

(No Model.)

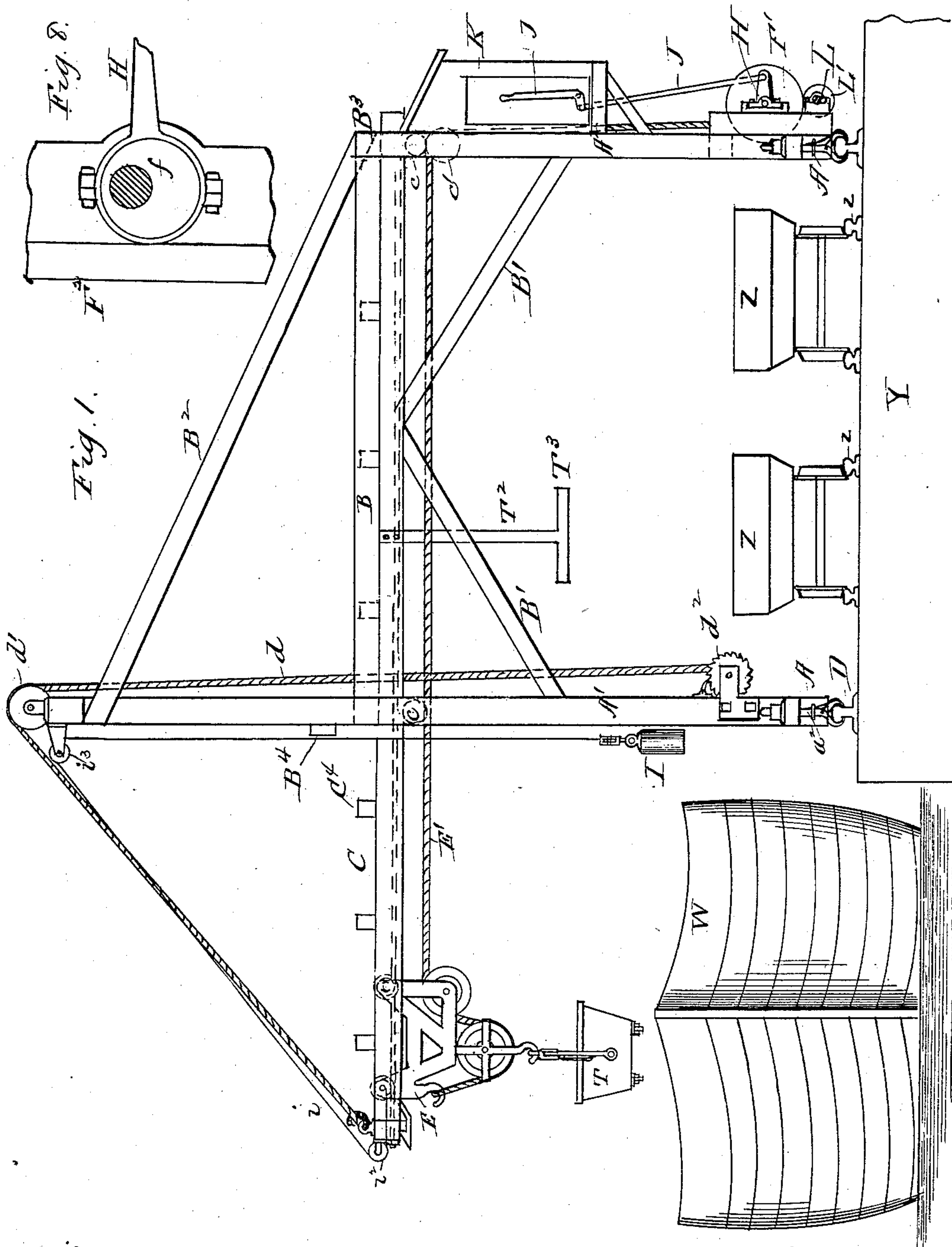
3 Sheets—Sheet 1.

A. BECKERT.

COAL AND IRON UNLOADER.

No. 257,128.

Patented Apr. 25, 1882.



