

(No Model.)

2 Sheets—Sheet 1.

J. W. KINSMAN.
HOISTING APPARATUS.

No. 475,963.

Patented May 31, 1892.

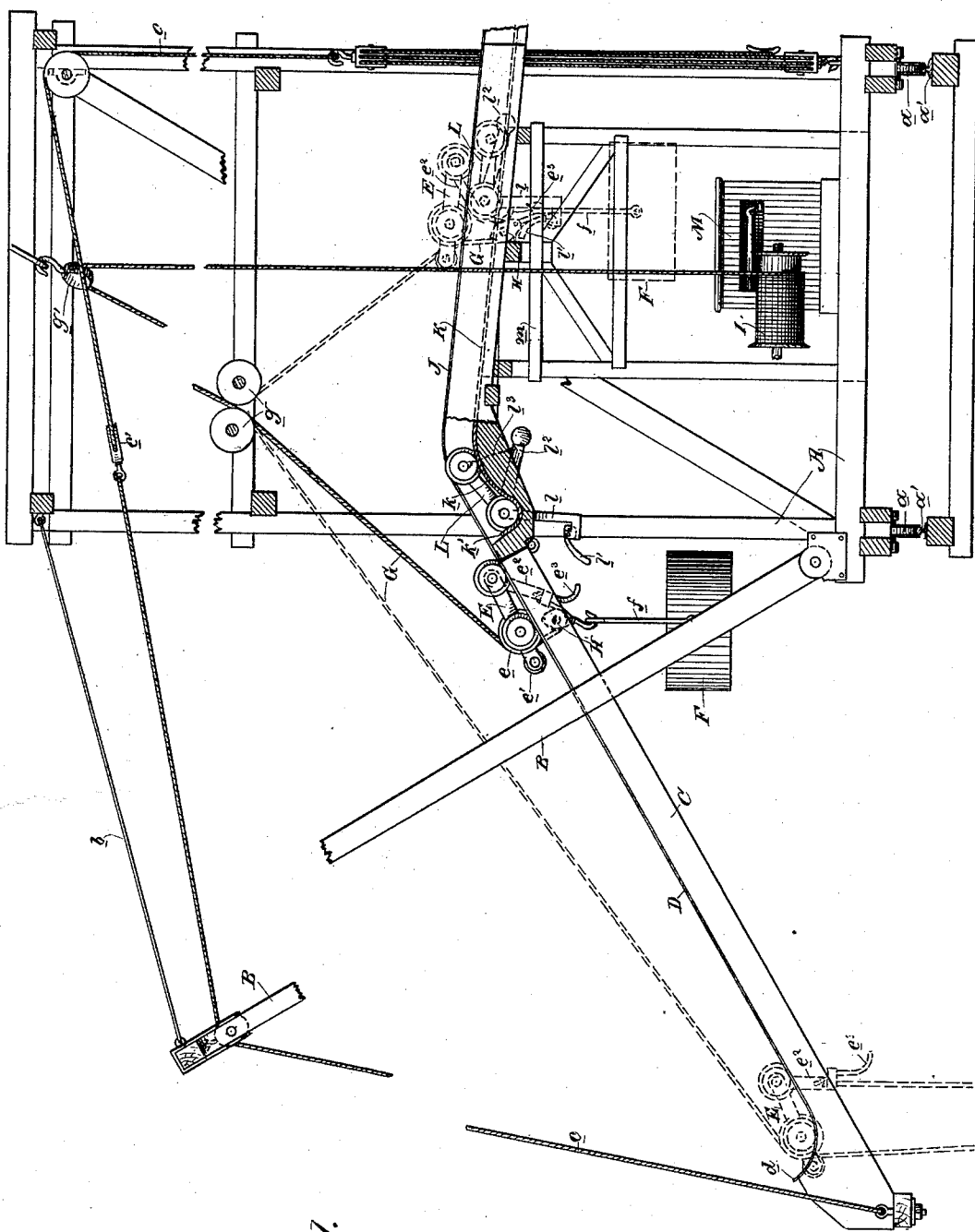


Fig. 1.

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UNITED STATES PATENT OFFICE.

JAMES W. KINSMAN, OF SAN FRANCISCO, CALIFORNIA.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 475,963, dated May 31, 1892.

Application filed March 11, 1892. Serial No. 424,547. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. KINSMAN, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Hoisting Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the general class of hoisting apparatus, and especially to those devices designed for unloading coal and other material in bulk from ships and depositing it in more or less distant pockets or bunkers.

