

(No Model.)

2 Sheets—Sheet 1.

A. E. BROWN.

HOISTING AND CONVEYING MACHINE.

No. 370,311.

Patented Sept. 20, 1887.

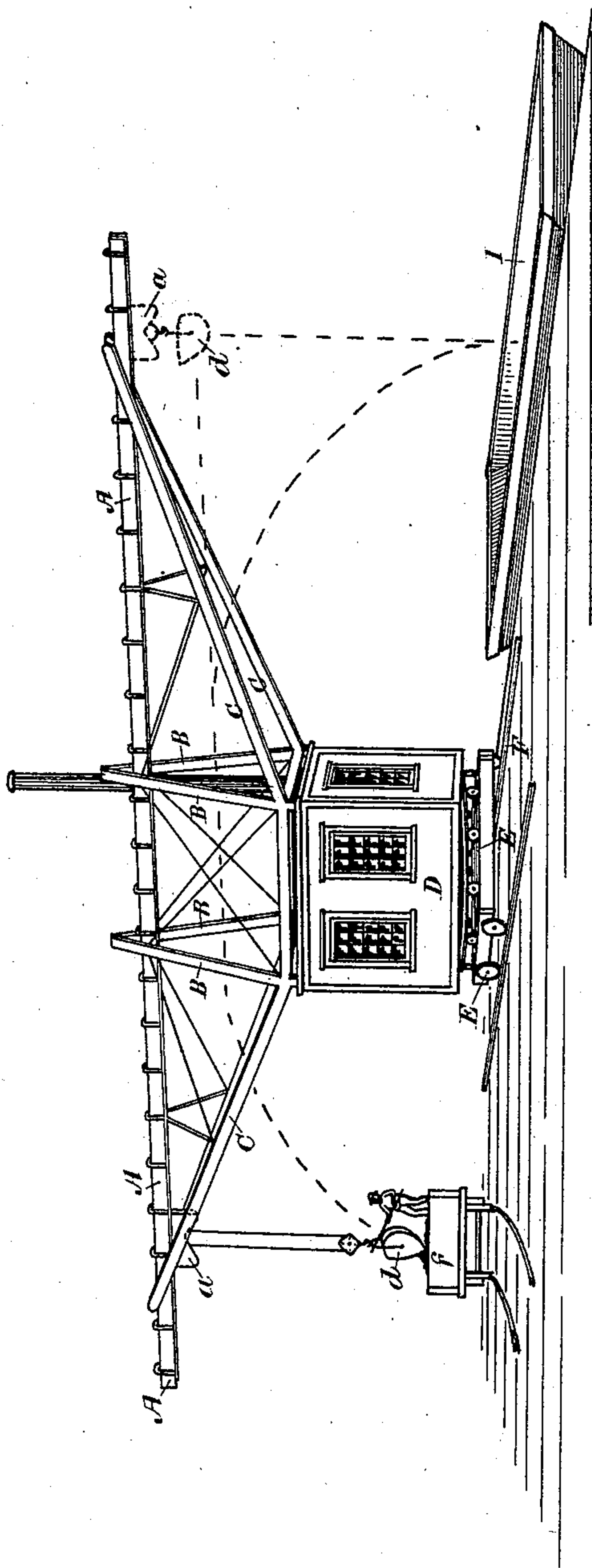


Fig. 1

Witnesses.

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H. Hansen.

Inventor

Alex. E. Brown.

By J. H. McIntire, Atty.