Witnesses:

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Inventor:

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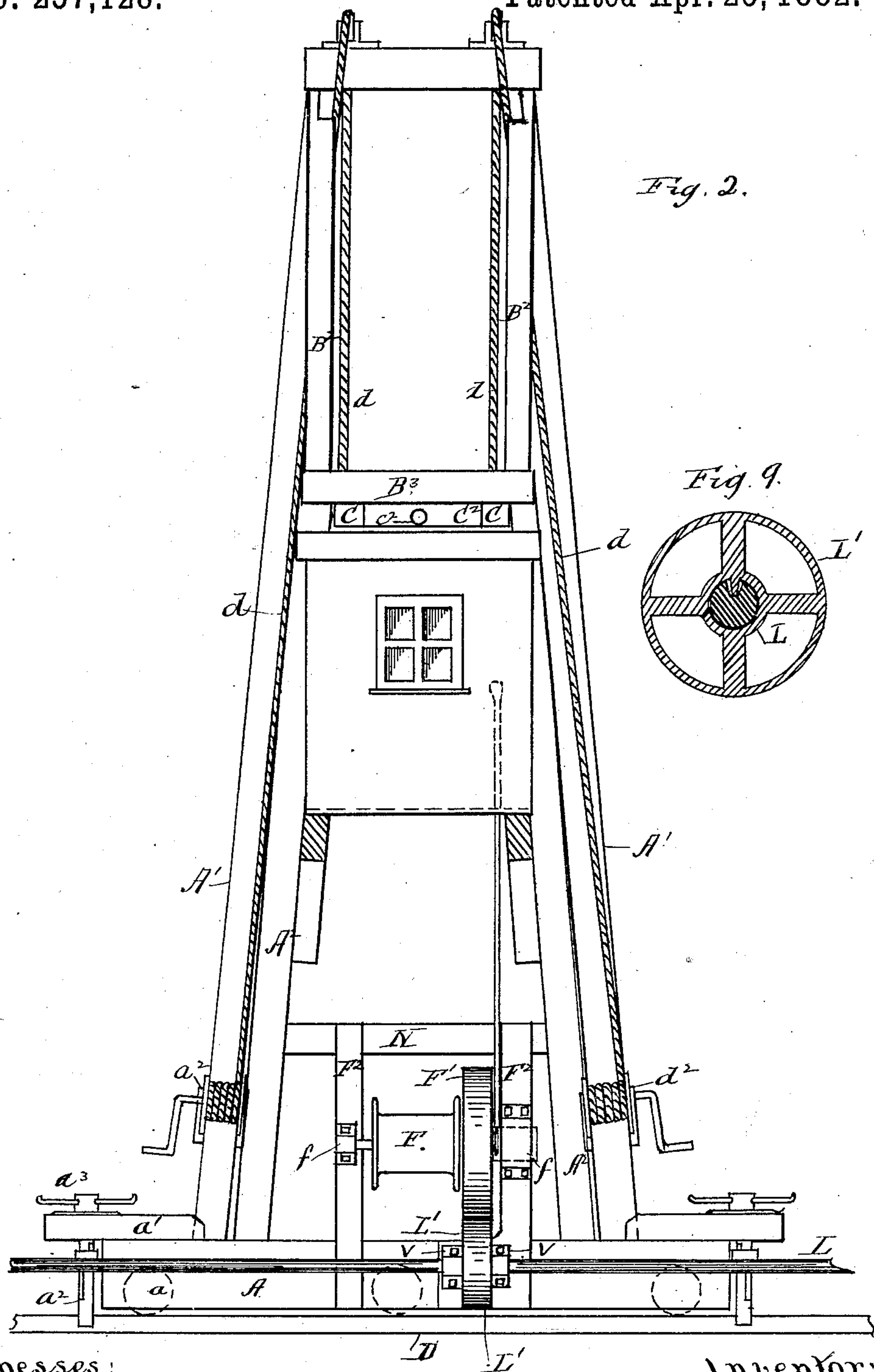
