

(No Model.)

3 Sheets—Sheet 1.

A. E. BROWN.

HOISTING AND CONVEYING MACHINE.

No. 315,900.

Patented Apr. 14, 1885.

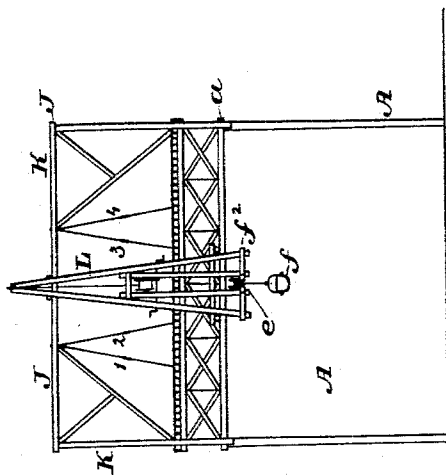


FIG. 2.

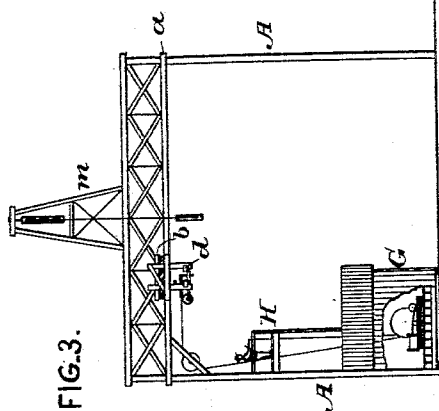
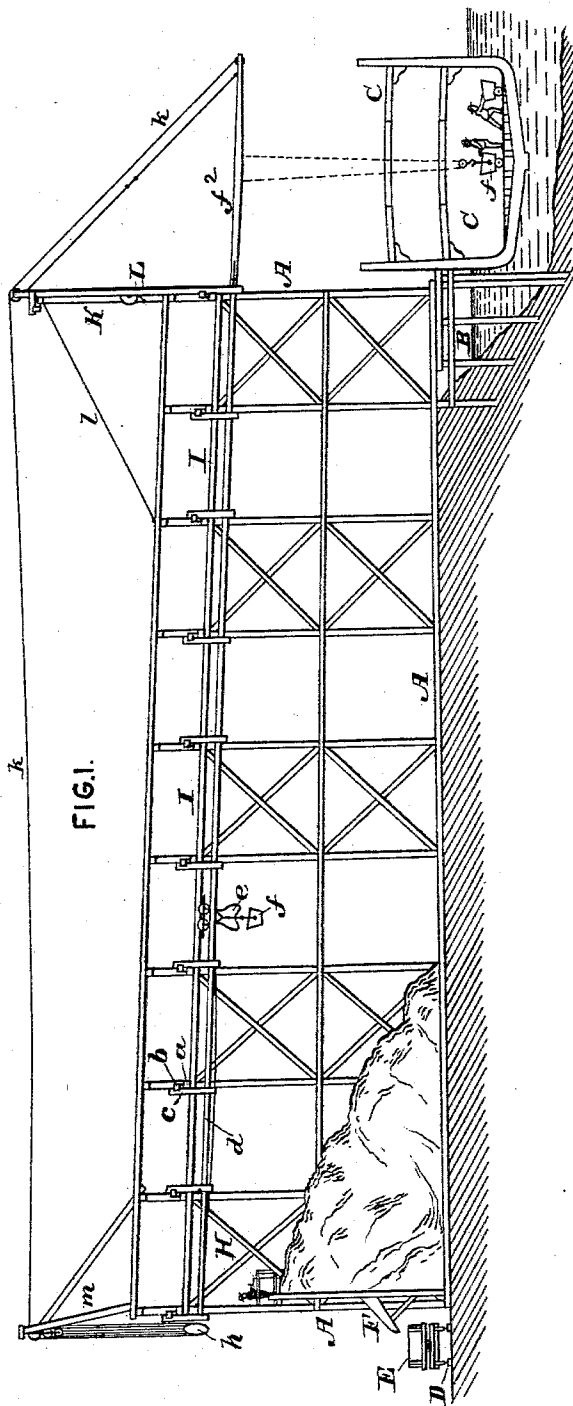


FIG. 3.



