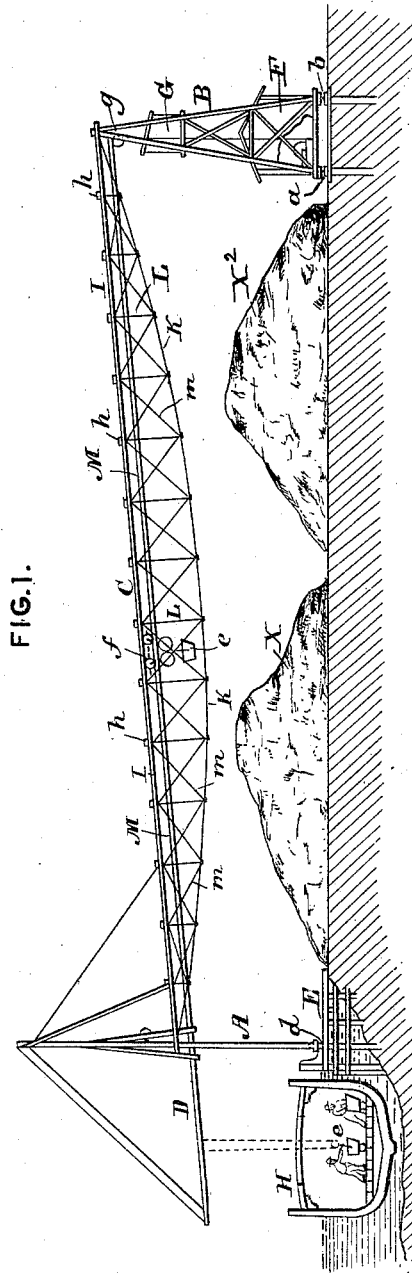
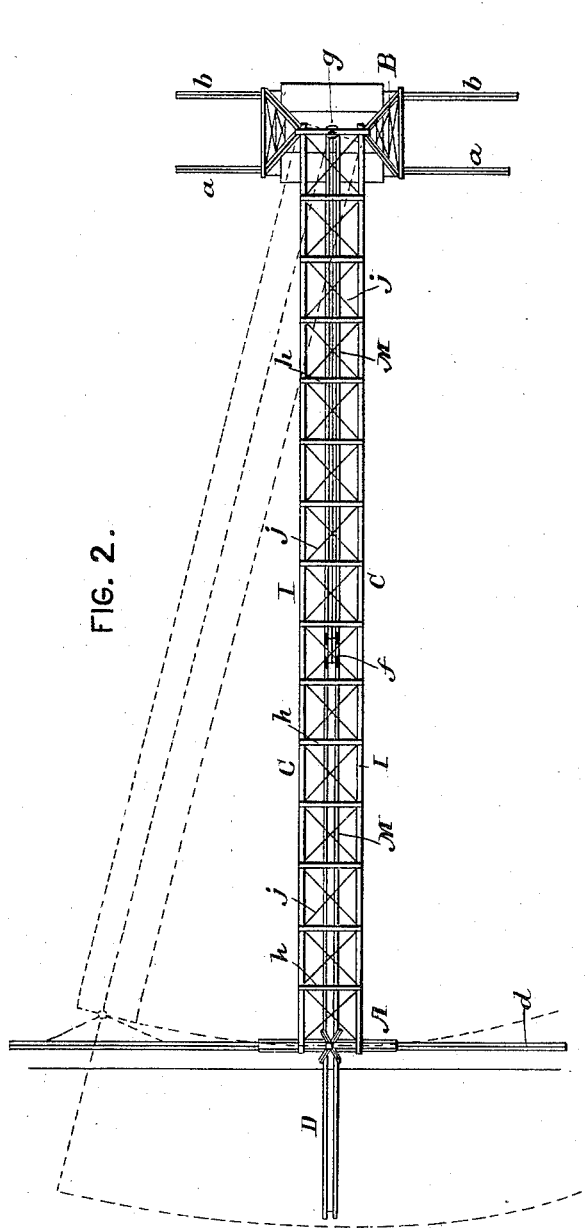


A. E. BROWN.

HOISTING AND CONVEYING MACHINE.