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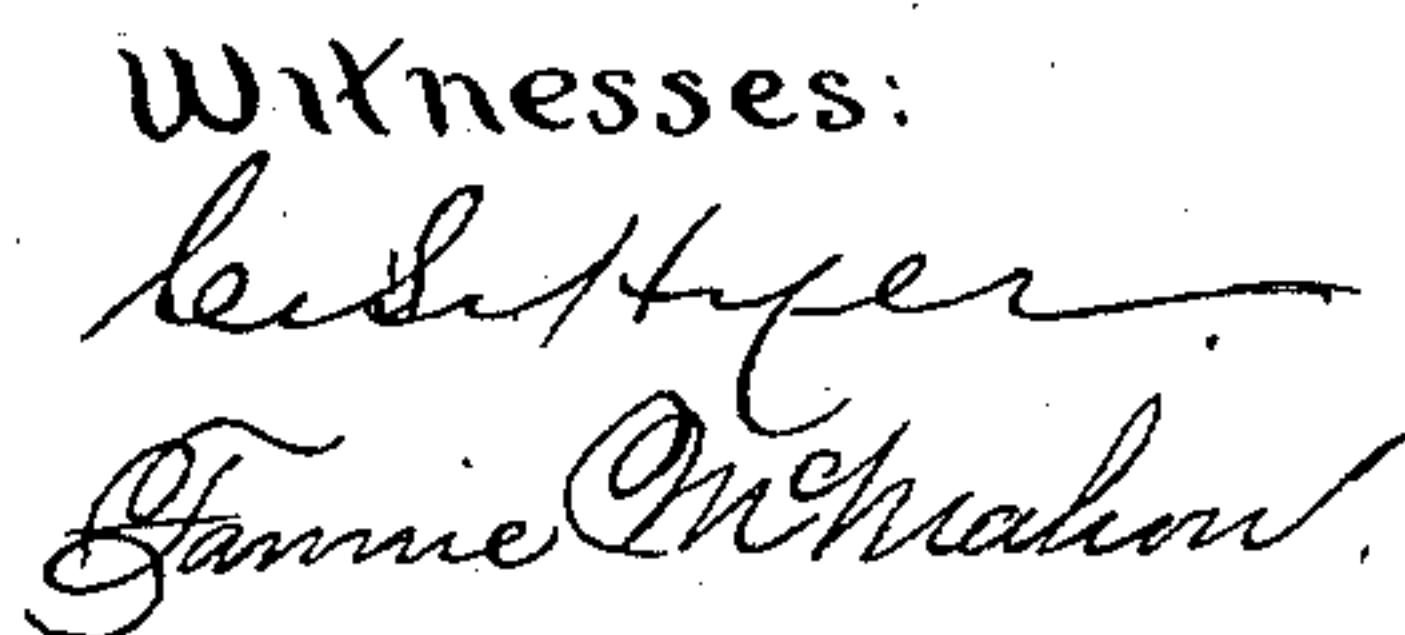
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3 Sheets—Sheet 3.