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ATTEST-

J. Henry Kaiser.
Jacob Felbel.

INVENTOR-

By Alex. E. Brown
J. N. McIntire atty.

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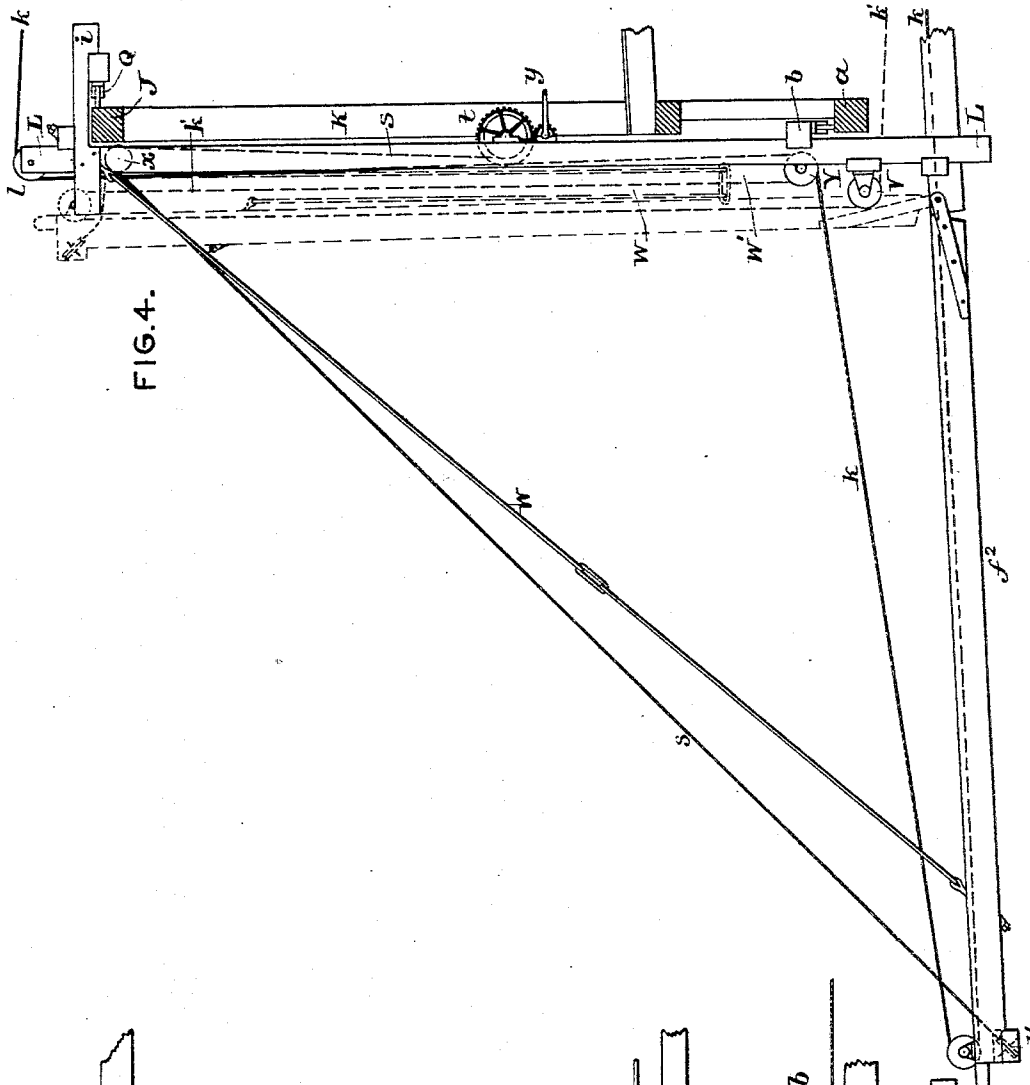


FIG. 4.

