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J. E. WALSH.
Store-House.

No. 202,311. Patented April 9, 1878.

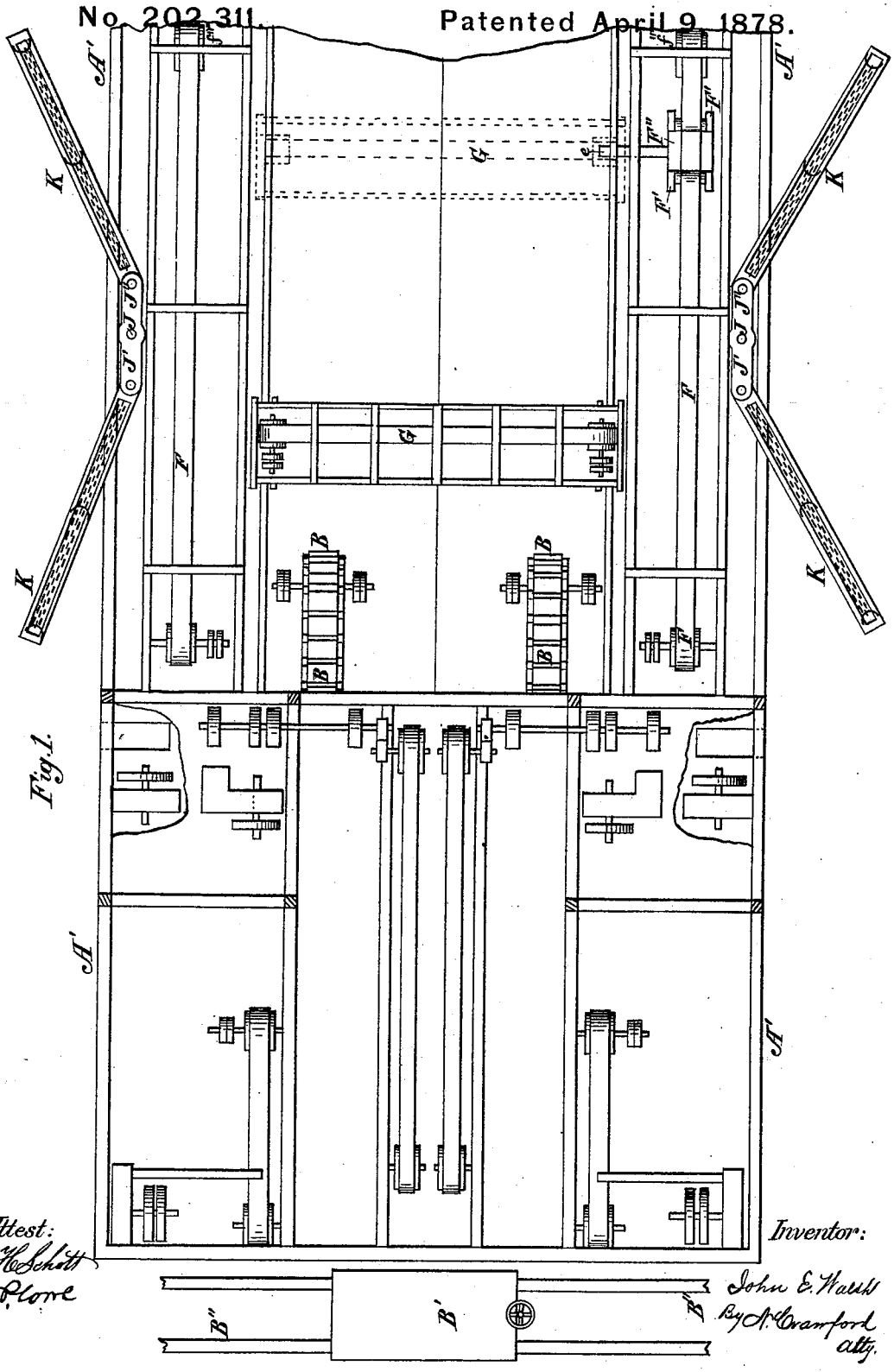

Fig. 1.