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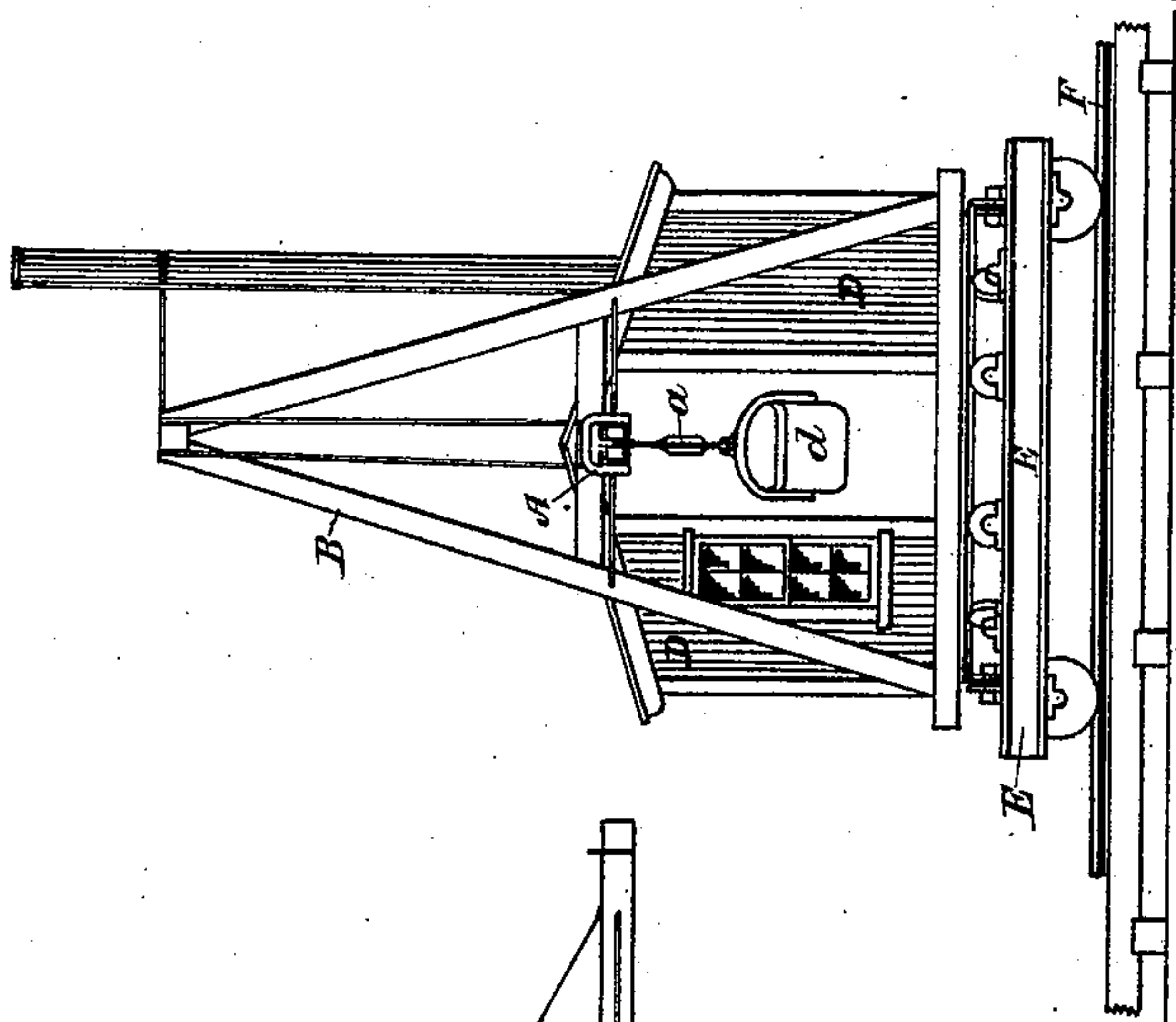