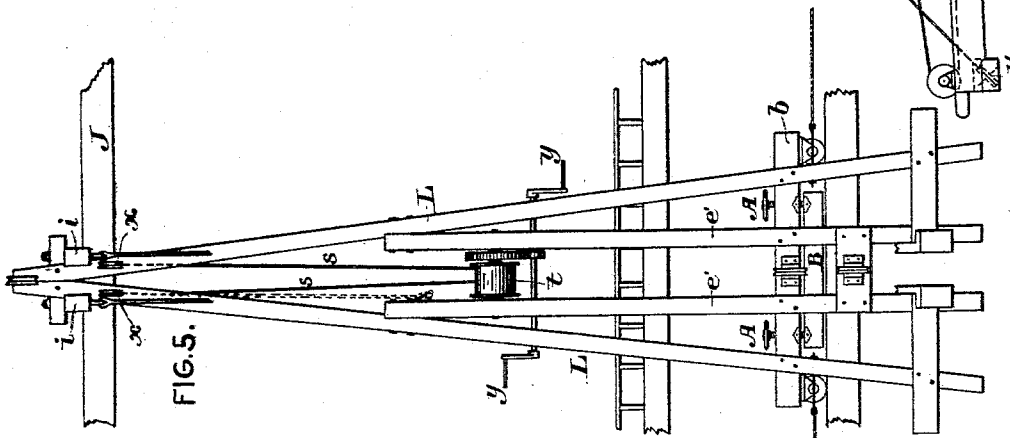


FIG. 5.

ATTEST.

of Henry Kaiser
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(No Model.)

3 Sheets—Sheet 3.

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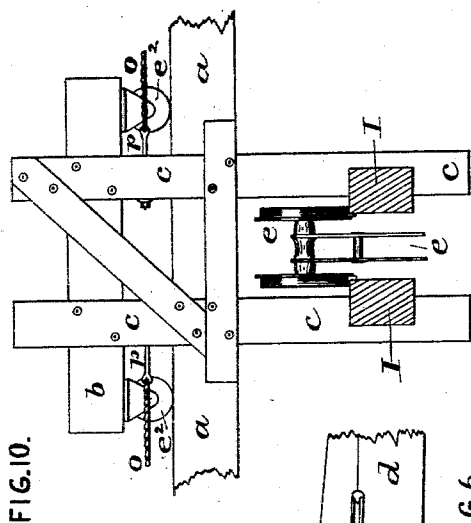


FIG. 10.

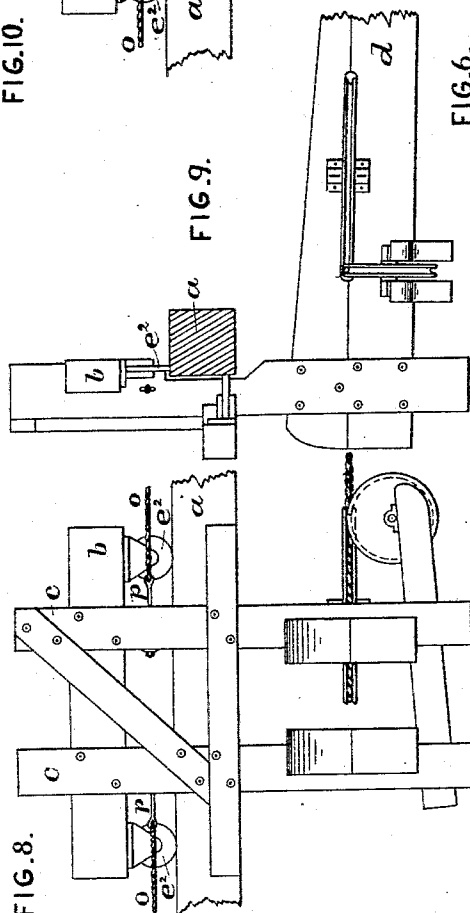


FIG. 9.

