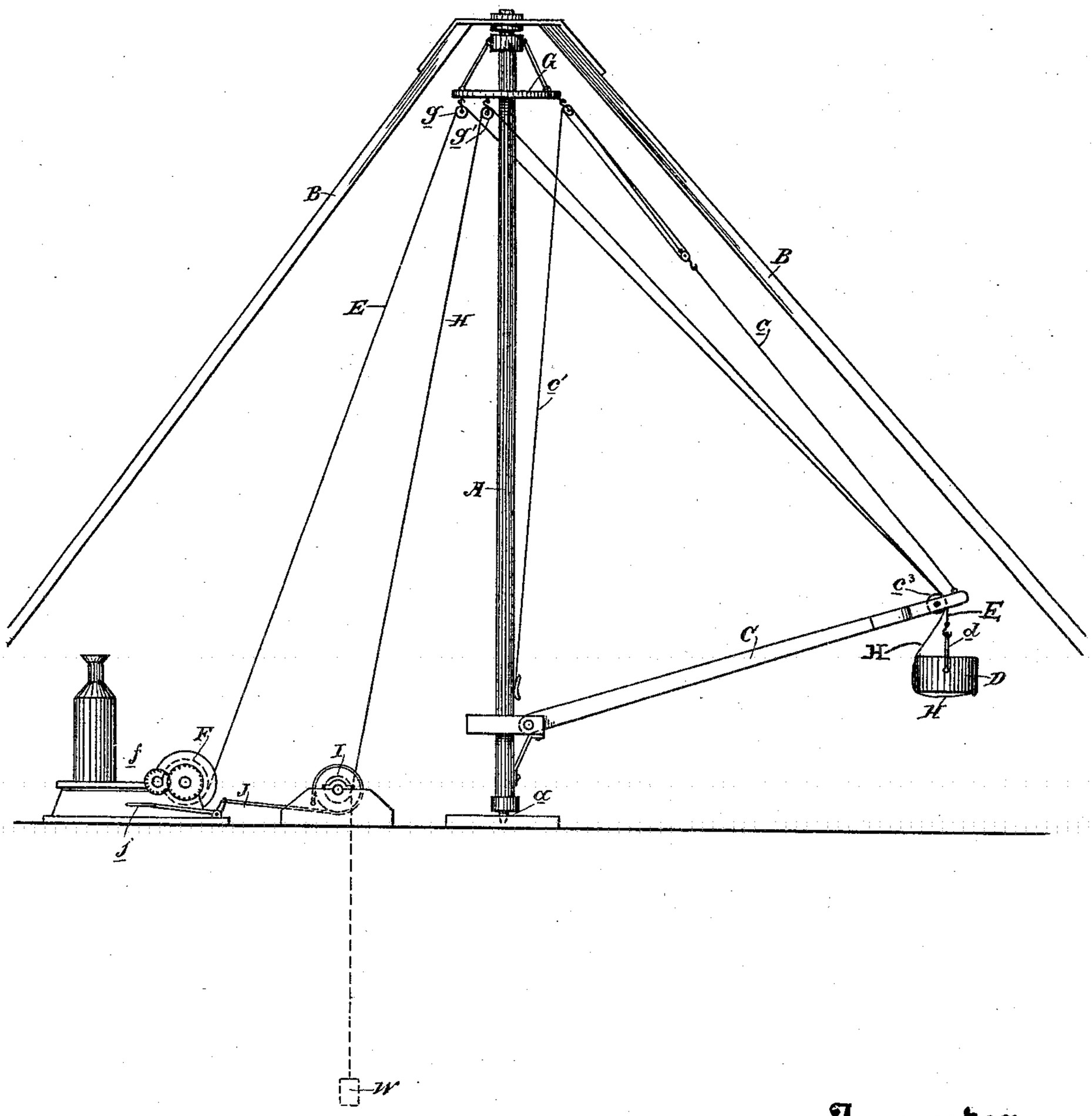
(No Model.) 2 Sheets—Sheet 1.

J. W. KINSMAN.

SWINGING CRANE.

