

(No Model.)

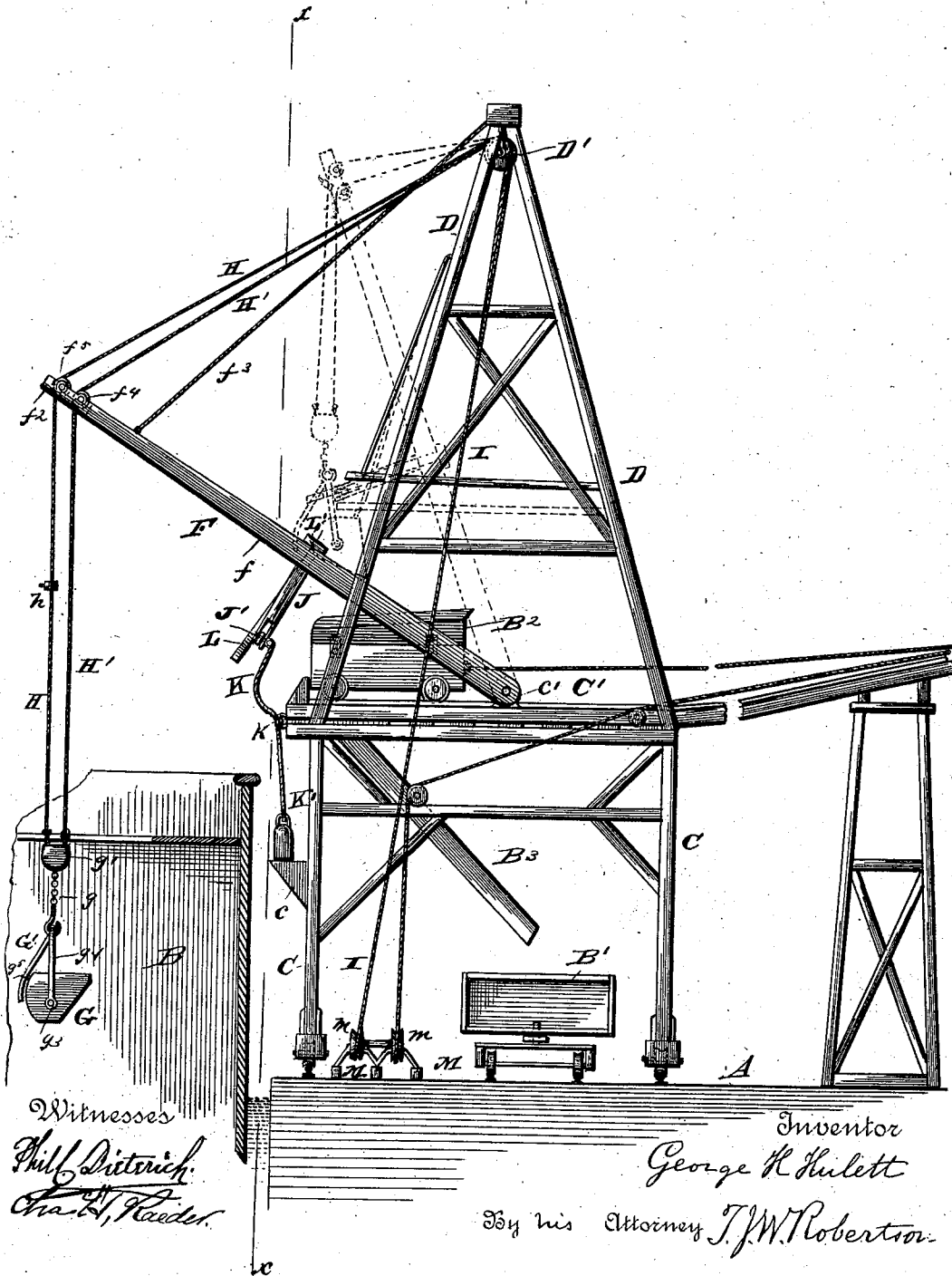
3 Sheets—Sheet 1.

G. H. HULETT.
HOISTING APPARATUS.

No. 376,655.

Patented Jan. 17, 1888.

Fig. 1.