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Inventor:
J. W. Beckert
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UNITED STATES PATENT OFFICE.

ANDREW BECKERT, OF SANDUSKY, OHIO.

COAL AND IRON UNLOADER.

SPECIFICATION forming part of Letters Patent No. 257,128, dated April 25, 1882.

Application filed March 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, ANDREW BECKERT, a citizen of the United States, residing at Sandusky, in the county of Erie and State of Ohio, have invented certain new and useful Improvements in Iron-Ore and Coal Unloaders; 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.

My invention relates to devices for unloading boats and depositing their contents in cars placed upon a wharf immediately under the frame-work of the unloader.

The object of my invention is to produce a device which can be moved from one end of the wharf to the other, and at the same time receive power to operate the unloader, no matter at what point the latter may be.

There are also several minor objects, which will hereinafter be described.

The nature of my invention consists of parts and combination of parts, all as will hereinafter be described, and set forth particularly in the claims.

In the drawings, Figure 1 represents a side elevation of my device, showing the bucket, traversing catch, and movable pulley immediately over the vessel and the adjustable stop upon the boom immediately over one of the cars; Fig. 2, a rear elevation of the unloader, showing the means for raising the bucket and moving the traversing catch upon the boom; Fig. 3, an elevation of the traversing catch, showing the shank of the pulley which supports the bucket detached from the hook; Fig. 4, a similar view of the catch with parts broken away to show the hook supporting the pulley-shank; Fig. 5, a view of the bucket and trigger; Fig. 6, an elevation of the adjustable stop, and Fig. 7 a plan view of the stop; Fig. 8, a detail view of an eccentric bearing; Fig. 9, a section through friction-roller L' and revolving shaft L.

W represents the bow of a boat moored to a wharf, Y, upon which cars Z Z and the unloader are placed. This unloader consists of

a frame-work, a boom, C, traversing catch E, and minor parts, which will hereinafter be described.

The frame-work consists of base-pieces A, having wheels *a*, which rest upon tracks D. Projecting from each end of base-pieces A is an overhanging step, *a'*, having rail-clamps *a*², which, when clamped tightly by means of screw *a*³, hold the unloader in place and steady it while loading and unloading the bucket. Mounted upon these base-pieces are derrick-posts A' A' and uprights A² A². These parts are connected together by means of cross-pieces B B B³ B⁴, braces B' B', and rafters B² B².

A boom, C, consisting of two pieces of timber placed parallel to each other and joined at their ends by cross-pieces C², leaving a space, C', between them, is mounted upon rollers *c*, attached to inwardly-projecting knees fixed upon the inner sides of derrick-posts A' A' and uprights A² A². Cross-piece B³, mortised in cross-piece B', holds boom C upon its rollers. The boom may have cross-pieces C⁴, arranged at suitable intervals across space C', to hold the timbers together. By moving the boom upon rollers *c* it can be adjusted to bring the bucket immediately over the hatchway of any sized vessel. After it has been adjusted stay-ropes *d* *d*, attached by one end to the beam, and passing over pulleys *d'* upon derrick-posts A' and down their inner face to windlasses *d*², may be used to tighten the beam in place.

Stretching from end to end, and through longitudinal slots C', is a rod, *c*², upon which the traversing catch E moves by means of wheels *e* *e*. This catch is drawn to the outer end of the slot after the bucket has been dumped by a counter-weight, I, attached to the outer end of the catch by a cord, *i*, which passes over pulley *i*², attached to the end of boom C, and pulley *i*³, attached to the upper end of and to one side of one of the derrick-posts A'. When the bucket has been loaded the catch is drawn back into the unloader and the contents of the bucket T dumped into a car, Z, beneath the cross-pieces B by means of a lifting-cable, E', which extends the whole length of the beam and passes over a roller, *c'*, placed between uprights A², down to a drum or spool, F, keyed to friction-pulley F' at the base of the unloader.

The drum and pulley are provided with and are keyed to a common shaft, which is journaled in eccentric bearings f on posts F^2 . These posts F^2 are attached by their lower ends to one of the base-pieces A and by their upper ends to a brake-block, N , attached to posts A^2 . Rigidly attached to the spool and pulley-shaft, and near the pulley, is a crank-arm, H , the pin of which is attached to a rod, J , provided with a lever, J' , at its upper end, which is within a watch-box, K , so that an operator stationed in the latter can force friction-pulley F' against brake-block N or allow it to fall upon friction-pulley L' upon line-shaft L . This shaft extends from one end of the wharf to the other, and is revolved by an engine placed at one end thereof, and is adapted to give motion to one or more unloaders and to allow the latter to be moved to any point thereon. To accomplish this a longitudinal keyway is formed in the surface of the shaft, in which a feather fastened to the friction-roller L' slides, thereby imparting the motion of the shaft to and allowing free motion of the roller lengthwise on the shaft.

To insure friction-roller L' moving with the unloader and always being under friction-roller F' , two arms, V V , attached to the framework, one on each side of friction-roller L' , are provided, so that no matter which way the unloader moves the arms will push the roller L' that way and always keep it under roller F' .

The traversing catch E consists of a framework, P , suspended from the axles of wheels e , and has a sheave, P' , journaled at the inner end of the frame-work, and a hook, P^2 , forming part of the frame. The lifting-cable E' is attached to hook P^2 and passes over sheave P' .