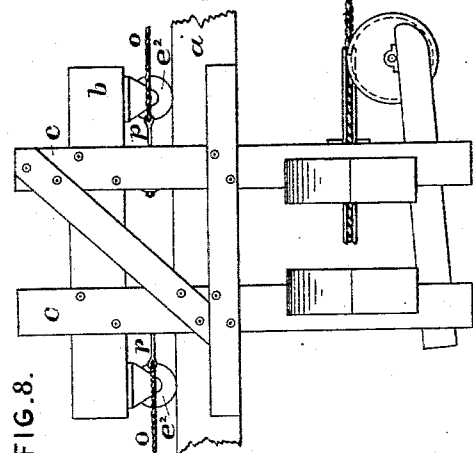


FIG. 8.

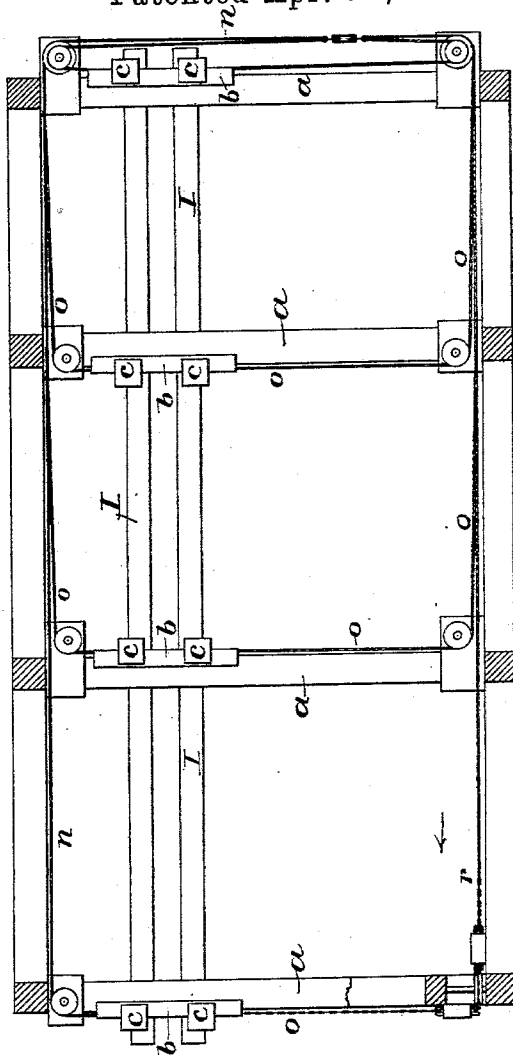


FIG. 6.

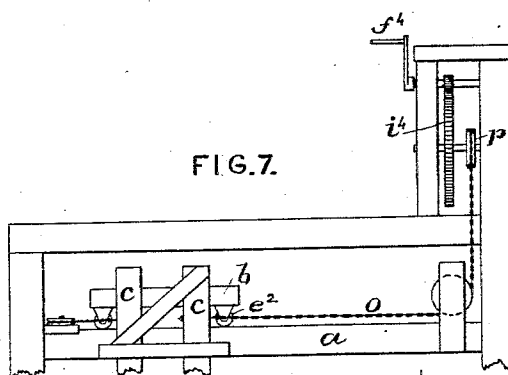


FIG. 7.

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J. Henry Kaiser
Jacob Felbel.

INVENTOR.
Alex. E. Brown
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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. 315,900, dated April 14, 1885.

Application filed December 29, 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 specification.