No. 488,076. Patented Dec. 13, 1892.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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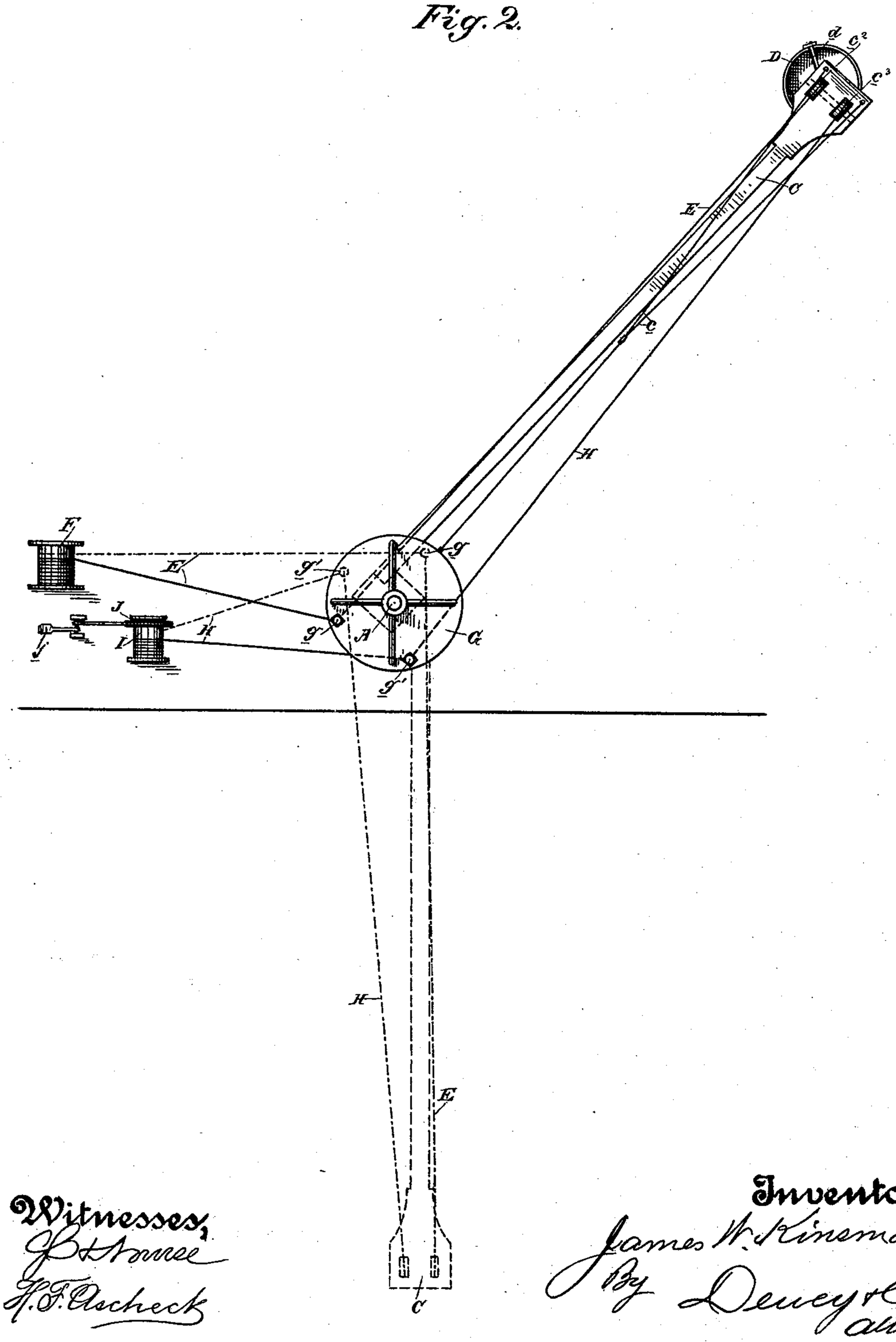
No. 488,076. Patented Dec. 13, 1892.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES W. KINSMAN, OF SAN FRANCISCO, CALIFORNIA.

SWINGING CRANE.

SPECIFICATION forming part of Letters Patent No. 488,076, dated December 13, 1892.

Application filed March 5, 1892. Serial No. 423,914. (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 Swinging Cranes; 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 swinging cranes for loading and unloading vessels and other carriers and for removing and depositing material.

My invention consists in the novel arrangement and construction of parts hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a simple and effective crane adapted to be easily operated and not liable to confusion or complication.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is an elevation of my swinging crane. Fig. 2 is a plan of same.

A is the mast of the crane stepped at its lower end, as shown at *a*, whereby it may have an axial movement. This mast is supported by suitable guides or braces B. Pivoted to the mast is the boom C, supported adjustably by the connecting-brace *c*, the fall *c'* of which extends down to and is secured to a cleat on the mast.

D is the bucket, tub, or other carrying receptacle. This has the usual bail *d*.

E is the hoisting-rope. At one end it is wound upon the drum F of the engine *f*. It thence passes upwardly through a block *g*, suspended from a lever G, secured upon the upper portion of the mast, and from this block it extends downwardly over a guide-sheave c^2 in the end of the boom, and is connected at its lower end with the bail *d* of the tub D.

