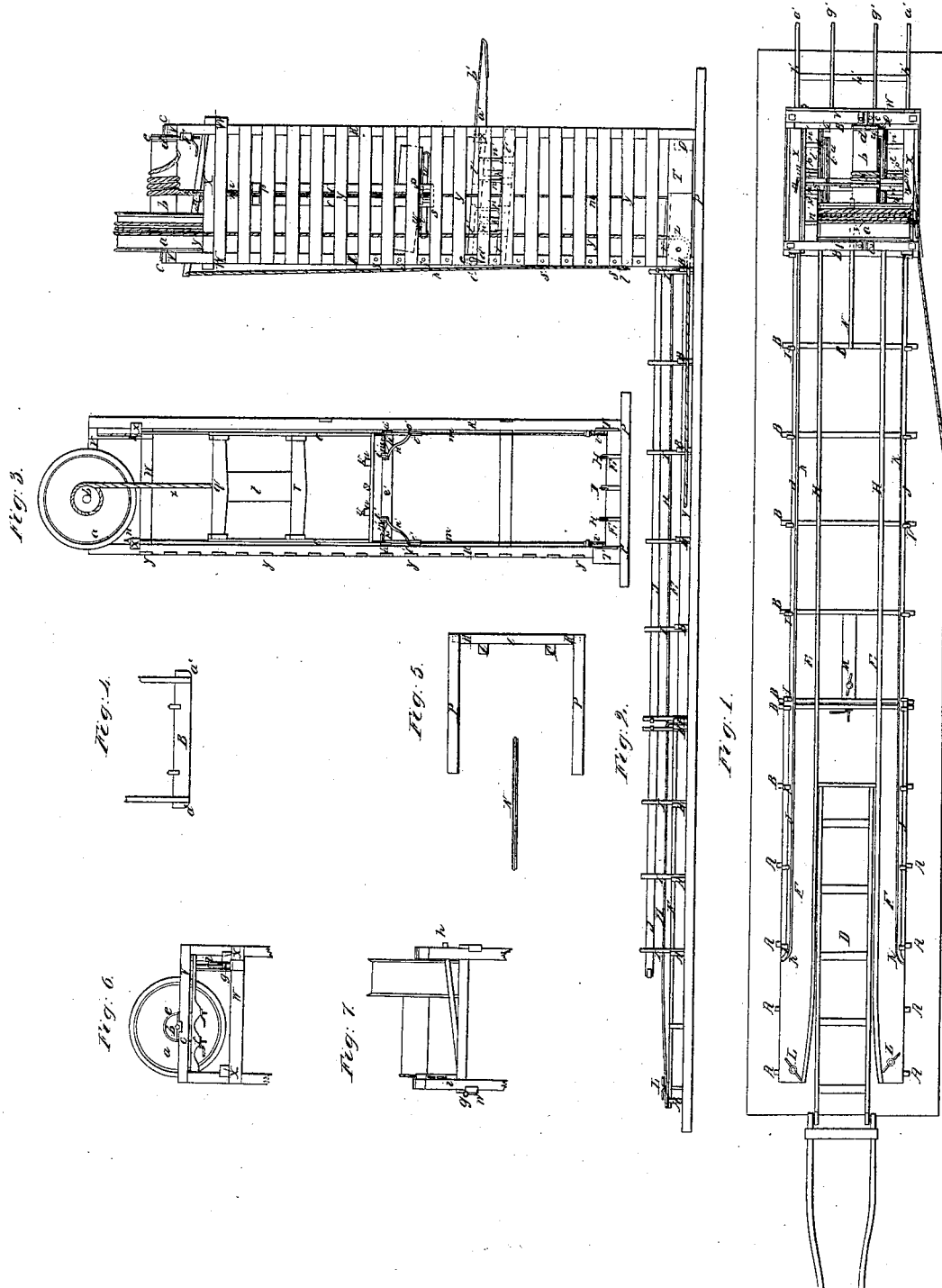


*W. J. Vyeth,*

*Ice Elevator.*

*No. 1,886.*

*Patented Dec. 10, 1840.*



# UNITED STATES PATENT OFFICE.

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MACHINERY FOR RAISING BLOCKS OF ICE TO ANY DESIRED ELEVATION AND  
DEPOSITING THE SAME IN STOREHOUSES.

Specification of Letters Patent No. 1,886, dated December 10, 1840.

