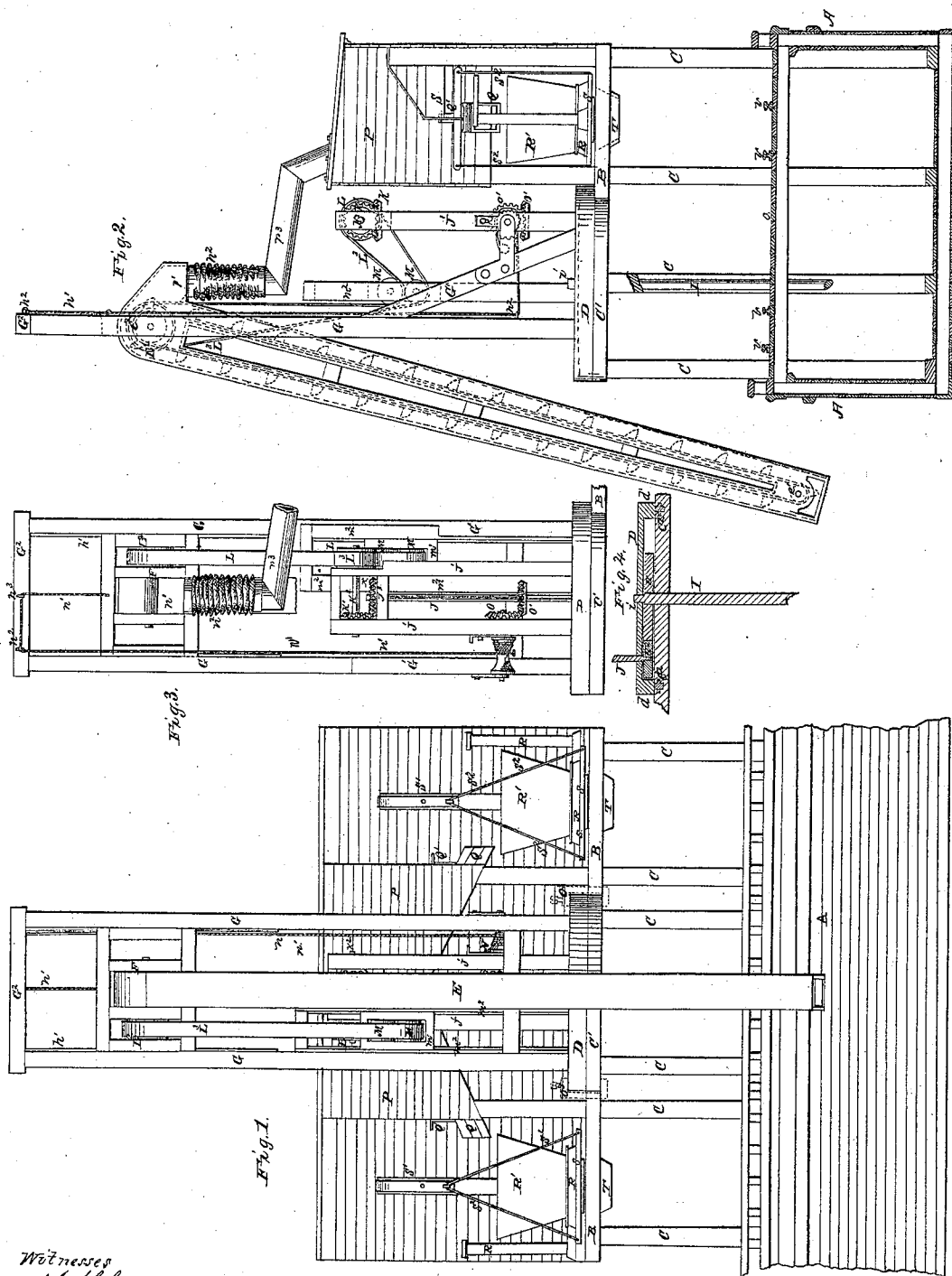


*A. B. Nimbs,
Grain Conveyer.*

N^o 36,193.