H is the tripping-rope. This at its inner end is wound several times upon a drum I, so as to make frictional contact therewith, and it has suspended from its extremity the weight W. The tripping-rope passes upwardly over a guide-block *g'*, secured to the lever G, and thence downwardly around the guide-sheave c^3 in the outer end of the boom C, and its lower end is secured to the tub D in such a manner as to tilt or invert said tub by turning it about its pivotal bail connections. The lever G, though it may be of any suitable form, is here shown as a disk or wheel.

J is a brake mechanism which operates upon the drum I of the tripping-rope, and said brake is operated by the foot-lever *j* in convenient position for the engineer. The positions of the guide-blocks *g* and *g'* upon the lever are such (as shown in Fig. 2) as to turn it under the pull or strain of the ropes E and H, as will be seen in the following description of the operation of the crane.

When the tub is at its lowermost limit and is loaded, the position of the boom C is as shown in the dotted lines of Fig. 2. In this position it will be seen by the dotted lines that the hoisting-rope E passes from drum F to pulley *g*, which at this time is turned with the lever-disk G to the upper right-hand corner, and it thence extends at an angle outwardly, inclining downwardly to the end of the boom and thence down to the hub. The tripping-rope H in this position, as will be seen by the dotted lines, extends from its drum I diagonally to its pulley *g'*, which at this time is turned with the lever-disk G to the upper left-hand corner, and thence extends outwardly to an angle to the end of the boom and down to the tub. Now, to raise the tub and swing the boom the drum F is rotated, whereby the hoisting-rope E is wound up. On account of the bent course of this rope around the pulley *g* and on account of the position of said pulley on the lever-disk G, said disk will be turned as a crank, causing the pulley *g* to move toward the vertical plane of the drum F. Thus at the same time that the tub is hoisted the mast is turned and the boom is swung. This movement of the mast is due to the positive pull of the hoisting-rope E on the lever-disk G, and the momentum acquired in swinging the boom to the position in which the hoisting-rope straightens itself and lies in the same vertical plane will carry said boom beyond this position to the position desired for dumping the tub—such position, for example, as is here shown by the full lines of Fig. 2. During this hoisting of the tub the slack of the tripping-rope H is taken up by the depending

weight W. Now in the position of the full lines shown in Fig. 2 it will be seen that the tripping-rope H passes from its drum I to the pulley g', and thence at an angle to the end of the boom and to the tub. Now to dump the tub when it has arrived at the position shown in the full lines the operator places his foot upon the lever j, whereby through the brake J he holds the drum I stationary, and at the same moment he frees the drum F, whereby the hoisting-rope E may pay out. The tub being now freed of the hoisting-rope tends to descend, but being held by the tripping-rope, which is now stationary by reason of the fixing of the drum I, the tub is inverted because said tripping-rope is connected with its bottom. At the same time that the tub is inverted and the position and condition of the parts being as described—namely, the rope E free to pay out and the tripping-rope H held tight—the boom begins to swing back again. This movement is occasioned by the strain on the fixed rope H, which strain is due to the holding of said rope and the weight of the tub D, which weight acts the same as a pull upon said rope. Said rope being bent from a vertical plane, as shown, and the position of the pulley g' being such that it can be pulled toward the vertical plane of the drum I, the crank-disk G will under this pull carry the pulley g' over toward the plane of the drum I and thus swing the mast. In this case, as in the former, the momentum acquired by the positive pull or strain of the fixed rope H will carry the boom beyond the vertical plane of said rope when straight and around to its initial position shown in dotted lines. When this position is reached, the rope H is freed, and the rope E being free, also, the tub can be lowered. The time and amount of movement of the mast can be regulated by a suitable brake applied to it.

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

In a swinging crane, the combination of the axially-turnable mast having a boom, a means secured to the upper end of the mast constituting a leverage and carrying the guide-pulleys or blocks g g', the hoisting-rope passing through one of said pulleys or blocks and suspending the bucket or tub from the outer end of the boom, a winding-drum for operating said rope, a tripping-rope passing through the other of said pulleys or blocks and secured to the bucket or tub in a position to invert it when pulled upon, a separate drum for holding and relieving said tripping-rope, means for revolving the drum to take up the slack of the tilting-rope when the hoisting-rope is being wound up, and a brake mechanism for controlling said separate drum, substantially as herein described.

In witness whereof I have hereunto set my hand.

JAMES W. KINSMAN.

Witnesses:
S. H. NOURSE,
H. F. ASCHECK.