(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

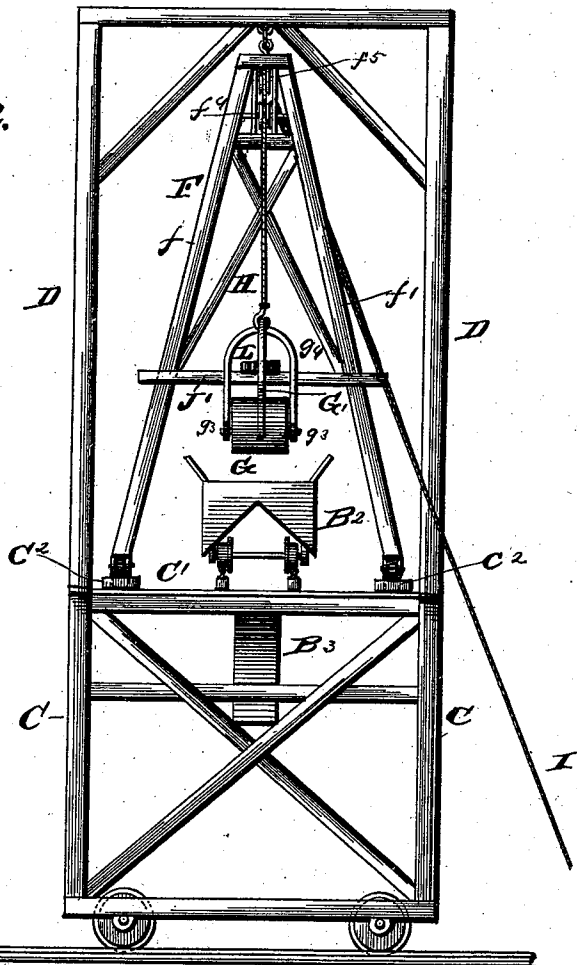
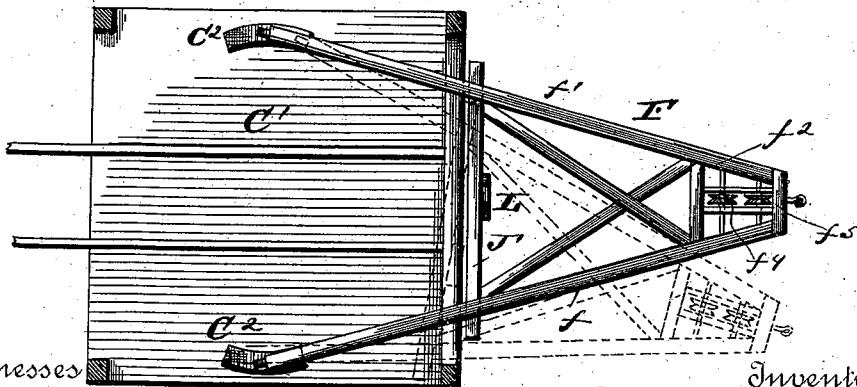


Fig. 3.