No. 302,706.

Patented July 29, 1884.



ATTEST.
J. Henry Kaiser.
Harry L. Amer.

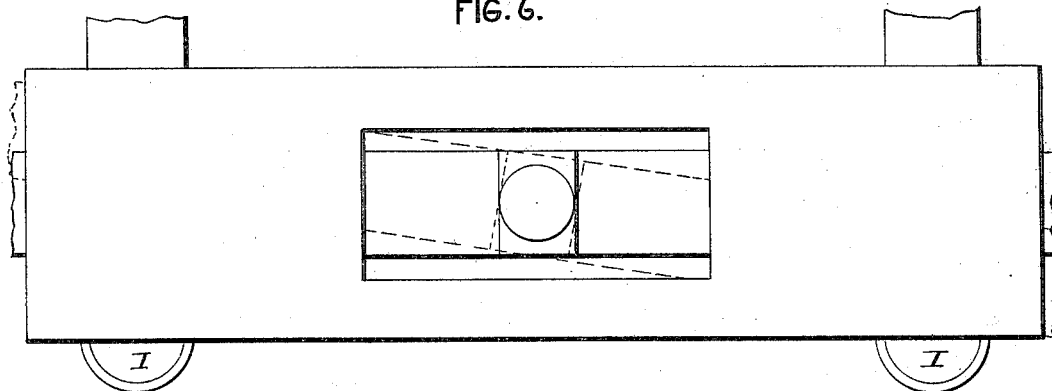
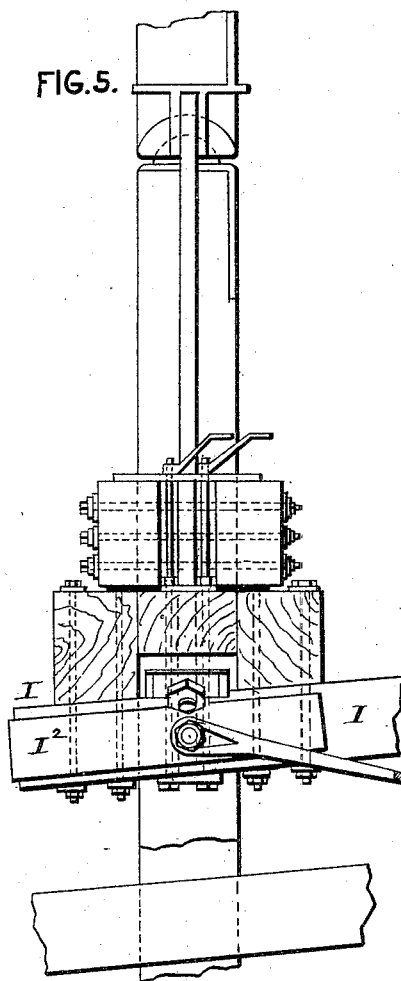
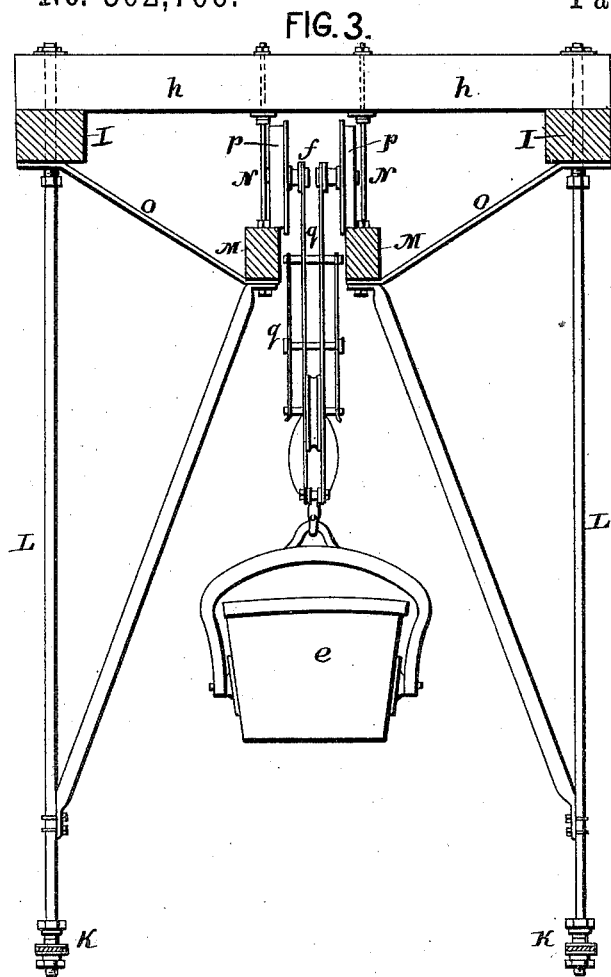
INVENTOR.
Alexander E. Brown.
By *J. N. McIntire*
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(No Model.)

