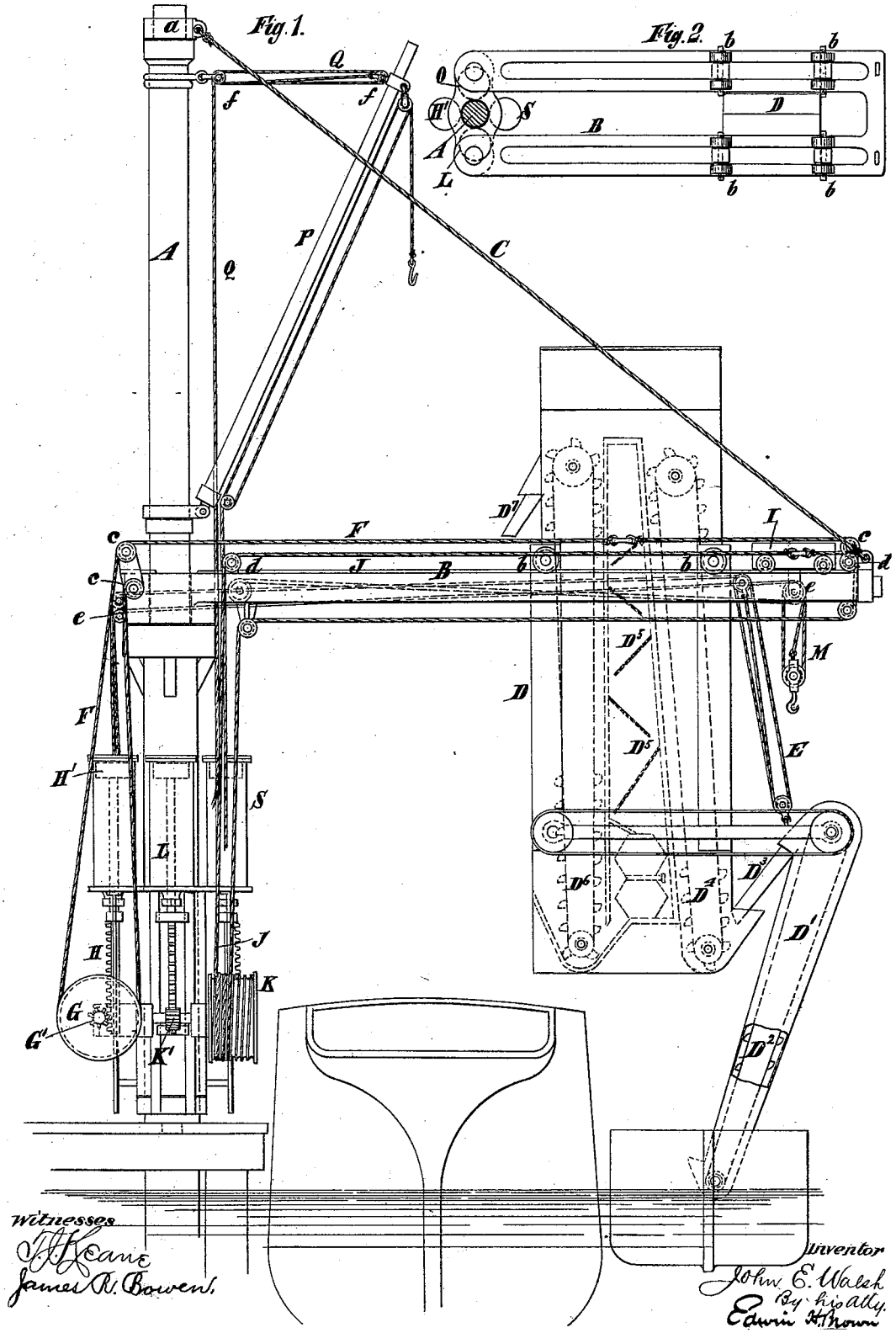
(No Model.) 2 Sheets—Sheet 1.

J. E. WALSH.

GRAIN ELEVATOR AND HOISTING APPARATUS.

No. 261,792. Patented July 25, 1882.