My invention relates to certain new and useful improvements in hoisting and conveying machinery adapted for use, in connection with a storage shed or building, for the purposes of hoisting coal, ore, &c., from cars or vessels, and distributing the same for storage under cover, and has for its main objects to provide for use, in combination with a suitable shed or storage building, a contrivance of such construction and operation as will accomplish the purposes above mentioned in the most desirable manner, and with the least expenditure of power, and a minimum amount of wear and tear of the machinery employed.

To this main end and object my invention consists in the several novel features of construction, which will be hereinafter more fully explained, and which will be particularly pointed out or defined in the claims of this specification.

To enable those skilled in the art to which my invention relates to understand and practice the same, I will now proceed to describe the several features of my improvement, 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 as to its several features in which I have so far successfully practiced it.

In the drawings, Figure 1 is a longitudinal section of a coal-shed or storage-building located near a dock or wharf, and having constructed within it or combined with it hoisting and conveying machinery, the whole constructed and operating according to my invention. Fig. 2 is a front view of the same. Fig. 3 is a rear view of the same. Fig. 4 is a partial vertical central section of the front end only of the shed and the hinged apron of the hoisting and conveying machine, drawn on

a larger scale, and illustrating the apron down in full lines and raised up in dotted lines. Fig. 5 is a front view of what is shown at Fig. 4 on the same scale. Fig. 6 is a detail plan or top view, on a different scale and with the parts condensed for convenience, showing the arrangement of devices for bodily moving laterally the rigid tramway which I employ in connection with the shed. Fig. 7 is a detail end view of what is seen at Fig. 6 in plan. Figs. 8 and 9 are respectively side and end detail views showing the upper part of the tramway and the sheaves on which the hoisting-rope is carried, while Fig. 10 is a detail view of one of the middle cords, showing how the tramway is supported, and showing also a section of the track-stringers and the location thereon of the truck of the conveying-machine.

In the several views the same part will be found designated by the same letter of reference.

A represents a coal-shed structure or frame storage-house adapted, in this case, especially, to the storage of coal, and located with its forward or outer end immediately over a dock or wharf, B, (see Fig. 1,) for the convenient reception into the shed of coal from transport vessels—such as seen, for instance, at C—and having its back end or rearmost portion contiguous to a railroad-track, D, into the cars E of which the accumulated material may be discharged by suitable chutes, F, or other means.

G is the engine and machinery house for the motive power of the hoisting and conveying machine, and is preferably located within and at the rear end of the shed or building, while at a suitable elevation above said engine-house is located a gallery or platform, H, (see Figs. 1 and 3,) which may be occupied by the operator or attendant, who from this lookout observes the condition of working machinery in the building, and controls the operations or actions of the hoisting-engines.

Within the building or shed, a suitable distance below its roof, is located a rigid or bridged tramway, I, on the track-beams of which is caused to travel, by the usual pull-up or hoist cable worked by the engine and by a counter-weight acting in the opposite direc-

tion, the truck of a suitable machine, *e*, from which depends a descending and ascending conveyer-bucket, *f*, that is raised and lowered in a well-known manner, and which, as usual, dumps its contents automatically. This rigid or bridged tramway is arranged and adapted to be moved bodily and laterally from side to side of the building, in a manner and by means which will be presently explained, so that the conveyer-machine traveling thereon may be used to elevate material and dump or discharge the latter not only at different points lengthwise of the building, but also at different localities widthwise thereof; and the ends of said bridge or tramway protrude slightly beyond the front and rear ends of the shed or building, as shown, in order, principally, that the projecting hinged apron *f*² of the tramway may travel either in a distended or closed-up condition exteriorly of the front of the building, while the rest of the tramway, with its attachments, may be moved laterally and bodily wholly within the building. This peculiarity of the construction and combination of the tramway and building will be best understood by reference to Figs. 1 and 2, where the folding or hinged apron *f*² is represented as projecting horizontally from the front end of the building, so as to be in operative condition for unloading the vessel *C*, and by reference also to Figs. 4 and 5, which on a larger scale represent the apron both in its distended and in its folded up conditions. If desirable, some means—such as clamping devices at *A* *B*, Fig. 5—may be used to clamp the apron end of the tramway, (or the end truck of the latter,) when adjusted to a given position for work, to a stationary portion, *a*, of the structure, in order to insure greater steadiness to the movable or adjustable parts of the contrivance at or near the base of the hinged apron. In these figures, *K* represents the front frame-work of the building, which is extended up some distance above the roof, and in front of which is arranged the vertical sort of *A*-frame *L* that forms part of and travels with the bridge or tramway, and that is steadied or held in place at its upper end by means of rearwardly-projecting short beams or bars *i*, which extend across, over, and nearly in contact with the top beam, *J*, of the front frame-work, *K*, and are provided at *Q* (see Fig. 4) with vertical pivoted anti-friction wheels that travel and bear against the back side of said top beam, *J*. By these means the vertical *A*-frame of the tramway, that travels widthwise of the building and immediately outside of the front thereof, is maintained securely in a proper working position during the movements both of the tramway laterally and of the hinged apron *f*² during the raising and lowering of the latter.