Witnesses

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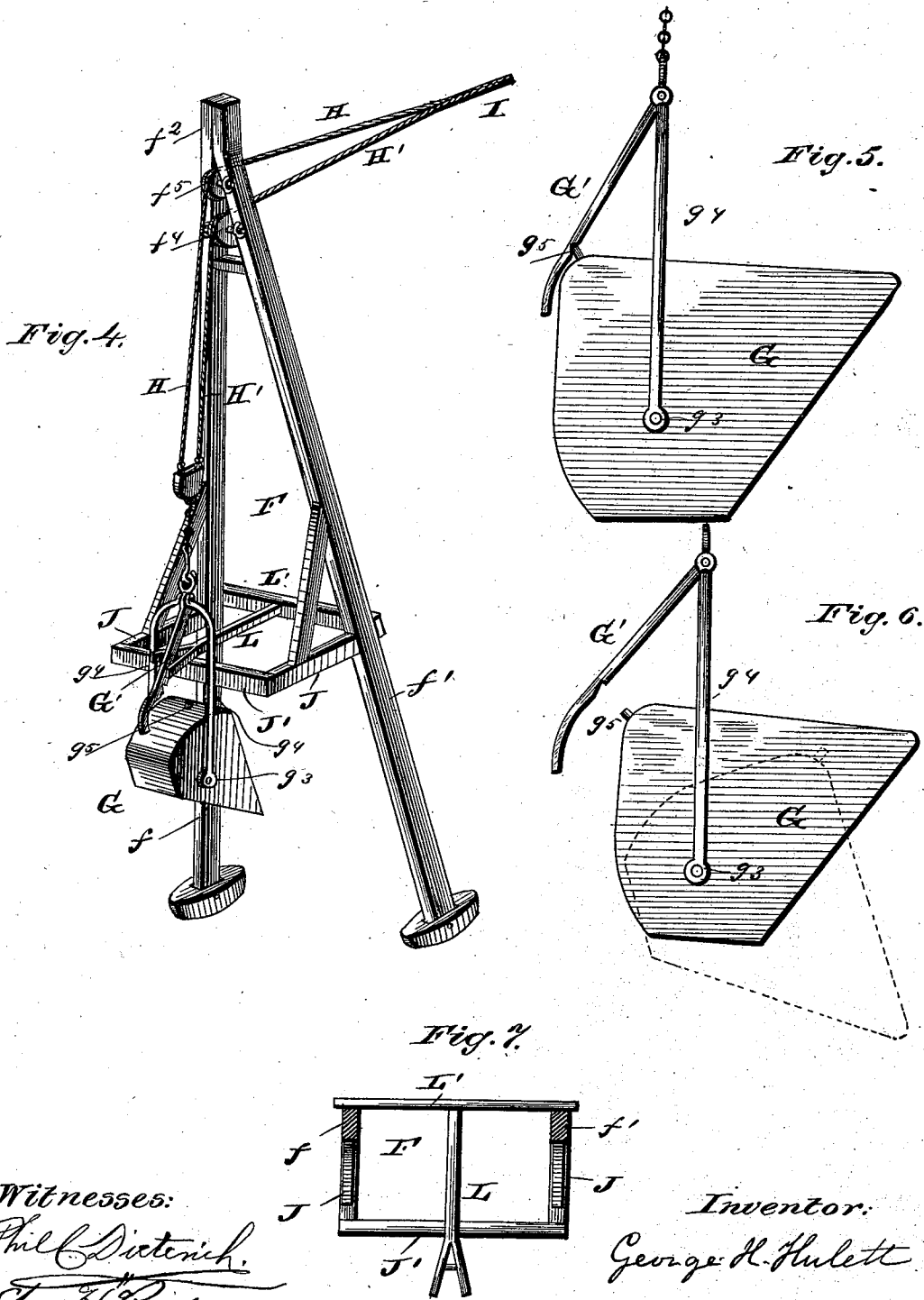
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UNITED STATES PATENT OFFICE.

GEORGE H. HULETT, OF CLEVELAND, OHIO.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 376,655, dated January 17, 1888.

Application filed January 10, 1887. Serial No 223,935. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. HULETT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hoisting Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to hoists or derricks having automatic dumping apparatus; and the novelty consists in the construction, arrangement, and adaptation of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claims.

I provide a base-platform having two slots made in arcs of a circle, opposite portions of said slots being arranged at a distance from each other equal to the distance between the feet of a two-legged boom, in order that the boom at its free end may be so changed as to engage the bucket with either hold of a vessel without changing the position of said vessel. I provide a double hoisting-rope, which connects the bucket with a single pull-rope, the said double portion being reeved over pulleys arranged at a distance apart near the free end of the boom. The ropes rising simultaneously effectively prevent any considerable part revolution of the bucket. I provide a rectangular frame rigid with the boom and so arranged that when the bucket is down this frame is entirely out of the way. When the boom is elevated, a cross-piece, which connects the two arms, will receive either side of the bail which is foremost and hold the same until the other side of the bail comes in contact, thus bringing the bucket squarely in position to be dumped.

When the bucket is brought into the dumping position by means hereinbefore mentioned, an arm extending from a cross-bar secured to the boom acts upon the locking-latch to automatically dump the bucket.

I provide a bucket having its pivot ar-

ranged considerably below its center of gravity and considerably to the rear of the plane of its exit. The exit is extended, and the position of its supporting-pivot gives it a short flat bottom, which will ride readily over the end of a car or cart, and which will by its extended mouth recover the bucket in its return.

I provide upon one or both of the simultaneously-moving ropes which support the bucket a stop or stops, which, when they come in contact with the boom, will elevate the same to its dumping position; and in order to limit the elevation of the boom I provide a weight, which, being attached to the boom or one of its parts by a rope, will abut against a portion of the frame-work to modify and control the amount of elevation.

I provide a locking-arm, which, secured to the apex of the bail of the bucket, is engaged by a keeper fixed upon the bucket at its rear upper portion, which locking-arm, when the bucket is in its dumping position with both sides of its bail bearing fairly against the cross-arm, is in line with the rigid dumping-arm.

I provide that the pulleys over which the pull-ropes are guided shall be hung separately in clevises loosely secured in blocks rigid with the platform of the dock.