Fig. 3

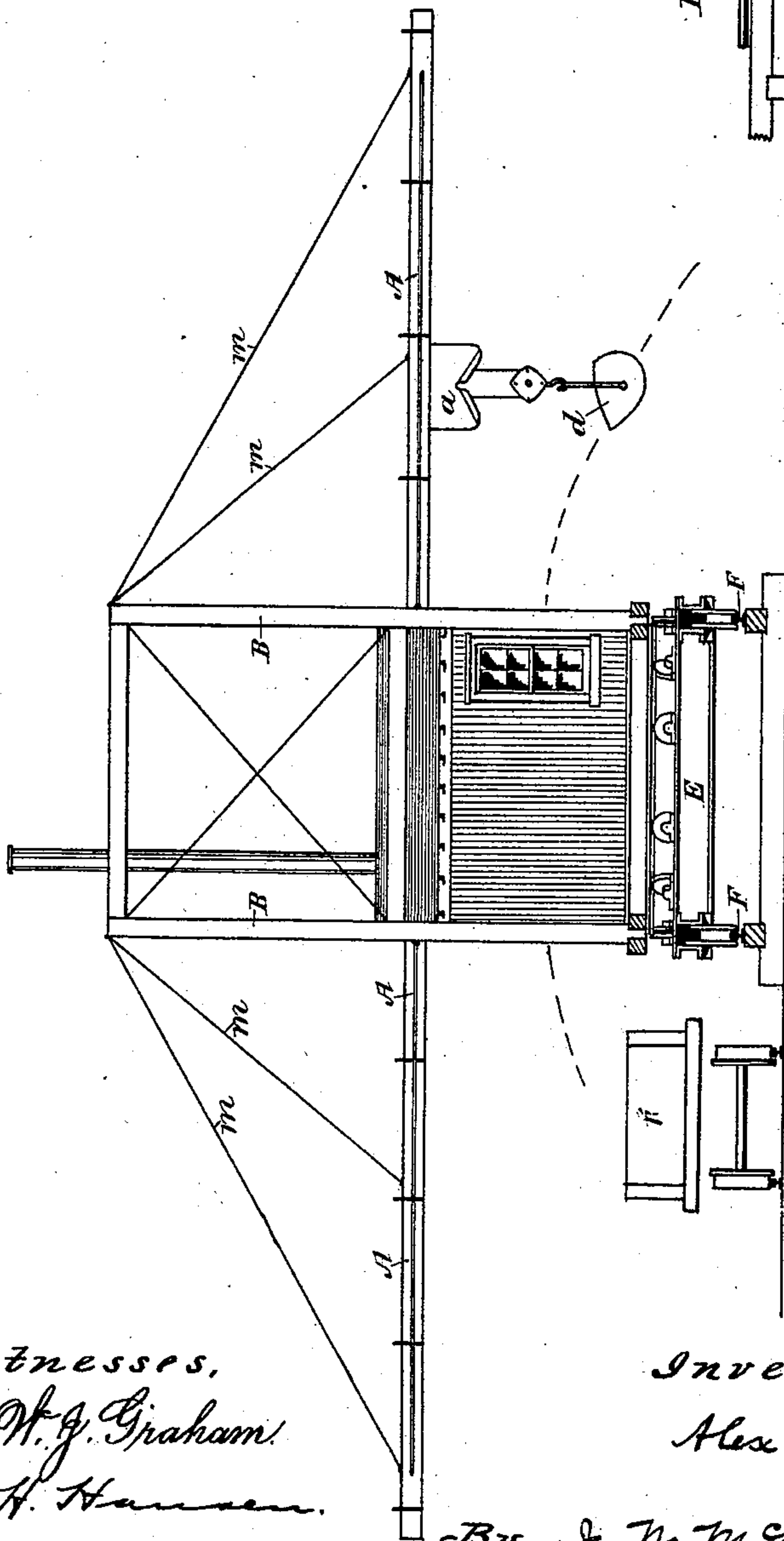


Fig. 2

Witnesses,
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By J. W. McIntire. Atty.

UNITED STATES PATENT OFFICE.

ALEXANDER E. BROWN, OF CLEVELAND, OHIO.

HOISTING AND CONVEYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,311, dated September 20, 1887.

Application filed March 15, 1887. Serial No. 231,025. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER E. BROWN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hoisting and Conveying Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to a new and useful improvement in elevated tramways for hoisting and conveying machines of that species which are designed more particularly for lifting materials and transporting them short distances to be filled into receptacles located either at the same or at a different elevation from that of the locality or receptacle from which the material is taken—as, for instance, in cases where material is taken from boats at a dock and transported or shipped over to cars on tracks contiguous to the dock, or where the material is taken from a certain locality and conveyed a short distance and to a different level for placement in cars or boats for transportation. For such kinds of work it has been customary previous to my invention to employ some sort of crane-like device, in connection, of course, with a suitable tramway, hoisting and conveying machine, and machinery for driving the same, constructed in such manner that substantially the entire weight of the overhanging or projecting boom or tramway would be located at one side of the center of gravity of the pier or house containing the machinery, adapted, as usual in such cases, to revolve about a vertical axis and to travel laterally upon a supporting-railway. I propose to provide for use a contrivance for such purposes in which the conveyance of the material by the movement of the machine on the tramway may be effected without materially revolving the pier or truck upon which the superstructure is supported, and in which the entire superstructure will be balanced, as shown, upon a pier and house truck, so that the entire weight of the superstructure will act at the center of gravity of the truck and pier, and thus permit the building of the entire contrivance much lighter, without danger of being tipped laterally by any amount of weight suspended at either end of the overhanging

tramway in the hoisting and conveying buckets.

To enable those skilled in the art to which my invention relates to understand and practice the same, I will now proceed to more fully describe it, referring by letters of reference to the accompanying drawings, which form part of this specification, and in which I have illustrated my invention carried out in those forms which are the best now known to me, and in which I have so far successfully practiced my improvement.

In the drawings, Figure 1 is a hoisting and conveying machine constructed according to my invention and arranged to operate for the purpose of lifting material from a boat or boats alongside of a dock and conveying the material to and discharging it into cars on shore. Fig. 2 illustrates in side elevation a modified form of my invention, in which the centrally-suspended tramway is located lower down with reference to the truck and engine house, and in which the house itself is divided into two parts, to permit the passage of the traveling buckets through the space between the two portions of the house for the more rapid and convenient transportation of the material from a locality slightly below the track on which the house rests to cars standing on the same level with the engine-house. Fig. 3 is an end view or elevation of the contrivance seen in side view at Fig. 2.