Patented Aug 12, 1862.



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UNITED STATES PATENT OFFICE.

ARHEUNA B. NIMBS, OF BUFFALO, NEW YORK, ASSIGNOR TO HIMSELF AND JOHN C. CLIFFORD.

IMPROVEMENT IN FLOATING GRAIN-ELEVATORS.

Specification forming part of Letters Patent No. 36,193, dated August 12, 1862.

To all whom it may concern:

Be it known that I, ARHEUNA B. NIMBS, of the city of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Floating Grain-Elevators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon, in which—

Figure I is a side elevation of the elevating apparatus and boat or vessel upon which it is supported. Fig. II is a cross-section of the vessel and end elevation of the elevating apparatus. Fig. III is an elevation of the elevating apparatus, and Fig. IV is a section of the turn-table and driving spur-wheels.

Letters of like name and kind refer to like parts in each of the figures.

A represents a central section of the vessel, upon which the elevating apparatus is supported, and which is of sufficient capacity to store one or more ordinary cargoes of grain. The vessel is provided with a steam-engine for driving the elevating machinery, which engine is also used to drive a propeller-wheel, by which the vessel may be moved from place to place, as occasion requires.

B represents a strong platform or floor supported above the deck of the vessel upon strong posts C, and having a circular portion, C', which forms a bed upon which the turn-table D revolves.

E is the elevator-leg, constructed in a common manner, with a small pulley, *e'*, at the foot and a larger pulley, *e''*, at the top, around which the belt to which the elevating-buckets are attached revolves. The leg is hung in a sliding frame, F, by the shaft of the pulley *e''*, which has its bearings in said frame.

G are two upright posts firmly secured to the turn-table D and stiffened by the braces G', and connected together at the top by a cross-piece, G². The sliding frame F, with the elevator-leg, moves up and down between these posts on the guides H', they being of such height as to allow the leg to enter the hatch of the vessel from which the grain is to be elevated and reach down to its bottom.

H is a driving spur-wheel placed in a space above the bed C', formed by the flange or annular rim *d'* on the under side of the turn-table D, which annular rim rests upon friction-

rollers C², placed in the bed C'.

I is the vertical shaft, upon which the driving spur-wheel H is keyed. It extends down below the deck of the vessel, and is there connected by appropriate gearing with the engine. It also projects up through the center of the turn-table, as shown at *i'*, and forms the axis upon which the table revolves.

It² is a pinion gearing with the spur-wheel H, and keyed on the lower end of a vertical shaft, J, which shaft extends up through the turn-table and between two posts, J', firmly secured to the table, and has a journal-bearing at the top in the cross-piece J².

K is a bevel-wheel upon the upper end of the shaft J, which gears with a bevel-wheel, K', on a horizontal shaft, K², having journal-bearings in the vertical posts J'.

L is a pulley or band wheel on the end of the shaft K².

L² is a pulley on the same shaft as the pulley *e''* at the top of the elevator-leg, and L³ is a belt which connects the pulleys L and L², so that by the revolution of the driving spur-wheel H motion is given to the elevating-buckets.

M are tension-pulleys bearing upon the belt L³ and hung in a weighted frame, *m'*, which slides up and down between the posts *m''*, firmly secured to the turn-table, so that in the necessary rise and fall of the elevator-leg the belt L³ will always be kept taut.

N is a windlass by which the elevator-leg is raised by winding up the rope *n'*, which rope passes through guide-blocks *n''* and the block *n'''*, connected to the cross-piece G², and is fastened to the sliding frame F, in which the elevator-leg is hung.

Motion is given to the windlass by the bevel-wheels *o* and *o'*, the bevel-wheel *o* being on the end of the windlass-shaft and the bevel-wheel *o'* on the vertical shaft J, they being so arranged that they may be thrown in and out of gear, as occasion requires.