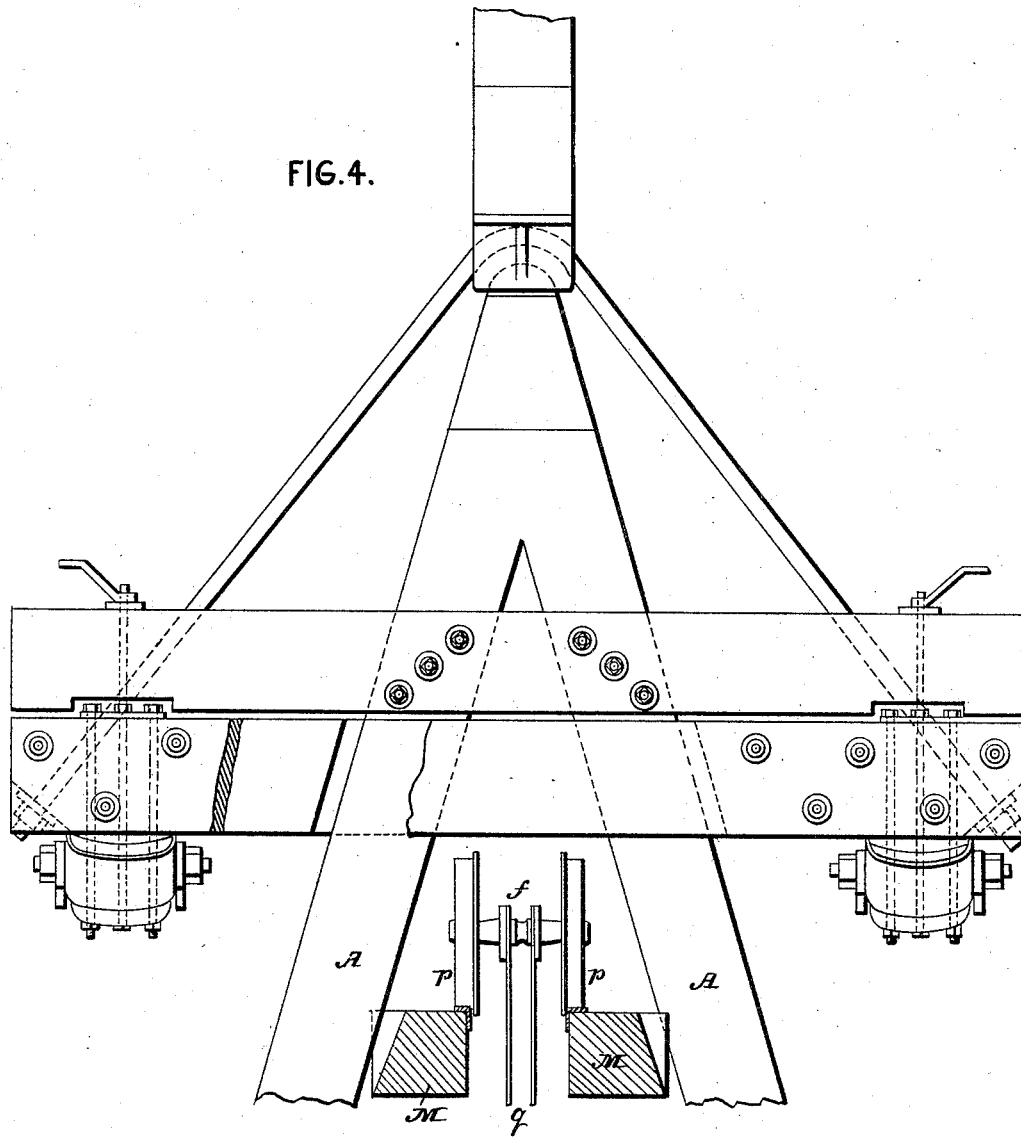
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Att'y.