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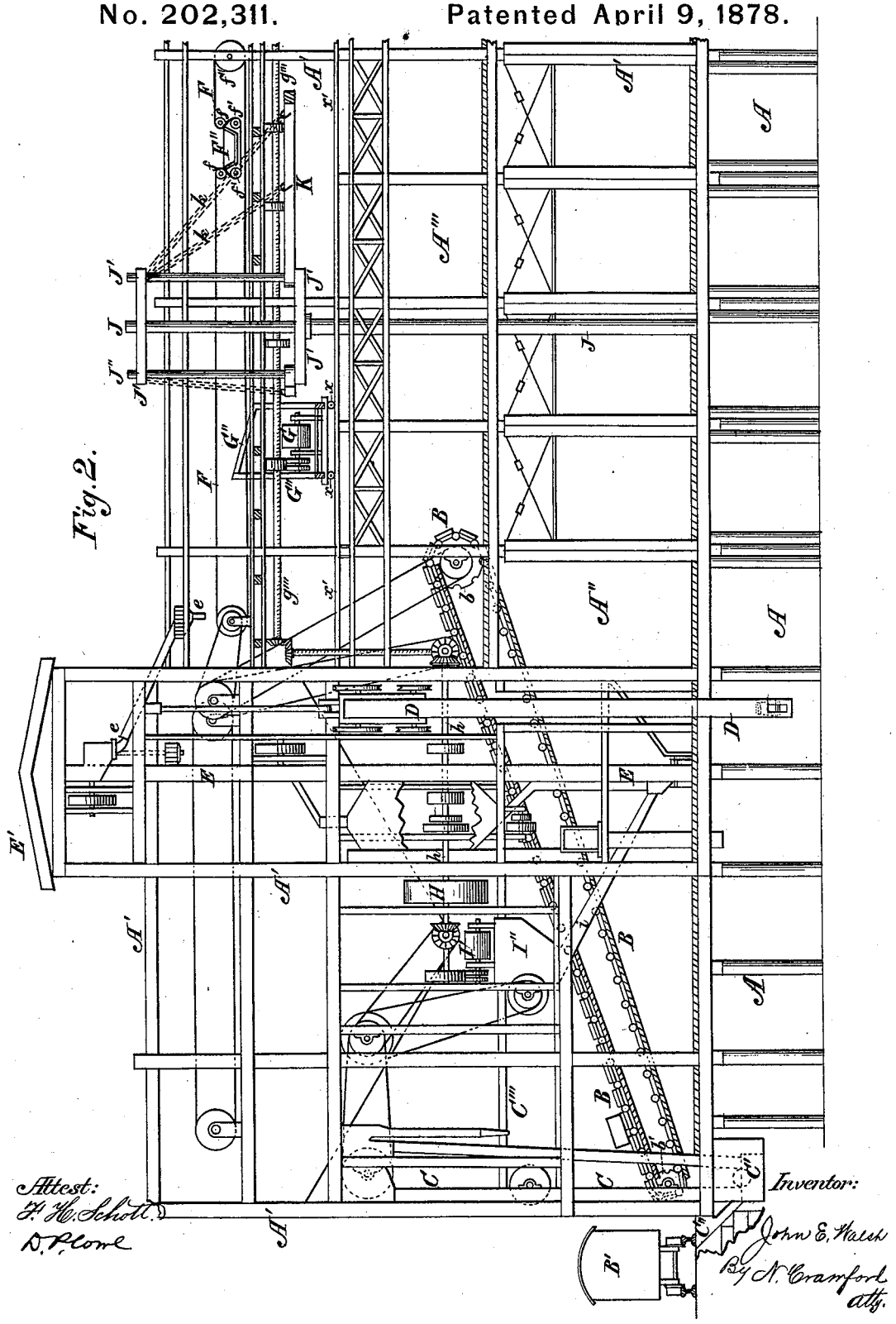

Fig. 2.