The frame-work at the front of the building is suitably braced at its rear to the roof of the shed by means of braces or tie-rods 1 2 3 4, as shown, and the apron *f*² of the tramway is raised up by means of a duplex hoist rope

or cable, *s*, which, extending from a winding-up drum, *t*, passes over sheaves *x* in the upper end of the *A*-frame *L*, and thence downwardly and outwardly around the sheave *u*, near the outer end of the apron. The winding-up drum is shown as being hung in or mounted on the vertical braces *e* *e'* of the *A*-frame *L*, operated by suitable gearing and hand-cranks, *y y*, which are supposed to be manipulated by an operative on the roof of the building, while the folded-up apron *f*² is supported, when down, by a flexible tie-rod, *w*, that folds up into the condition seen at *w'* when the apron may have been lifted up into the position illustrated in dotted lines at Fig. 4.

At or near the rear end of the shed or building is located, projecting upwardly from its roof, a bracing-frame, *m*, from the upper rear portion of which depends the counter-weight *h*, that pulls in an opposite direction to that of the hoisting-engine of the conveying-machine *e*, the said counterbalancing-weight *h* being arranged to operate in conjunction with a series of block-sheaves or block and tackle in such a manner that the said weight will have to rise and fall but a short distance compared with the distance traveled back and forth by the conveying-machine *e*.

The bridge or rigid tramway *I* is suspended by a series of vertical bars, *c*, which are arranged in pairs, each pair of which is provided with a horizontal cross-bar, *b*, securely bolted in place, and each of said cross-bars *b* is provided with a pair of truck-wheels, *e*², (see Figs. 8, 9, and 10,) that rest and travel upon cross timbers or beams *a* of the shed or house, so that any movement lengthwise on said beams *a* of the truck-like or wheeled cross-pieces *b* will cause the stringers of the bridge or tramway *I*, that are suspended from said pieces *b* by the verticals *c*, to move laterally to the same extent; hence if the whole series of truck-like tramway-supporting pieces *b* be moved simultaneously and to the same extent in either direction, the entire tramway or its stringers *I* will be moved bodily and with a perfectly-parallel movement crosswise of the building to the same extent as the movement of said truck-like pieces *b*. To effect such bodily movement laterally of the tramway through the medium of truck-like devices that rest and travel on the cross-beams *a* of the building, *I* connect with opposite ends of each truck-like device pulling cords or chains *o*, (see Figs. 6, 8, and 10,) the ends of which are preferably secured to eyebolts *p*, fastened to the verticals *c*, and *I* extend such chains or cords from each of said trucks and in opposite directions around suitably-grooved wheels or idlers pivoted near the ends of the cross-beams *a*, and thence separately to a suitable source of power, which operates to work said cords or chains to pull on the entire series of trucks simultaneously and evenly in the same direction, for the purpose of moving the tramway bodily and evenly toward the other side of the building. This method or system of op-