UNITED STATES PATENT OFFICE.

ALEXANDER E. BROWN, OF CLEVELAND, OHIO.

HOISTING AND CONVEYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 302,706, dated July 29, 1884.

Application filed June 5, 1884. (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 certain new and useful improvements in that kind of hoisting and conveying apparatus in which a rigid or bridge tramway is employed in contradistinction to a cable-tramway. As heretofore constructed, this kind or type of hoisting and conveying machine, though most desirable on some accounts, has had some serious defects in practical operation; and to cure these objections and provide for use an apparatus of this type that shall be more efficient and desirable than any heretofore made is the main purpose of my present invention, which to this end consists in certain novel features of construction, which will be found hereinafter more fully described, and which will be more particularly pointed out in the claim of this specification.

To enable those skilled in the art to which my improvements relate to more fully understand my invention and practice the same, I will now proceed to describe it by reference to the several figures of the accompanying drawings, in which I have shown a bridge-tramway hoisting and conveying machine embracing my invention carried out in that form in which I have so far successfully practiced it.

In the drawings, Figure 1 is a side elevation of a machine made according to my invention. Fig. 2 is a top view of the same. Fig. 3 is a vertical cross-section drawn on an increased scale. Fig. 4 is a partial end view or end sectional view on a still larger scale, and Fig. 5 is a side view (same scale) of the devices shown at Fig. 4, while Fig. 6 is a top or plan view of what is shown at Fig. 4.

A is the outer, and B the inner, one of the two piers, on top of which are supported the ends of the truss or bridge C of the tramway, (see Figs. 1 and 2,) which, as usual, is supplemented with an apron at D, adapted to ex-

tend out over boats to be unloaded at the dock E. The inner pier, B, is adapted to rest and to be adjusted or moved sidewise (as occasion may require) on a double track, *a b*, about in the usual manner; but the outer pier, A, is composed of a single sort of A-frame, and rests and is adjusted laterally upon only a single-rail track, *d*.

At Fig. 1 I have illustrated the machine as at work discharging material from a boat at H.

The carriage of the machine and its dumping-bucket *e* are shown on a small scale at *f* of Figs. 1 and 2, and more plainly (on a larger scale) at Fig. 3, where, as well as in Figs. 4, 5, and 6, may be better seen, also, the detailed construction of the truss and other parts of the contrivance. The inner or rear pier, B, is composed, as shown, of a suitable framework of either iron or wood, (in the instance shown of wood) of sufficient base area to properly rest upon the usual track-wheels that run on the rails *a b*, and afford a steady support to the inner end of the truss or bridge C, which, as shown, rests at its rear end on top of the uppermost cross bar or beam of said pier, and is there pivoted (see *g*, Fig. 2) so that its forward end may vibrate horizontally about such point of pivotal connection to pier B in a manner and for purposes to be presently explained. The forward end of bridge C is suspended from a sort of ball-and-socket bearing at the top of the outer pier, A, which, as seen, is composed of an A-frame, in such a manner that said bridge or truss C at its forward end and the upper end of the said outer pier are capable of a sort of universal-joint movement relatively. The upper straight chord of the truss or bridge is composed, as seen, of two stringers or beams, *l*, arranged parallel with each other at a suitable distance apart, and tied or braced together by the horizontal cross-beams *h* (arranged parallel to each other and at right angles to *l*) and the diagonally-arranged brace-rods *j*. (See Figs. 2 and 3.) The lower and curved chord of the truss or bridge is composed of two plate-like bars, *K K*, (see Figs. 1 and 3,) of considerable width and little thickness, comparatively, which extend from end to end of the straight upper chord, and are secured thereto by means of a series of upright rods, *L*, and diagonal brace-

bars *m*. So far the structure, it will be seen, presents a shape in cross-section (see Fig. 3) resembling somewhat that of an inverted letter