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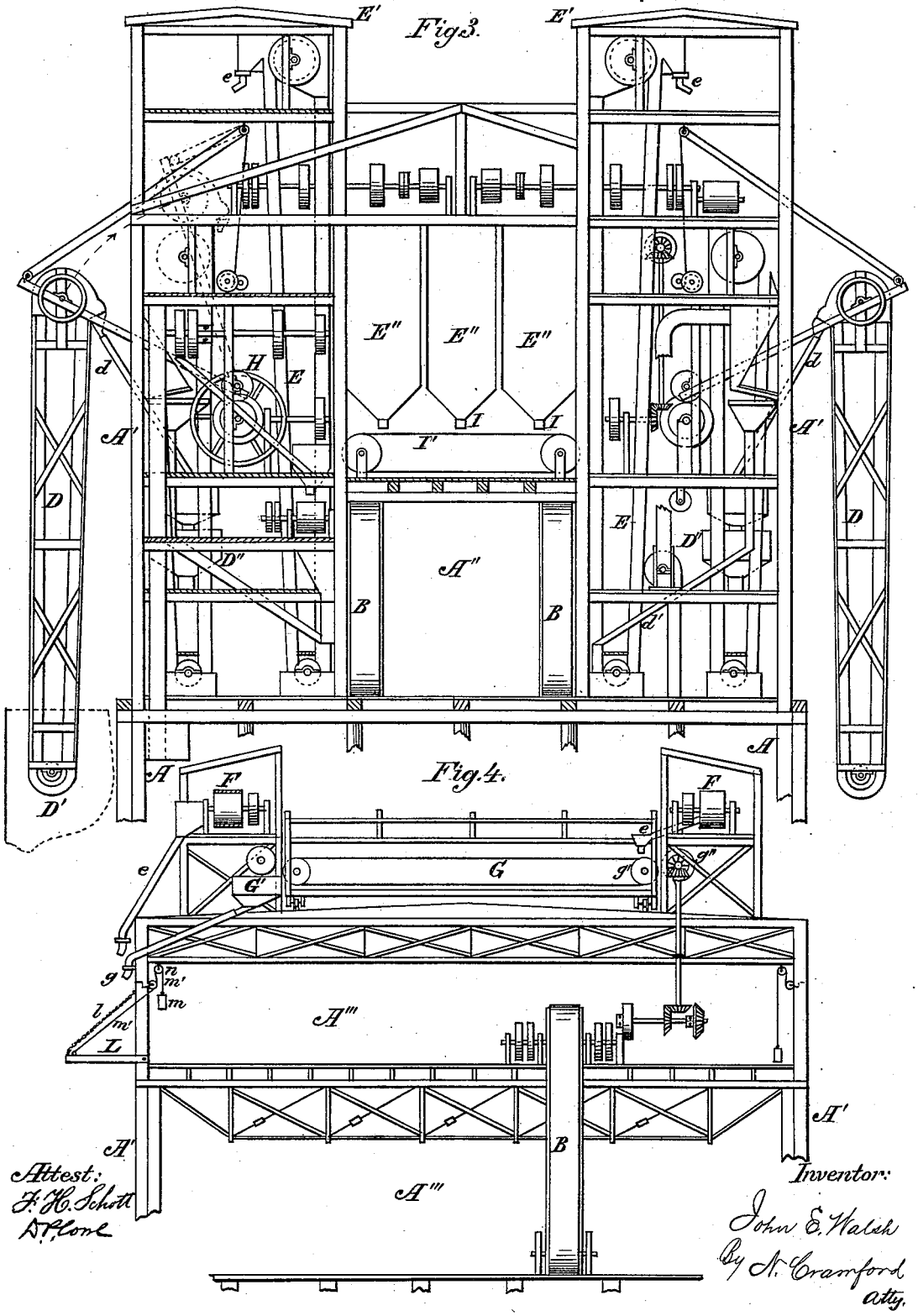
Fig 3.



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UNITED STATES PATENT OFFICE.

JOHN E. WALSH, OF NEW YORK, N. Y.

IMPROVEMENT IN STORE-HOUSES.

Specification forming part of Letters Patent No. **202,311**, dated April 9, 1878; application filed February 16, 1878.

To all whom it may concern:

Be it known that I, JOHN E. WALSH, of the city of New York, county and State of New York, have made certain Improvements in Store-Houses, and the necessary machinery contained therein for handling all kinds of goods, packages of merchandise, and grain, whether for storage or for shipping aboard vessels, of which the following is a specification:

The object of this invention is to construct store-houses upon docks or piers, of two or more stories in height, having the necessary machinery to receive goods, merchandise in packages, or grain in bulk from vessels at the sides or from railway-cars at the front, and deliver the same upon any floor of the different stories in the store-house, or to remove such goods, packages, or grain from the different stories of the store-house aboard ship, whether it is to be so delivered on one or the other of the three sides that the ship may be located; and it consists in the construction and arrangement of the house and the operating machinery therein contained to effect the object, as will be more fully hereinafter described.

In the drawings, Figure 1 represents a plan or top view of the store-house and its accommodations and arrangement of operating devices. Fig. 2 represents a side elevation of the same. Fig. 3 represents a front or bulk-head view, and Fig. 4 a broken transverse view, of same.

A represents the pier or dock upon which the store-house stands, and A′ the necessary frame-work of the building, while A″ is the lower story of the house, and A‴ the second story. Any number of additional stories may be added, if found necessary to do so, without departing from my invention.