My invention consists in the novel constructions, arrangements, and combinations hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a simple and effective apparatus in the operation of which a minimum amount of manual labor is necessary and by which the material may be rapidly conveyed to pockets or bunkers located at any suitable distance.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation of my hoisting mechanism. Fig. 2 is a front view of same.

A is the frame of the apparatus. This may be stationary, or it may be, as here shown, provided with wheels *a*, running on tracks *a'*.

Hinged to the frame are the shears B and the boom C. The boom is supported and its inclination regulated by cables *c*, passing up through the shears and properly secured by block and tackle *c'* to the main frame. The shears have supporting-guys *b*.

Upon the surface of the boom C is a track D, the lower end of which is provided with a suitable stop, as by being upturned, as shown at *d*. Upon this track is mounted and adapted to travel a trolley E.

F is the bucket or tub in which the material is hoisted. It has a bail *f*.

G is the hoisting rope or runner. This at one end is connected with the bucket or tub and with the trolley E in the following manner: Upon the forward axle of the trolley is a guide-sheave *e*, opposing which is a small sheave *e'*. Freely pivoted on the rear axle of the trolley is an arm *e²*. The runner G passes down between the sheaves *e* and *e'*, carries a hook-block H in its bight, and thence up to

the end of arm *e²*, in which it is knotted. The hook H engages the bail *f* of the tub F. The runner passes upwardly from sheave *e* to and between a pair of guide-sheaves *g* on the main frame, over a top block *g'* in the main frame, and down to the hoisting-drum I.

The operation of the parts thus far described is as follows: The boom C is set at such an angle that the loaded tub will be hoisted by the runner without causing the travel of the trolley, which during the vertical hoist of the tub is in position down at the lower end of the track D, where it is held by the upturned end *d* thereof; but when the tub has reached the limit of its vertical hoist and can go no farther continued winding up of the runner has the effect of pulling the trolley E up the inclined boom, carrying the tub with it. Supported suitably by the frame A is a track J. One end of this is curved downwardly to meet the upper end of the boom, and the main body of said track is inclined downwardly in the opposite direction, but at a slight angle, and it may have any length to cause it to extend over to the pocket or bunker. The trolley E passes from the boom-track onto the track J and travels along said track to the pocket or bunker. Now as this bunker may be at quite a distance it is obvious that in order to avoid having to raise the load to an abnormal height the track J should have but a gentle inclination. This being the case, it is obvious that the slacking away of the runner when the trolley reaches the crest of the track, instead of having the effect of causing said trolley to run down the gently-inclined track J, would merely have the effect of lowering the loaded tub, the trolley remaining stationary. To avoid this difficulty and to provide means for positively supporting the loaded tub on its course to the bunker independently of the runner, I have the following construction: Directly under track J is a second track K, parallel with it. Its curved end *k* is, however, curved downwardly at a greater angle than the curved end of track J, and said end *k* has a stop of suitable character, here shown as an upturned end *k'*. Upon track K is mounted and adapted to travel a second trolley L. On its forward axle is pivoted a hook *l*, in the end of which is pivoted a swinging guard *l'*, consisting of a bar having a tail-piece and a

head-piece lying in the bend of the hook. The hook is controlled by a weight-arm l^2 , itself limited by a chain l^3 , hanging from the rear axle. Upon the pivoted arm e^2 of the first trolley E is a contact-piece e^3 . In practice the hook l is a double one or two connected, as shown.

The further operation is as follows: When the loaded tub is pulled up to the trolley E and the latter is traveling up the inclined boom, the arm e^2 of said trolley is pulled to a backward inclination. The normal position of the second trolley L is down at the stop end of track K, where it rests, with its hook l hanging down and forwardly and controlled by the weight-arm l^2 . The guard l' of the hook has its tail-piece hanging down and its head-piece slightly raised in the bend of the hook. When the trolley E reaches a point over the trolley L, the bail f of tub F is carried to a point directly over the hook l , and the contact-piece e^3 of arm e^2 of trolley E bears against the hook l and forces said hook back to a vertical position, where it is stopped by its weight-arm coming up under the rear axle of trolley L. As the trolley E continues its travel it picks up, through the contact of piece e^3 with the now rigid hook l , the trolley L and the two thus travel together. On account of the rapid rise of the end k of track K the trolley L rises, and thus carries its hook l up under and into contact with the bail f of tub F and the bail forces the head-piece of guard l' down and throws its tail-piece up, thus confining the bail in the hook. The tub is now suspended directly and positively from trolley L by its hook l . When the crest of the tracks is reached, the runner is paid out and both trolleys travel together down the gentle inclines of tracks J and K, carrying the loaded tub from the hook l . When the bunker is reached, the tub is dumped in suitable manner, and then the runner is wound up to bring the trolleys and empty tub back, the runner pulling on the small sheave e' of trolley E and the two trolleys being still connected by the engagement of the tub bail and hook l . When the crest is again reached, the runner is paid out and the trolley L runs down to the stop k' and is arrested, while the trolley E, disengaged by the dropping of hook l , due to the rapid incline of the track end k , proceeds with the tub down the sharp incline of the boom to the lower end, where it also is arrested, and the tub can then be lowered vertically.