Suspended upon cable E' , between the hook and sheave, is a pulley, P^3 , having a shank, P^4 , which passes up into the frame-work through an opening, O , having inclined plates or guides o for the shank. Above this opening is a hook, R , which catches in the eye of shank P^4 , as shown in Fig. 4, and holds pulley P^3 while the bucket is being transferred from over the boat to the cars on the wharf. This hook R is attached to a shaft, r , journaled in the framework, and which has a crank-arm, R' , outside the frame-work. Attached to the pin of this crank-arm is a rod, R^2 , which extends forward outside the frame-work and is attached thereto by a strap, r' . Upon the outer end of rod R^2 , between collar r^2 and the front edge of the frame-work, is a spring, r^3 , coiled around the rod. The object of this spring is to force the rod outward, so that when in position shown in Fig. 4 it will draw hook R immediately over opening O and into the eye of shank P^4 .

I do not claim broadly a traversing catch provided with an inclined passage for a shank having a shoulder, which, in passing through said passage, is caught by a rod and spring-operated plate, and at the same time releases a latch from a stop and allows the catch to be drawn upon the trasversing cable, as I am aware that such catches have been used before.

The specific construction, however, of my device is new, and to that I lay claim.

Pivoted to the frame-work at s is a lever-latch, S , which, whenever spring s^2 presses the inner end down, catches upon stop S' , as shown in Fig. 3. The inner end of the lever-latch is over opening O , so that when shank P^4 passes into and through the latter it will elevate the inner and depress the outer end of lever-latch S , and thus detach it from stop S' .

Suspended from hook P^5 of pulley P^3 is an ordinary pivoted bucket, T , provided with a trigger, T' , which, during the transit of the bucket, prevents the latter from tilting.

Upon the boom is a stop, T^2 , which is attached by means of bolts, so that when the beam has been shifted the stop can be removed and placed at some other point upon the beam. The same operation is performed when it is desired to use a different track from that over which the stop is placed. The object of this stop is to arrest the progress of the bucket and tilt the same by placing the cross-piece T^3 in such a position that the trigger will be sure to strike it. This cross-piece is curved, as shown in Fig. 7, so that the trigger, if the bucket should be swaying, will have a wider stop to strike against, and at the same time not interfere with the tilting of the bucket.

The operation is as follows: A loaded vessel is moored to the dock or wharf and the unloader moved upon the track until boom C is on a line with the vessel's hatchway. The unloader is then clamped to the track. The boom is now adjusted in such a manner that the outer end thereof will be directly over said hatchway and fixed in that position by means of rope or guys d d and windlasses d^2 . The operator, stationed in watch-box K , suspends pulley F' between friction-pulley L' and brake-block N by means of levers H and J' and rod J , so that counter-balance I , attached by a cord, i , to the forward end of traversing catch E , will draw the latter upon rod c^2 to the outer end of the boom. Lifting-cable E' is played out as the traversing catch nears the outer end of the boom, and is kept tense by the counter-balance to prevent any unnecessary jar when the pulley is unhooked and lowered. The speed with which the traversing catch travels can be regulated by braking friction-pulley F' against brake-block N . The several parts of the traversing catch, when moved upon rod c^2 , are in the position shown in Fig. 4, and when the traversing catch reaches the outer end of the boom the end of rod R^2 strikes against the cross-wall C^2 of space C' , turns shaft r by means of crank-arm R' , and detaches hook R from shank P^4 on pulley P^3 , leaving the latter in position to descend. Cable E' is now slackened, so that the weight of bucket T will cause pulley P^3 to run down on the cable to the vessel, where a loaded bucket is attached in place of the empty one. As shank P^4 leaves the traversing catch the upward pressure upon the inner end of lever-latch S is removed, and spring s^2 forces it down, so that the hooked