*To all whom it may concern:*

Be it known that I, NATHANIEL J. WYETH, of Cambridge, Middlesex county, State of Massachusetts, have invented new and useful improvements in machinery for raising blocks of ice to any desired elevation and depositing the same in storehouses for their preservation.

The said improvements, the principles thereof, and the mode in which I have contemplated the application of the same, by which they may be distinguished from other inventions of a like character, together with such parts or combinations I claim as my invention and which I desire to secure by Letters Patent, I have herein set forth in the following description and exhibited in the accompanying drawings herein referred to, which taken in connection form my specification.

Figure 1 represents a top view. Fig. 2, is a side elevation and Fig. 3 a transverse section of my machinery; Figs. 4, 5, 6, 7, parts in detail.

After the blocks of ice have been raised from the water and deposited on a sled for removal from the spot where cut to the storehouse or depot, it becomes necessary to raise them with great care to such different elevations as may be necessary to deposit them in successive horizontal layers. At the same time despatch is necessary in packing the ice, especially where large quantities are to be stored for future shipment abroad, owing to variations of temperature, and consequent liability of destruction of the ice formed on the surface of the lake or river from which it is taken.

A, A, A, &c., B, B, B, Figs. 1, 2, are pieces of hard wood termed bearers, each being placed perpendicular so that its lower edge may rest on the surface of the ice. The opposite corners of these bearers or each end in contact with the ice should be rounded off similar to the front of a common sled runner as seen at  $a^2$ ,  $a^2$ , Fig. 4, so as to facilitate the operation of moving the apparatus from place to place on the surface of the ice. The center parts of the four bearers A, A, A, A, should be removed so as to admit an ice sled D to pass between the rail E, E, until its rear ends abut against the side of the fifth bearer as seen in the drawing. Strong and wide planks F, F, are bolted

bearers in order to strengthen this part of the railway and prevent disarrangement of the same by lateral pressure, occasioned by the irregular action or movements of the horse and sled.

On the tops of the bearers two lines of strong planks E, E, are set up edgewise and are properly joined and bolted down to the bearers. Their upper edges are protected by rails or bars of iron H, H, secured to the same by screws or in any other convenient manner. Side posts I, I, I, &c., are bolted perpendicularly to the sides of the bearers near their extremities as shown in Figs. 1 and 2 and to the inner faces or sides of the posts I, I, I, horizontal guide rails J, J, are secured, each of said guide rails having a bar of iron K affixed to its inner side as seen in the drawings. This apparatus is secured to the surface of the ice by screws L, L, M, and otherwise and generally arranged in all respects similar to the delivering railways of my invention for raising ice from the water and depositing the same on a sled and for which in connection with the gig, which raises a block of ice from the water I now also apply for Letters Patent and to my specification of which reference may be had. A portion of each of the rails, E, E, at the commencement of the railway should curve outward as represented in Fig. 1, in order to easily admit the end of the sled and guide it into its position between the said rails. Each of the guide rails J, J, should also curve outward at their commencement as seen in the drawing, Fig. 1, in order to receive the block of ice and readily introduce it between the said rails.

In the center of the rear end of the railway or that part which is nearest to the house in which the ice is to be deposited should be a plank N, placed edge up and parallel with the guide and slide rails and with its upper edge level, or in the same plane with the upper edges of the slide rails E, E. This plank should be cut into the two rear bearers B, B, and the bearers into it, so that its bottom edge shall be flush with their lower edges. It should extend and project from the rear bearer about two feet as shown in the drawings Fig. 1, and is for the purpose of preventing the ice when it slides from the rails E, E, and the gig hereinafter described, from falling from the ends of said rails prematurely upon the

points in the hoisting gig as hereinafter described. The rear end of the railway is fixed in its position against the gig posts and frame by wooden terminals driven through its rear bearer into the foot of the posts to be hereinafter mentioned or in any other convenient or proper manner.

That part of my apparatus I denominate the hoisting run is thus described. A rear square sill O, Fig. 5, is placed parallel with the ice house, with its rear side flush with or against the front side of the same. The top of this sill should be level with the surface of the lake or river from which the ice is to be taken and about two feet below the bottom of the ice house. This sill should have tenons at its ends to pass into corresponding mortises in two other side sills P, P, placed at right angles and level with the above. These sills should rest on a good foundation of earth or on piles driven into the ground according to the nature of the soil beneath them. On the inside of the rear sill should be driven or otherwise firmly secured two stoppers Q, Q, the position of the sills and stoppers being seen by red dotted lines in Figs. 1, 2, 5, each at about one and one half feet from the center of the sill and projecting a suitable distance above the top of said sill. On the side sill P, P, four gig posts R, R, R, R, should be raised of such length as may be sufficient to reach from the top of the sills to a point about eleven feet higher than the upper level to which the ice is to be piled in the ice house. These posts are tenoned into the side sills above described, one at each end of each of them. These posts should be placed perpendicular and should have holes S, S, S, &c., of about one inch diameter bored through each of the two front ones at about one foot apart, those on the one side being level and ranging to corresponding ones on the opposite side. These holes should extend from within two feet above the sills P, P, to about the greatest height to which the ice is to be raised into the ice house.