U. A short distance below the level of the bottom of the upper chord of the truss are arranged centrally and a short distance apart the track-beams *M*, for the truck or wheels of the hoisting and conveying carriage or machine proper to run on. These track-beams *M* run, of course, parallel with each other and parallel with the upper chord or top of the truss, and are suspended, braced, and wholly supported from the top chord cross-beams *h* by rods *N* and braces *o*. (See Fig. 3.)

Extending from the lower side of each of the beams *M* are a set of obliquely-ascending braces *o*, and a set of obliquely-descending lower chord brace-bars, the former of which are fastened at their upper ends to one of the beams *I* or the cross-beams *h*, and the latter of which are bolted at their lower ends to the lower portions of the rods *L*.

The carriage *f*, with its wheels *p*, bucket *e*, and other appliances at *q*, is supposed to be made and to operate about the same as these parts of other hoisting and conveying machines—such, for instance, as have heretofore been patented to me—and as they form no part of my present invention need not be further described herein.

From what has been so far explained in connection with the drawings, the following will suffice to explain the operation of my improved structure of bridge-tramway apparatus. The usual carriage or machinery at *f* is caused to travel back and forth to any desired extent on the rails or track laid on the track-beams *M*, and the bucket *e* being raised, lowered, and dumped by suitable means (as usual) under the control of the operator or attendant, (stationed at *G*,) the material to be handled is conveyed from a boat at *H*, and deposited, as at *X* *X'*, on shore, or may be otherwise disposed of as circumstances may require. Both of the piers *A* and *B* may be moved along on their respective tracks to materially change the location of the bridge, as may be necessary, as usual; but if it be desired to move only the outer pier, *A*, more or less sidewise—i. e., along on its track *d* without changing the position of the inner one, *B*—this may be done without difficulty and without any undue strain on any portion of the structure by reason of the capacity of the bridge or truss to swivel or turn on its pivotal connections to both piers, and the capacity of the outer pier frame, *A*, to tip over or inwardly at its upper end without getting out of perfect engagement and adjustment with the outer end of the bridge.

One of the great advantages of the construction of bridge shown, with the laterally-disconnected lower (curved) chords, *K*, and the track-beams *M*, located as shown and described, is the location of the track, so that the truck or carriage runs along within the truss-frame, and the bucket travels above the lower part of the truss, thus gaining head room, (for handling and piling stock,) in comparison with structures in which the bucket has to travel much lower down.

It will be seen that by the location of the track high up in the bridge and independent of the top or bottom chords, or suspended from the top cross-beams, not only am I enabled to have the machine and its bucket work so as to take up the least possible amount of headway, but I am also enabled to make the machine-track of as narrow a gage as possible to suit the proportions of the machine-truck and at the same time place the chords of the trusses at any suitable distance apart to acquire the necessary stiffness and strength in this structure against lateral or side pressure, which is a very important and necessary consideration in trusses of long span.

Of course many of the details of construction of my improved bridge-tramway apparatus may be varied without changing the novel principle thereof, and either one of the new features of the contrivance shown and described may be used with more or less advantage without the employment in the same apparatus of the other feature.

Having now so fully explained my invention—carried out in the best forms now known to me—that those skilled in the art can understand and practice it, either in part or in whole, and either in the particular form in which I have so far used it or in some modified form, what I claim as new, and desire to secure by Letters Patent, is—

A bridge-tramway having the track stringers or beams for the carriage of the conveying-machine suspended directly from the top cross-beams and located high up within the structure, the latter being open below, so that the bucket of the carrying-machine may rise and fall anywhere within the length of the bridge, all substantially as hereinbefore set forth.

In witness whereof I have hereunto set my hand this 19th day of May, 1884.

ALEXANDER E. BROWN.

In presence of—

W. B. SCOTT,
JAMES CORRIGAN.