B B are inclined elevators, starting from near the front or bulk-head of the building, from the lower floor or story A″, and extending to and above the floor on the second story A‴, and it may be continued or extend to any desired number of stories above when the house is of more than two stories in height. These elevators are endless revolving inclined floors, passing over proper wheels *b b′*, in the usual way of revolving endless floors or elevators of this description, and they are used for carrying up packages of freight that may be unloaded from the cars B′ on railway-tracks B″ at the front or bulk-head of the store-house to the floors above the lower story.

C C, Fig. 2, are grain-elevators of the ordinary construction for such purpose, of which there may be two or more, as desired, and having their lower ends in grain-tanks C′ below the floor of the dock, with receiving hoppers and spouts C″, to receive and direct the grain into the tank, to be elevated as it may be unloaded from the car or cars B′ standing at the front end of the store-house on track B″ to the upper part of the store-house.

D D are two swinging elevators or ship's-legs for discharging the grain from a canal-boat or vessel, D′, at the side of the dock, and are capable of being depressed to go into the hold of a vessel to receive and elevate the grain in such boat or vessel up into the store-house for storage, or for being weighed, cooled, and transferred to other devices for being delivered into the hold of another vessel, to be shipped hence.

d d are spouts from the heads of elevators D D, to direct the elevated grain to go into a weigh-hopper, D″, thence to a second elevator, to be delivered into bins for storing, or to other devices for distribution.

E E are high elevators, situated on either side of the house, and terminating in high towers E′ E′, high enough to spout and give direction to the elevated grain to go into bins E″ for storage, or to be conveyed horizontally to other devices for disposing of the grain, and delivering it to spouts to conduct it to the holds of vessels at the sides of the dock.

From the heads of elevators E in towers E′ are spouts and conductors *e* to deliver the grain so elevated upon a horizontal conveyer, F, or to spout it back to the bin again, when necessary, by giving the spout the proper direction under a proper construction for such purpose. Grain elevated by elevators D can be and is transferred from hopper D″ by spout *d′* to the foot of elevator E.

Conveyers F are long horizontal ones, built above the second story, and in this instance above the roof, with special roof over them-

selves, and extend, if necessary, the entire length of the house toward the shipping end, and may be made to be a revolving horizontal shaft with screw projections to force the grain to the place of its delivery; but I prefer to have it carried by an endless flat conveyer-belt running over end pulleys, in the ordinary manner of operating endless belts. The endless belts are made to pass over and about the four pulleys *f f' f f'*, and then continue on and around the end pulley *f''*, as seen in Fig. 2. These pulleys *f* and *f'* are placed in a frame, F', with one pulley, *f*, placed a little distance above the pulley *f'*, while the fellow pulley *f* is situated at a considerable distance from the first pulley, and far enough to have a receiving and directing hopper, F'', between them.

The frame in which the pulleys *f* and *f'* and hopper F' are contained can be located at any point in the length of the endless belt by simply slipping it to its position, and it also affords a support to the endless belt.

G is a transverse endless-belt conveyer, located above the top of the roof of the house, and receives the grain at any point of the length of the house from the longitudinal conveyer F and delivery-hopper F', and will deliver it into hopper G', Fig. 4, thence through spout *g* into a pipe or other means to convey it into the hold of a vessel or boat. Hopper G' is movable with the transverse conveyer G, so as to receive the grain at any point of the length of conveyer F. This conveyer is covered and protected by a framing and roof, G'', independent of the house-roof, and moves lengthwise of the house with the conveyer G on wheels *x* and track *x'*, while the pulley *g'* that drives the belt gets its motion from wheel *g''* on horizontal shaft *g'''*, Fig. 2, on which the wheel *g''* may slip and travel with the hopper F'; or belts and pulleys may be used for the same purpose.

All the parts that require motion in the above description are caused to move by the well-known means of belts and pulleys, friction or other gear on shafts, and driven by steam or other power, conveniently located and applied to the main pulley H on shaft *h*, and from thence by the train of gears and shafts or belts and pulleys, as seen in Fig. 2, to the most remote moving part.

The elevators are provided with leader-spouts, to direct the grain to any part of the house desired for it to pass; and when the grain is to be discharged from the bins E'' a gate, I, is opened at the bottom of such bin, and the grain falls upon a transverse horizontal conveyer, I'; thence is delivered into receiving-hopper I'', and through spout *i* to the bottom of high elevator E, to be elevated to the top of the tower, to be distributed where desired; and the grain raised by elevator C is spouted onto conveyer C''', thence into hopper I'', to be disposed of as desired.