I have also made provision, in case it be desirable, to weigh the material during its course to the bunker.

M represents a scales supported by frame A. The track K crosses the platform m of the scales. When, therefore, the trolley L reaches this portion of track K, it is obvious that the weight of the parts can be indicated.

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

1. In a hoisting apparatus having oppo-

sitely-inclined tracks, a trolley for carrying the load up one incline and a second trolley in the path of the first trolley engaged by the latter trolley and provided with means for suspending the weight of the load and relieving the hoisting-rope of said weight as the load is carried down the opposite incline, substantially as herein described.

2. In a hoisting apparatus, the combination of a trolley, a hoisting rope or runner suspending the load-receptacle and engaging the trolley, whereby the latter and the receptacle are pulled up an incline, a second trolley in the path of and adapted to be engaged by the first trolley and carried with it on an opposite incline, and a means carried by the second trolley for engaging and suspending the load-receptacle, whereby the hoisting-rope is relieved of the weight of the load-receptacle during the travel on said opposite incline, substantially as herein described.

3. In a hoisting apparatus, the combination of the inclined track D, the oppositely-inclined track J, meeting its upper end, the track K, parallel to the track J, the trolley E, traveling on tracks D and J, the load-receptacle and hoisting rope or runner for suspending the receptacle and carrying the trolley up the track D, the second trolley L, traveling on track K and lying in the path of trolley E, whereby the trolleys engage and travel together down the tracks J and K, and means for suspending the load-receptacle from trolley L, substantially as herein described.

4. In a hoisting apparatus, the combination of the inclined track D, the oppositely-inclined parallel tracks J K, the former joining the track D, the trolley E, traveling on tracks D J, the second trolley L, traveling on track K, the hoisting rope or runner passing over and secured to trolley E and carrying the load-receptacle in its bight, the hook of trolley L, adapted to receive and suspend the load-receptacle, and the contact-piece of the trolley E for engaging said hook, whereby the trolleys travel together on tracks J K, substantially as herein described.

5. In a hoisting apparatus, the combination of the trolley E, having the pivoted arm with contact-piece, and the second trolley L, having the pivoted hook with controlling weight-arm, whereby the load-receptacle is received from the first trolley and suspended by the second trolley and the two trolleys are caused to move together, substantially as herein described.

6. In a hoisting apparatus, the combination of the trolley E, having the pivoted arm with contact-piece, and the second trolley L, having the pivoted hook with pivoted guard and controlling weight-arm, whereby the load-receptacle is received from the first trolley and suspended by the second trolley and the two trolleys are caused to move together, substantially as herein described.

7. In a hoisting apparatus, the combination of the inclined tracks D, J, and K, the trol-

leys E and L, the guide-sheaves and pivoted arm with contact-piece of trolley E, the pivoted hook with controlling weight-arm of trolley L, and the hoisting rope or runner passing between the sheaves of trolley E and secured to its arm, said rope carrying the load-receptacle in its bight below said trolley, substantially as herein described.

8. In a hoisting apparatus, the oppositely-inclined tracks D and J, the trolley E, traveling thereon and having the pivoted arm, and the hoisting-rope suspending the load-receptacle and engaging the trolley, as described, in combination with the inclined track K, having the rapidly-inclined end lying under the end of the track J, and the second trolley L on said track K and having a hook adapted to rise up under the bail of the load-receptacle to suspend it, substantially as herein described.

9. A hoisting apparatus consisting of a frame having an inclined boom with track

D, and the parallel tracks J K, inclined oppositely to the boom-track, the track J joining track D, and the track K having a rapidly-inclined end, the guide-pulleys located above the crest of said tracks, the trolley E, traveling on tracks D J and having the pivoted arm with contact-piece, the hoisting rope or runner passing between the guide-pulleys engaging the trolley E and suspending the load-receptacle, and the trolley L on track K, having the hook to receive the load-receptacle and to suspend it independently of the hoisting-rope, whereby the trolleys and receptacle may travel upon the tracks J K, substantially as herein described.

In witness whereof I have hereunto set my hand.

JAMES W. KINSMAN.

Witnesses:

S. H. NOURSE,
J. A. BAYLESS.