constituting a part of my invention, is not essential to it, broadly considered.

I do not wish to be understood as limited to the mechanical details above described.

I claim—

1. In a fall block, in combination, the frame, the rope sheave, a member moving on the frame, and means controlled by the weight of the load whereby engagement is effected between said sheave and said member, substantially as described.

2. In a fall block, in combination the frame, a driving and a driven mechanism both mounted on said fall block frame, and means controlled by the weight of the load whereby said driving and driven mechanism are connected, substantially as described.

3. In a fall block in combination, the frame, the fall rope sheave, a reel and means for connecting said sheave and reel whereby a bucket suspended in part from said frame and in part from said reel may be dumped, substantially as described.

4. In a hoisting apparatus in combination, the fall rope, the sheave suspended thereby, a moving member and mechanism whereby the motion of said sheave in one direction is communicated to said member, substantially as described.

5. In a fall block in combination, the fall rope sheave, the side members of the frame inclosing the same, the shaft upon which said sheave is fixed, a reel revolubly mounted upon said shaft, a suspender connected with said reel and mechanism interposed between said shaft and said reel whereby the motion of the sheave is communicated to the reel, substantially as described.

6. In a fall block in combination, the fall rope sheave, the frame inclosing the same, the shaft upon which said sheave is fixed, a suspender at each side of said frame and mechanism connecting each of said suspenders with an opposite end of said shaft whereby said suspenders may be hoisted, substantially as described.

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Witnesses:

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