erating on all the trucks at the same time and to precisely the same extent will be best understood by reference particularly to Figs. 6 and 7, where, for convenience sake, I have illustrated the entire system, although in a contracted condition and out of proportion. By reference to these figures it will now be seen that as an operator turns the crank-handle f^4 in one direction or another he will, through the medium of the gearing i^4 , mounted in suitable frame-work located, preferably, on the roof of the building, cause the cords or chains o to be wound in one direction or another on the drum or chain-wheel p , thereby causing all the cords or cables o to operate uniformly upon all the truck-wheel devices, from which depends the tramway to move all said truck-like devices uniformly in either one direction or another on the cross-beams a of the building, and thus effect a perfectly-even movement laterally of the entire tramway within the building.

Of course more or less modifications may be made in the details of construction and arrangement of the devices I have shown without departing from my invention in the particular of the means for moving the tramway laterally, so long as the means employed are such, as shown, that by operating simultaneously and evenly upon a series of tramway-supporting trucks the tramway itself will be moved sidewise within the building, as explained.

If a series of separate winding-up devices or motors could be successfully employed, each one operating on a single truck, such arrangement would effect the purposes of my invention; but I have found a single motor or driving mechanism connected with the series of truck-pulling cords or cables, and hence operating on all at the same time in like manner, to be a practically successful contrivance.

It will be seen that by having the forward end of the tramway protrude slightly beyond the front of the building, so that the apron f^2 can work entirely outside of the building in any position, I am enabled to produce an exceedingly strong and efficient structure for the described purposes; and that by the employment of the frame-work K at the front of the building, and the upwardly-extending A-frame L , so combined at its upper end with the cross-beam J as to be laterally supported therefrom and, at the same time, by reason of the anti-friction wheels Q , moved freely back and forth, I am enabled to provide efficient means for affording support to the outer end of the apron without injuriously affecting the intended free and easy movement of the whole tramway structure sidewise relatively to the building structure.

Of course many changes in detail may be made, and some one or more of the novel features of my entire contrivance may be used with more or less advantage without the rest. I therefore wish it to be distinctly understood that I do not limit my claim of invention to any precise details of construction so long as the general principle of construction and mode of operation be employed, nor to the use in one structure or contrivance of all the separable features of my invention or improvements; but,

Having now so fully explained the nature and operation of my invention that those skilled in the art can easily practice the same in various forms as to details, and either as to a part or all of the separate features of improvement, what I claim as new, and desire to secure by Letters Patent, is—

1. A bridge or rigid tramway supported at three or more points, and adapted to be moved bodily sidewise on a series of cross-beams or truck-like supports, substantially as and for the purposes set forth.

2. In combination with any suitable covered storage-building, a tramway for a hoisting and conveying machine, arranged beneath the roof of said building, and having its hinged apron projecting outwardly beyond and working wholly exteriorly of said building, all substantially in the manner and for the purposes set forth.

3. In combination with a shed or storage building, a laterally-adjustable tramway arranged inside thereof, and a hinged apron projecting beyond the building, an upwardly-projecting frame-work near the outer end of the tramway and exterior of the building, and a suitable supporting cross-beam at the end of the building, the whole arranged and operating together, so that said cross-beam affords proper support for the upper end of the projecting frame-work of the tramway, substantially as hereinbefore set forth.

4. A rigid tramway suspended by a series of truck-like carriers, and means for causing said carriers to move simultaneously upon suitable supporting cross-beams, substantially as and for the purposes set forth.

5. The combination of a series of truck-like tramway-supporting carriers with a single machine or mechanism for moving said carriers simultaneously, substantially as hereinbefore set forth.

In witness whereof I have hereunto set my hand this 17th day of December, 1884.

ALEXANDER E. BROWN.

In presence of—

GOTTLIEB GEUDER,
SAML. GIBBONS.