I provide that when the car upon the elevated road shall be withdrawn the unloading of the vessel may still be carried on, without altering the condition or working relation of the hoist, through an inclined chute, which will empty into a railroad-car below, between the tracks of the elevated railroad.

I have illustrated the invention, showing only such parts as are claimed as novel.

It will be understood that a steam-drum is used, and that five or more derricks may be operated simultaneously by a single engine, the drum carrying the pull-rope of the several hoists.

Figure 1 is a side elevation of the hoist, showing portions of the dock and vessel. Fig. 2 is an end view of the hoist alone. Fig. 3 is a top plan view with portions omitted. Fig. 4 is a perspective view of parts of the apparatus detached. Fig. 5 is a side elevation of the

bucket with its locking-arm locked. Fig. 6 is a similar view with the locking-arm unlocked. Fig. 7 is a detail view.

Referring to the drawings, A designates the dock, and B the boat or vessel.

B' designates the railroad-car running on the dock, and B² the elevated car. These cars will be understood to be any kind of carrier.

C designates an elevated platform having a ledge, *c*, and C' the floor of said platform.

D designates the frame-work of the hoist, having at its upper end, suitably journaled, a drum, D'.

The platform C is adapted to support a carrier, as a car or cart, and within its supports *c'* is strongly pivoted the boom F. This boom consists, essentially, of two legs, *f f'*, and a cap-frame, *f*².

The platform C is provided with oppositely-arranged arcs of a circle, C² C³, into which the feet of the legs *f f'* are received, and into which such feet may be secured at proper and desirable points, in order to throw the free end of the boom over one or other of the hatchways of the vessel. I deem this feature important, as the crowding of other vessels will frequently prevent the unloading of the one in question, and if the tide be low the vessel might be aground, which would necessitate the moving of the vessel or a cessation of work. When the car B² is out of the way, the unloading may still be carried on through an inclined chute, B³, into the carrier B'. The boom F is supported by a rope, *f*³, from the frame D, and carries near its free end two pulleys, *f*⁴ *f*⁵. The bucket G, which will be hereinafter more particularly described, is connected by a small chain, *g*, to a block, *g'*. To this block is rigidly connected a two-part rope or cable, H H', and these two ropes at their upper extremities are spliced or otherwise strongly connected to a single pull-rope, I. Thus when the rope I is drawn downward the two ropes H H', reeved over the pulleys *f*³ *f*⁴, respectively, are drawn upward simultaneously, and the said pulleys, being arranged at a distance from each other, will prevent the bucket from any considerable rotation.

Upon the rope H, I attach a stop, *h*, which, when it comes in contact with the outer end of the boom, will elevate the boom and its load up into the position shown in dotted line in Fig. 1. It will be noticed that the inner rope, H', being of less length than the outer rope, H, when the boom assumes its highest position, will hold the bucket evenly from its block *g'*.

K designates a rope, which is attached to any suitable part of the boom, and leading through an eye, *k*, arranged above the ledge *c*, carries the weight K' from its lower end. When the boom F has reached its highest desired point of elevation, the weight K' will abut against the stationary frame-work and prevent its further elevation. The elevation of the boom may be adjusted at will by merely ad-

justing the position of the weight K' upon its carrying-rope K.

The bucket G is of peculiar conformation. I place the pivot *g*³ of its bail *g*⁴ considerably below and in rear of its center of gravity. It has an extended dumping-mouth. As the bucket swings inward and upward as the boom is elevated, I desire that its bottom shall not come in contact with the end of the carrier. At the apex of its bail *g*⁴, I pivot a locking-arm, G', and to the rear upper edge of the bucket I provide a locking-catch, *g*⁵.

Rigid upon the boom F, I form a frame-work consisting of two arms, J J, connected by a cross-arm, J'. The short flat bottom of the bucket, as it is forced upward and inward by the connecting-ropes, if it comes in contact with the cross-bar J', with either side of its bail foremost, will oscillate until the other side of said bail reaches said cross-bar, and the bucket is in position to dump. Before it reaches its position, however, its locking-arm G' comes in contact with a dumping-arm, L, rigidly held upon a cross-bar, L'. By this construction and arrangement of parts the elevation of the boom, by reason of its weight K', is not only controlled, but the bucket is forced by the cross arm J' to come fairly into position to be dumped, and at the instant before it reaches such position the dumping-arm L automatically releases the locking-arm G', and the bucket is dumped into its desired receptacle.