The elevating-leg and all its attendant machinery being thus supported upon the turn-table, it is evident the turn-table may be revolved, so as to place the leg in any desired position, either to elevate from its own vessel such grain as may there be stored, or to elevate from a vessel alongside, without in the

least interfering with the operation of the said machinery, all the parts of which move together and retain the same relative position.

The table is held firmly in any required position by means of clamps o^3 , which secure it to the bed. When it is wished to move it, it is simply necessary to loosen the clamps, when the action of the spur-wheel H upon the pinion H² will cause the table to revolve until the desired position is attained and the clamps again tightened.

The position of the posts which support the elevating-leg upon the turn-table is such as to bring the spout p' , through which the buckets discharge, directly over the center of the turn-table—a position which it will always keep, even with the varying positions of the leg and turn-table.

P represents a bin into which the grain is discharged from the spout p' as it is brought up by the elevating-buckets, it passing through a flexible pipe, p^2 , connected to the spout p' and opening into the mouth of an inclined trough, p^3 , opening into the bin, the mouth of said trough being also over the center of the turn-table, so as to be always beneath the spout p' . The flexible pipe p^2 allows for the up-and-down movement of the elevator-leg, it being extended or compressed as the leg is raised or lowered.

The bottom of the bin is doubly inclined, the highest part being directly beneath the opening through which the grain enters, so that the grain may be taken from each end of the bin through the spouts Q in equal quantities. The spouts are provided with slides Q', by which the flow of grain is regulated.

R represents a pair of platform weighing-scales, one at each end of the bin, and provided with hoppers R', into which the grain runs from the spouts Q to be weighed. These scales are supported upon platforms S, which are suspended from arms S' by the rods S², so that the listing of the vessel will not affect the accuracy of the scales, they always retaining a perpendicular position. If necessary, the platforms S may be made of iron and very heavy, so as to prevent any possible vibration of the scales.

T are wide mouthed spouts connected to the floor B beneath the scales, into which the hoppers R' open. The grain is conveyed by an appropriate trough from these spouts to the hold of the elevating-vessel, and there stored or carried into a vessel alongside, as the case may be. The bin is elevated sufficiently above the deck of the vessel, and is so arranged and connected with the elevating-scales and leg that the grain may be elevated from a vessel upon

one side and weighed and transferred to a vessel upon the other side with but one set of elevating apparatus, a result which has not before been accomplished, to my knowledge. By placing the elevating-leg and its attendant machinery upon a turn-table, as described, I cause it to accomplish as much as three stationary ones could be made to do—that is, it will elevate from either end of its own vessel or from a vessel alongside. I thus save the expense of building and operating a large amount of machinery.

U represents railroad tracks laid upon the deck of a vessel, so that a train of cars may be run on and unloaded, hatches being made in the deck of the vessel, through which the grain is passed into the hold. When loaded in this manner, the elevator may be run alongside of the vessel in which the grain is to be shipped, and the grain elevated, weighed, and transferred into said vessel. This is a very important consideration where grain is shipped by railroad to a seaport in winter, and avoids the necessity of bagging the grain and a great expense in handling. I also contemplate connecting with my floating elevator a new and improved grain-drying apparatus which I am now constructing.

In a floating elevator for elevating grain, I claim—

1. Supporting and operating the elevator-leg upon a turn-table, for the purposes and substantially as set forth.

2. Placing and using the discharging-spout of the elevating-leg in line with the center of the turn-table, so that any movement of the turn-table and elevating-leg will not change the relative position of the spout.

3. The combination of a grain elevating apparatus and bin with a vessel, the elevating-leg and bin being so placed and arranged that the bin shall be above the deck of the vessel, and sufficiently high so that the grain may be discharged from the bin (or from the bin through the weighing-scales) into a boat alongside, substantially as described.

4. Supporting the weighing-scales upon a suspended platform, so that the scales and hopper will at all times maintain a perpendicular position, notwithstanding the listing of the vessel.

5. The combination of a railroad-track with a vessel and elevating apparatus, for the purposes and substantially as set forth.

A. B. NIMBS.

Witnesses:

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W. H. FORBUSH.