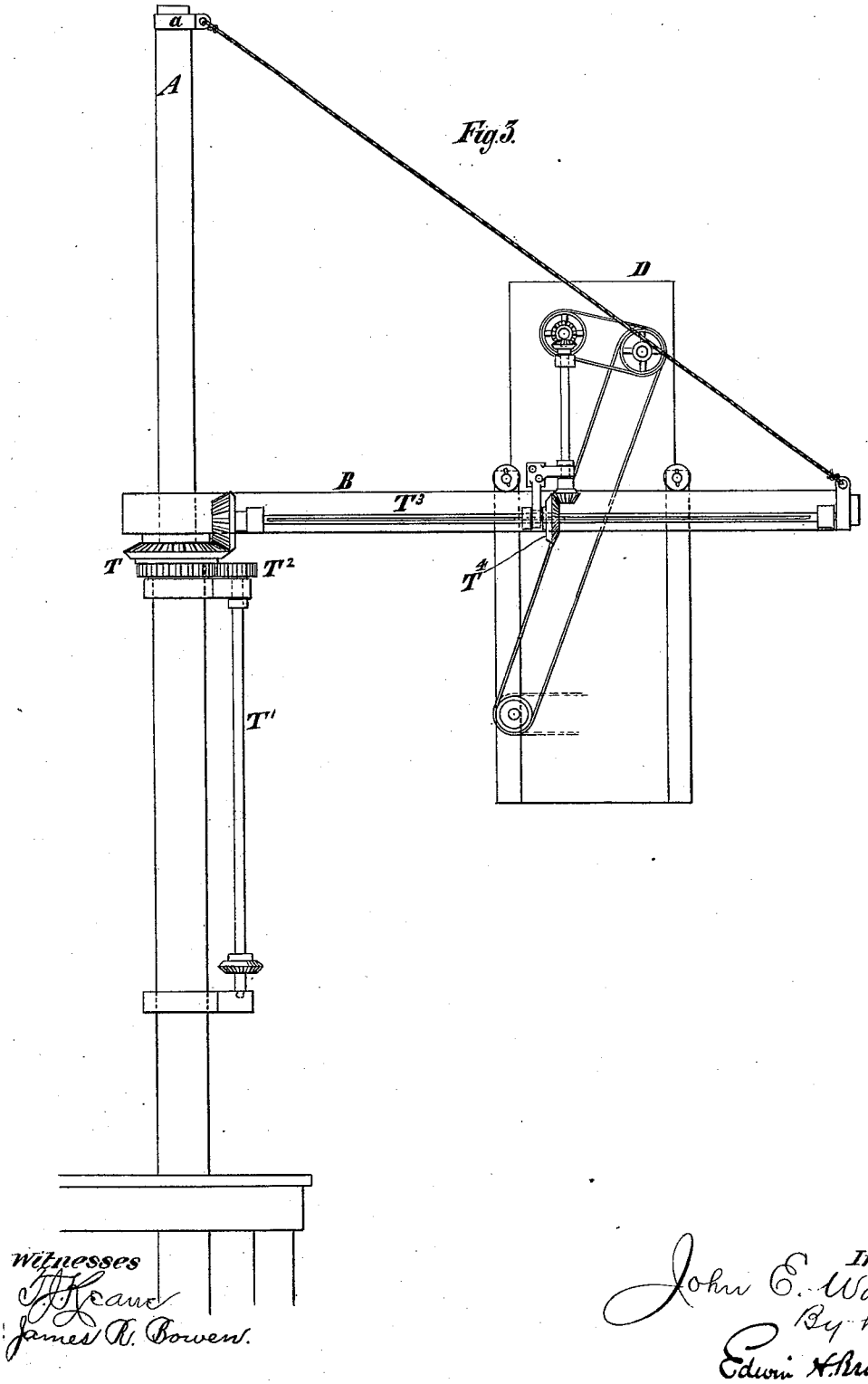
(No Model.) 2 Sheets—Sheet 2.

J. E. WALSH.

GRAIN ELEVATOR AND HOISTING APPARATUS.

No. 261,792. Patented July 25, 1882.

Fig. 3.



Witnesses
J. J. Keane
James R. Bowen.

Inventor
John E. Walsh
By his Atty
Edwin H. Brown.

UNITED STATES PATENT OFFICE.

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

GRAIN-ELEVATOR AND HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 261,792, dated July 25, 1882.

Application filed June 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. WALSH, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Grain-Elevators and Hoisting Apparatus, of which the following is a specification.

The principal object of my improvement is to dispense with the necessity for the floating grain-elevators which are now commonly used; and to this end the improvement consists in the combination of a mast erected on a wharf, an arm or arms supported thereon and adapted to be swung around into different positions, and a grain-elevator supported by and adapted to travel along such arm or arms.