The short flat bottom of the bucket, as before mentioned, prevents it from coming in contact with the end of the carrier; but on its slow return its snout *g*⁶ is intended to come into such contact, as the boom slowly descends by reason of its own weight and the additional gravity of the weight K', to throw the bucket back into its normal position and to lock the bar G' with its keeper *g*⁵.

The carrier B², I ordinarily arrange upon a railway. When this carrier is not in use, I provide that the bucket may be dumped into the chute B³, and from thence into a car, B', beneath the elevated platform and upon the dock.

The feet of the boom may be arranged with any ordinary provision for locking them in place within the slots C².

It has been proposed to use booms with movable feet moving in the arc of a circle, and I do not therefore claim this broadly; but in such case the feet were secured by bolts passing through curved grooves in castings attached to the platform. I regard my improvement as essentially different from this, inasmuch as my shoes work in slots formed in the platform itself, and there is thus no liability of the castings in which the grooves have been heretofore formed becoming loose and thus getting out of place.

In some cases I may make my shoes in the form shown in Fig. 4—that is to say, with mortises on which the feet of the boom are stepped.

The draw-rope I passes over a drum, and by

further suitable connections (not shown) is led over the drum of a steam-engine or other motor. (Not shown.)

5 The pulley *m* is hung within a clevis or crank frame, which is pivoted within suitable blocks, *M*, fixed upon the dock *A*.

10 The motor-drum may be employed to operate several hoists simultaneously, or several drums may be so arranged in relation to each other that one may revolve loosely upon the power-shaft to return a bucket while other drums are thrown into connection with the power-shaft to elevate other booms.

15 Modifications in details of construction may be made within wide limits without departing from the principle or sacrificing the advantages of my invention, the essential features of which have been fully hereinbefore described.

20 Having thus described the invention, what I claim as new, and desire to secure by protection of the United States, is—

1. The combination, with an elevated platform having curved slots oppositely arranged in the arcs of a single circle within the body of said platform, of a two-legged boom having shoes working directly between the walls of and arranged to be adjusted within said arc-shaped slots, whereby the free end of the boom may be thrown over different hatchways of a vessel without moving either the vessel or derrick, as set forth.

2. The combination, with the boom *F* and means for changing its position in the arc of a circle, of two pulleys arranged in the free end of the boom, a single pull-rope and two branch ropes, as *H H'*, the said branch ropes being arranged to move simultaneously, and having their outer ends connected to a block which supports the bucket, as set forth.

3. The combination, with the boom having pulleys *f⁴ f⁵*, of the bucket-supporting block *g'*, the simultaneously-moving ropes *H H'*, both attached at one end to said block, and pull-rope *I*, attached to both of said ropes, the drum or pulley *D'*, and the stop, as *h*, arranged upon one of said ropes and adapted to engage the

boom at predetermined periods, as herein specified.

4. The combination, with the boom having pulleys *f⁴ f⁵*, the bucket and its supporting-block, the two simultaneously-moving ropes, the pull-rope, and proper connections, of the weight *K'* and cord *K*, arranged to limit the upward movement of the boom, as specified.

5. The combination, with the boom *F*, the suspended bucket, and means for elevating them, of the frame *J J*, secured to said boom, and the cross bar *J'*, rigidly secured to said frame and arranged to engage the bail of the bucket and to "square" it up for dumping, as herein specified.

6. The combination, with the boom, the bucket, and means for elevating them, of the cross bar *J'*, rigidly secured to the boom and arranged to present the bucket fairly for dumping, and the dumping-bar *L*, supported rigidly upon the beam at right angles to the bar *J'*, and arranged to engage the locking-arm of the bucket to dump the same, as set forth.

7. The bucket *G*, having short flat bottom and extended dumping-mouth, and having its bail-pivot hung below and in rear of its center of gravity, and having an extended mouth and bail, *g'*, combined with the boom, the cross-bar *J'*, the locking-arm *G'*, the keeper *g*, and dumping-arm *L*, as set forth.

8. The derrick herein described, comprising the boom having its feet adjustably secured in slots *C²* of the platform *C*, the pull-rope *I* and its two branches, *H H'*, the longer one being led over the pulley *f⁵*, nearest the end of the boom, and both secured rigidly to the block *g'*, the bucket *G*, having locking-arm *G'*, the frame *J J'*, the dumping-arm *L*, the rope *K*, and the weight *K'*, and the stop *h*, all arranged for joint operation, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE H. HULETT.

Witnesses:

E. J. FOSTER,

THEO. R. HOFFMAN.