J J are derrick-masts, one or more on either side of the house, and of sufficient height to have the double cross-trees J' J' and uprights J'' J'' carrying the swinging booms or arms K K high enough to receive and raise goods, merchandise, and packages from the ship's hold into any of the stories of the house, or for lowering such packages that are stored in the house into the hold of a vessel to be shipped hence, as may be required. *k k* are supporting-chains to the arms K, and freely swing therewith.

L L are platform-doors on the sides of the house, at the upper stories, pivoted or strongly hinged at the bottom to turn outward down to a horizontal position, as seen in Fig. 4, and when so turned outward are held in horizontal position by the brace chains or rods *l*, secured at one end to the upper inside of the door, and the other to the framing of the house.

When desired to close the doors, a weight, *m*, is attached to the end of cord *m'* that passes over pulley *n*, and the other end secured to the upper part of the door, as seen in Fig. 4; and by pulling the weight down the door will close, and the weight will hold it so. These doors L, when opened outward and thus secured, form a safe platform, upon which goods or packages can be received into or delivered out of the upper stories of the house to or from ships, as the case may be, by the derrick K at the sides. The derricks are operated and worked by the same power or engine as the other machinery in the house.

Dock store-houses have heretofore been constructed in the form of sheds, or one-story buildings, to receive all the goods either from land or water carriage, and great inconvenience is experienced in this method of handling goods, grain, and merchandise in one and the same house, as the steam-power is generally located on the only floor, and stevedores receive and discharge freight by teams on the same level, and no machines for handling freight other than raising or lowering it out of or into a vessel is used; and by constructing and adapting the house and machinery as above described, the goods, packages of merchandise, or grain are all handled and raised or lowered by machinery, whether received from cars by land-carriage or from vessels by water-carriage, thus reducing the cost of the present mode of handling and storing goods by manual labor alone, as all goods received by rail-car or street-trucks are placed in the upper stories of the house by engine-power and elevators, and only hands enough are required to give direction to the goods as they are carried by the power employed. Further, many times more goods can be handled on the same ground-space by my improvements in a given time than by the ordinary way of discharging or loading goods on board ship or from cars by hand labor, thus making a saving in the ground occupied for the receiving

and shipping of miscellaneous or mixed freight into or from a single-story dock or pier store-house.

Having thus described my invention, what I claim is—

1. In a dock store-house, the swinging elevators or ship's-legs D and intermediate devices, in combination with the high elevators E and spouts *e*, and devices for directing the grain into the hold of a vessel for stowing the grain for transportation, substantially as described.

2. In a dock store-house, the combination of the high elevators E, spouts *e*, and the longitudinal endless-belt conveyer F, in the manner and for the purpose substantially as described.

3. The endless-belt conveyer F, in combination with the movable frame F′, and pulleys *f* and *f′*, as and for the purposes described.

4. The combination of the conveyer F and frame F′, carrying pulleys *f* and *f′*, with the hopper F″, as and for the purpose described.

5. The transverse endless-belt conveyer G, in combination with the conveyer F and movable hopper F′, substantially as described.

6. The transverse endless-belt conveyer G, operated in a movable protecting frame and cover, G″, that is moved by wheels *x x* on ways *x′* in a direction parallel with the conveyer F, and at right angles with the direction in which the conveyer G travels, as and for the purposes described.

7. In a dock store-house, the combination of the conveyer F, conveyer G, receiving-hopper G′, and spout *g*, whereby the grain passed by conveyers F and G is directed into ships to be stowed as freight, substantially as described.

8. In a dock store-house, the double derricks J, situated at the sides thereof, and each provided with two booms or swinging arms, K, moving independently, as and for the purposes described.

9. In a dock store-house of two or more stories in height, the platform-doors L in the sides of the upper stories, to be swung out and down to form platforms to receive and discharge goods upon and therefrom, constructed and operating as described.

10. In a dock store-house, the combination of the derricks J K and platform-doors L, substantially as described.

11. In a dock store-house of two or more stories in height for mixed freight, the combination of the inclined elevators B, upright elevators C and E, ship swinging elevator D, conveyers C‴, F, and G, with their intermediate operating devices, and side derricks J K, all arranged and constructed to operate substantially as described.

JOHN E. WALSH.

Witnesses:
F. H. SCHOTT,
J. MASON GOSZLER.