In the several figures the same parts will be found designated by the same letters of reference.

A is an elevated tramway or track, on which travels the machine *a* of the hoisting and conveying apparatus, which machine carries the hoisting and conveying bucket *d* in the usual manner, and is caused to travel back and forth by the action of the hoist rope or cable driven from the machinery located within the engine-house D. This track or tramway A is suspended from and supported by A-frames B, and is suitably braced to give it the requisite supporting strength and rigidity. In the case shown at Fig. 1 the said tramway is suspended immediately beneath the angular top portions of the A-frames, and is braced by compression members C, as shown, and the whole structure strengthened by suitable tie-rods and metal braces, while in the form of machine shown

at Figs. 2 and 3 the said track-beams A are located considerably lower down within the open space of the A-frames B, and are supported and strengthened by the tie-rods *m*, all as clearly illustrated.

At Fig. 1 the A-frames are supported upon a rectangular frame-work, about which is built the engine-house D, and which, with the house and its contained machinery, rests upon a suitable truck, E, upon which it is adapted to rotate, after the fashion of a turn-table, and in a manner and for purposes well understood. The said truck E is mounted upon and designed to travel on a suitable track or railway, F, for the purpose of shifting the position of the entire structure, in the usual manner. *f* in said figure represents the cars, into which the material is supposed to be loading, while I represents the boat alongside of the dock, from which the material is supposed to be taken by the hoisting and conveying buckets *d*.

At Figs. 2 and 3 the modified form of machine therein shown is represented as operating to lift material by its buckets *d* from a bed of phosphate rock, and to carry and discharge the same into the cars at *f* for transportation; and in this form of my machine or contrivance the A-frames B are constructed, it will be seen, so that their bases rest upon the base or floor of the house D, which contains the engine, and which is built around the lower portions of said A-frames.

It will be seen that in a structure made according to the novel principle shown and described the elevated tramway or track-beam A may be made of any desired length, (within reasonable bounds,) since by reason of having the entire structure balanced over the center of gravity of the pier and engine-house no tendency exists to tip or disturb the balance of the latter; and it will be understood that in a contrivance having the tramway thus suspended and balanced, the hoisting and conveying machine proper, being adapted to travel from end to end of the suspended tramway, may be operated so as to cause the hoisting and conveying buckets to ascend any desired distance after having been filled, and to travel along at the same time toward the opposite end of the tramway, and to there descend and discharge their contents without having to turn the tramway on its central support, as is necessary in the case of all contrivances in which the hoisting and conveying machine proper is supported by and travels upon a tramway or beam that simply projects out from the pier and engine-house at one side of the latter.

In the practical operation of a contrivance, such as is shown, for instance, at Fig. 1, the

material to be taken from the boat I is filled into the bucket *d*, and said bucket travels practically in a curved path of motion from the boat I upwardly and laterally over the engine-house D and thence downwardly over and into the car *f*, thus effecting the movement of the material by the combined ascent of the bucket *d* and the travel of the machine *a* on the tramway in the shortest possible line of travel from the boat I to the car *f*, and hence, of course, with the most economical expenditure of power and time.

In the modification shown at Figs. 2 and 3 the conveying-buckets *d* may be moved, it will be seen, from the locality at which they are filled with the material in a slightly-curved path of motion from said locality upwardly and at the same time toward the house D, and thence through the divided engine-house rearwardly on a nearly horizontal line to the car *f*, into which the material is to be dumped.

Of course various modifications other than the one I have shown may be made in the form and detail arrangements of the parts of the entire structure without departing from the principle of my invention. Further, it will be understood that, by reason of the entire structure being centrally supported above and balanced over a single supporting-pier and truck, the entire structure may be made with a much greater range of travel or action and at the same time much lighter, while possessing the requisite strength, than it would be possible to make the structure according to the old-fashioned principle.

Wishing it to be understood that I do not limit my claim of invention to the precise detailed structure shown, so long as the machine involves the novel feature original with me,

What I claim as new, and desire to secure by Letters Patent, is—

The combination, with the rotatory house-truck provided with the usual appliances of a hoisting and conveying machine and a pier mounted on said house-truck and operating to permit the free passage through said pier laterally of the load to be manipulated, of a suspended and balanced tramway having mounted thereon an ordinary trolley or carriage, the whole arranged and operating in the manner and for the purposes hereinbefore set forth.

In witness whereof I have hereunto set my hand this 31st day of August, 1886.

ALEX. E. BROWN.

In presence of—

E. T. SCOVILL,

CHAS. W. KELLY.