end of the outer arm will catch upon stop S' and hold the traversing catch at that point, as shown in Fig. 3. After the loaded bucket has been attached to hook P⁵ on pulley P³ friction-wheel F' is lowered upon pulley L', fixed upon revolving shaft L, and held there by means of levers H J' and rod J. The motion of friction-pulley L' is imparted to friction-pulley F' and spool F, which winds up lifting-cable E' and draws pulley P³ and bucket T up to the traversing catch. Shank P⁴ on pulley P³ passes between guide-plates o through opening O, strikes the inner end of lever-latch S, detaches its hooked end from stop S', and the cable, which is still being wound around spool F, starts the traversing catch on rod c² toward the unloader. This movement releases the end of rod R² from the boom and spring r² forces it outwardly, drawing with it by means of crank-arm R' and shaft r the hook R, which catches in the eye in shank P⁴. The traversing catch is drawn back until trigger T' on bucket T strikes against stop T², placed on the boom at a point immediately over a car on one of the tracks, and into which the contents of the bucket is dumped. The traversing catch is then started back by the operator in the watch-box, suspending the friction-roller F', as before, and allowing the counter-balance to perform its function.

I am aware that it is old to adjust beams in unloading apparatus by means of block and tackle suspended from a crane. That form differs from mine in that my boom is seated upon rollers journaled in the frame-work and when adjusted is rigidly held in place by guy-ropes d.

I am also aware that hay-loaders having a traversing cable adjustable upon two beams and provided with a stop that can be adjusted upon different points of the cable have been in use, but this I do not claim; but

What I claim as new is—

1. In an unloader, the combination, with an adjustable boom, of the frame-work having wheels mounted upon tracks, along which it can be moved, and of a shaft extending the whole length of the wharf parallel to the rails, and having a friction-roller keyed thereon to impart motion to a friction-pulley upon the frame-work, which pulley operates the bucket-lifting mechanism, all substantially as set forth, and for the purposes described.

2. In an unloader mounted upon rails, the combination, with a shaft journaled in the frame of the unloader and having a frictional roller keyed thereto, of a friction-roller held below the friction-roller on the unloader by arms and attached by a feather or key to a revolving shaft which runs parallel to the rails and has a longitudinal keyway, in which the key or feather upon the friction-roller slides

when the unloader has been moved upon the rails, substantially as described, and for the purpose set forth.

3. In an unloader adapted to be moved upon a track, the combination, with a friction-roller having eccentric bearings, of a brake-block, of a friction-pulley mounted upon a revolving shaft having a longitudinal keyway and in contact on each side with arms attached to the unloader-frame immediately below the friction-roller journaled therein, for the purpose set forth, and of a device for suspending the friction-roller between and to place it in contact either with the revolving pulley or the brake-block, substantially as described.

4. The combination, with the frame-work of an unloader having rollers and windlasses, of a boom adapted to be moved upon said rollers, and of guy-ropes passing over the top of the frame-work and attached by one end to the outer end of the boom and by the other to said windlasses, which tighten the guys when the boom has been adjusted, substantially as described, and for the purpose set forth.

5. In an unloader, an adjustable boom having a movable stop and seated upon rollers journaled in the frame-work through which the boom projects, in combination with guy-ropes attached to the outer end of the boom and to the frame-work, and provided with windlasses, whereby the guy-ropes can be tightened after the boom has been adjusted, and a traversing catch which travels upon the boom and carries a bucket provided with a trigger which strikes the movable stop and tilts the bucket, in the manner set forth.

6. In an unloader, a traversing catch consisting of a frame-work suspending from a traversing rod by means of wheels, and having a hook at one end and a sheave at the other to support a moving pulley by a lifting-cable attached to the hook and passing over the sheave, and a passage between the hook and sheave to admit the shank of a movable pulley, of a hook journaled in the frame-work above the passage and operated by a rod having a crank at one end and a spring at the other, as shown, and of a lever-latch pivoted upon the frame-work and having one end immediately over said passage and the other provided with a latch or hook which catches upon a stop on the beam when the spring upon the inner end is free to play, and all combined and arranged substantially as described, and for the purpose set forth.

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

ANDREW BECKERT.

Witnesses:

F. W. COGSWELL,
C. C. BITTNER.