The improvement also consists in the combination of a mast erected on a wharf or other place, arms supported thereon and adapted to be swung around into different positions, and a grain-elevator supported by said arms, so that it may travel along them, and extend up between them.

The improvement also consists in the combination of a mast erected on a wharf or other place, an arm or arms supported thereon and adapted to be swung around into different positions, a grain-elevator supported by said arm or arms, so as to be adapted to travel along the same, and means whereby the mechanism of the grain-elevator may be driven irrespective of the position of the grain-elevator upon the said arm or arms.

The improvement also consists in the combination of a mast erected on a wharf, an arm or arms supported by the mast, so as to be susceptible of being moved into different positions, a grain-elevator supported on the said arm or arms, a jack attached to the mast, a windlass connected to the jack, and tackle connecting the windlass with the grain-elevator, so that the latter may be moved along the arm or arms into any desirable positions.

The improvement also consists in the combination of a mast, a gaff connected thereto, a jack affixed to the mast, and means connecting the jack to the gaff, so as to enable it to raise and lower the same.

The improvement also consists in the combination of a mast, an arm supported thereby, a carriage adapted to travel along the said arm, a jack affixed to the mast, and means connecting the jack with said carriage, for the purpose of enabling the jack to move the same into different positions.

The improvement also consists in the combination of a mast, an arm supported thereby, a carriage adapted to travel along the same, tackle extending below the carriage, whereby articles may be hoisted, another set of tackle connected with the carriage for moving it, and jacks connected with the separate sets of tackle.

In the accompanying drawings, Figure 1 is an elevation of an apparatus embodying the improvement. Fig. 2 is a plan of a portion of the same on a smaller scale, and Fig. 3 is an elevation of certain parts of the apparatus.

Similar letters of reference designate corresponding parts in both figures.

A designates a mast or pole erected on a wharf.

B designates arms extending horizontally therefrom and connected thereto, so that they may be swung around the mast or pole into different positions. These arms are longitudinally slotted throughout almost their entire length. At the outer ends they are connected together, and they are also connected by brace rods or cables C with a collar, *a*, fitting upon the upper part of the mast and adapted to turn around the mast when the arms are turned around the same.

D is a grain-elevator, supported by wheels *b* upon the arms B, and adapted to be caused to travel along the same into different positions.

The arms B are designed to be swung over the water adjacent to a dock, and the elevator adjusted along them in such manner that it may serve to unload grain from one vessel and transfer it to another vessel, as indicated in Fig. 1. This elevator has a leg, D', which is furnished with a bucket-elevator, D^2. This leg may be lowered into the vessel from which the grain is to be unloaded, and its bucket-elevator will carry off the grain and deliver it through a spout, D^3, into the lower portion of the housing or body of the grain-elevator. Thence it is conveyed by a bucket-elevator, D^4, to the upper portion of the housing or body, and discharged by a spout onto screens D^5,

forming a part of a cleaning mechanism. After leaving these screens the grain is carried by a bucket-elevator, D^6, to the upper portion of the housing or body and discharged by a spout, D^7. From this spout it may be conducted by a conveyer-tube of any suitable kind to the vessel on which it is to be loaded. It will be seen that by this feature of my improvement I am enabled to dispense with the floating elevators now commonly used, and that by so doing I save not only the great extra expense entailed by the use of such elevators, but economize the valuable space between wharves. The leg D′ may be raised and lowered by means of suitable tackle, E, and, if desirable, may be received within the housing or body of the elevator when raised.

F designates tackle connected to the grain-elevator D, extending around pulleys *c*, and connected to a windlass, G. On one of the journals of this windlass is a pinion, G′, with which engages a toothed rack-bar, H, connected to the piston or plunger of a jack or engine, H′. This jack or engine may be operated by steam, water, air, or other motive agent conveyed to it through pipes from a suitable source of supply. The jack is controlled by a valve, which may be operated by hand, and as its piston or plunger moves in and out the rack-bar rotates the pinion G′, and thereby operates the windlass. The windlass, when operated, moves the grain-elevator D along the arms B in the desired direction. The rack-bar is guided by cleats arranged on each side of it, and may be provided with a cross pin or pins working in slots in the cleats.

I designates a carriage supported on one of the arms B and adapted to travel along the same. It has connected to it tackle J, which, after passing around pulleys *d*, extends to a windlass, K, whereby the carriage may be moved along the said arm. This windlass is provided with a pinion, K′, and operated by a jack or engine, L, which may be similar to the one before described. The carriage is also provided with hoisting-tackle M, which hangs through the slot in the arm B, upon which the carriage is supported. The hoisting-tackle M passes around pulleys *e*, and is connected to a windlass, whereby it may be operated. This windlass is actuated by a jack or engine, which will preferably be similar to those before described. When this carriage is used the grain-elevator is moved and allowed to remain as near as possible to one end of the arms B, so as to afford the carriage as long a range of travel as possible.

P designates a gaff hinged to a collar surrounding the upper part of the mast A, and adapted to be raised and lowered by means of tackle Q, which passes around pulleys *f* and is connected to a windlass. This windlass is operated by a jack or engine, S, similar in construction to those described. When this gaff is to be used the arms B are swung to one side.

It will have been observed that the several windlasses and jacks or engines are supported on the mast A. They may be mounted directly on the same, or they may be mounted on a sleeve surrounding the same and adapted to turn around when the parts with which they operate are turned around.

It is perhaps needless to say that the mast A may be braced and stayed with guy-ropes or rods in any suitable manner.

The arms B may be turned around, when necessary, by means of tackle operated by hand or otherwise.

The mechanism of the grain-elevator may be driven by an engine arranged within its housing or body and supplied with steam or other motive agent from a source of supply on the wharf or other suitable place. It may, however, be advantageously driven from an engine on the wharf, as illustrated by Fig. 3 of the drawings.

T designates a double-faced gear-wheel loosely surrounding the mast A.

T′ designates a shaft driven from the wharf in any suitable manner, and carrying at the upper end a gear-wheel, T^2, which engages with the lower face of the wheel T.

T^3 designates a shaft supported in bearings on the outer side of one of the arms B, and provided at the inner end with a bevel-wheel, which engages with the upper face of the wheel T, so as to derive motion therefrom.

On the shaft T^3 is a bevel-wheel, T^4, which is fitted thereto by means of a spline or feather, so that it will rotate therewith, but may nevertheless be moved along the same. This bevel-wheel T^4 moves with the grain-elevator, and transmits motion to a shaft, whereby the mechanism of the grain-elevator is driven.

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

1. The combination of a mast erected on a wharf or other place, an arm or arms supported thereon and adapted to be swung around into different positions, and a grain-elevator supported by and adapted to travel along such arm or arms, substantially as specified.

2. The combination of a mast erected on a wharf or other place, arms supported thereon and adapted to be swung around into different positions, and a grain-elevator supported by said arms, so that it may travel along them and extend up between them, substantially as specified.

3. The combination of a mast erected on a wharf or other place, an arm or arms supported thereon and adapted to be swung around into different positions, a grain-elevator supported by said arm or arms, so as to be adapted to travel along the same, and means whereby the mechanism of the grain-elevator may be driven irrespective of the position of the grain-elevator upon the said arm or arms, substantially as specified.

4. The combination of a mast erected on a wharf or other place, an arm or arms supported by the mast, so as to be susceptible of being moved into different positions, a grain-

elevator supported on the said arm or arms, a jack attached to the mast, a windlass connected to the jack, and tackle connecting the windlass with the grain-elevator, so that the latter may be moved along the arm or arms into any desirable position, substantially as specified.

5. The combination of a mast, a gaff connected thereto, a jack affixed to the mast, and means connecting the jack to the gaff, so as to enable it to raise and lower the same, substantially as specified.

6. The combination of a mast, an arm supported thereby, a carriage adapted to travel along the said arm, a jack affixed to the mast, and means for connecting the jack with the said carriage, for the purpose of enabling the jack to move the same into different positions, substantially as specified.

7. The combination of a mast, an arm supported thereby, a carriage adapted to travel along the same, tackle extending below the carriage, whereby articles may be hoisted, another set of tackle connected with the carriage for moving it, and jacks connected with the separate sets of tackle, substantially as specified.

8. The combination of a mast, tackle connected therewith, a windlass, a jack supported on the mast, a rack-bar attached to the rod of the piston or plunger of the jack, and a piston engaging with the rack-bar and connected to the windlass, substantially as specified.

JOHN E. WALSH.

Witnesses:
T. J. KEANE,
JAMES R. BOWEN.