To the inside of the gig posts and cut flush into them two planks T T should be bolted one on each side, extending from the front gig posts to the rear ones. Their lower edges should be about three inches above the side sills P P. A leading block Z having a suitable sheave or pulley in the same is properly affixed to one of the front gig posts. Two guides or short pieces of wood U U with their inside faces covered and protected by iron plates are bolted along the insides of the planks T T and also to the insides of the gig posts. They are somewhat inclined or depressed below a horizontal line as seen in the drawing Fig. 2, making an angle therewith of about ten degrees.

The tops of the front and rear opposite gig posts are secured together by cross

pieces V V reaching from one post to the other as seen in Fig. 1 and properly tenoned into corresponding mortises formed in the cross pieces V, V. The gig posts are also connected together by two other supports or timbers W, W, placed somewhat below and parallel with the pieces V, V, and bolted to the posts. The gig posts are still further secured together near their upper ends by two straining pieces X X, extending across the frames perpendicular to the pieces W W and suitably joined and bolted to the gig posts. The gig posts may also be secured in their places by as many ties or planks Y, Y, Y, extending from one to the other as may be deemed requisite. These ties may be so arranged at such distances apart as to form a ladder on which a person, as occasion requires, may ascend to the machinery, attached to the top of the gig posts. As the rear gig posts may be secured to the ice house at such points as desirable, no cross ties are necessary from one to the other.

A main hoisting barrel or wheel *a* of proper size and constructed in any suitable manner, is placed on a wooden shaft *b*, which has suitable journals at its ends to run in proper boxes or bearings *c c* affixed on the top of the cross pieces V V. The rear end of the wooden shaft *b*, should have a ring of iron or other proper metal fixed thereon, which serves the purpose of securing said end from splitting and to work a friction band thereon. This ring is seen at *d*, Fig. 1. The friction band above mentioned consists of a strap of iron *e* bent into a semi-circular shape where it passes over the end of the shaft *b*, (see Fig. 6) and having its ends passing through and properly secured to a spring bar *f* one end of which is bolted to where it joins to one of the rear posts of the gig frame. The other extremity of the said spring bar *f* is connected to a second lever *g h*, Fig. 7, at a point between the fulcrum of said lever *g* and its other end, by means of a rod, *i*. The lever *g h* is hung or hinged at one end *g*, to the rear cross bar W and at its other end *h* a rope *k*, Fig. 2, is connected which passes down and is belayed around a block, *l*. On applying force to pull upon the rope *k* the strap or band —*e*— will bind on the shaft *b* with a friction proportional to the said force and thus the revolution of the shaft *b* may be retarded at pleasure. On the removal of the said force from the rope the spring bar *f* will raise the strap or friction band *e*, from the ring *d*.

Two gig rods *m, m*, one on each side of the hoisting run, are secured at their lower ends to the insides of the side sills P P and at their upper ends they pass through the cross ties or straining pieces X X and are confined or drawn tight by hand nuts *n n*

working on screws cut on the ends of the rods. These rods are intended to guide and keep in place, the hoisting gig which is constructed in the following manner. Four  
 5 upright planks *o, o, o, o*, of strong wood, two of which are on each side of the frame and are each situated on opposite sides of one of the rods *m m* at a sufficient distance apart to allow their passage up and down on  
 10 said rod, are connected by cross straps *p p* of iron Fig. 2 and transversely by cross bars *q, r, s*, Fig. 3. Cross bars *q r* may also be connected by a wide plank *n* bolted on their sides from the center part of one to the  
 15 center part of the other.

To the lower cross tie or bottom plank *s* which is horizontal two slide bars *u u* should be secured each at a suitable distance on each side of the center thereof. These  
 20 bars are wider at their front than at their rear ends as seen in the drawing Fig. 2, or their upper edges have a slight inclination or make a small angle with the horizon. These slide bars should have an iron plate  
 25 or bar *v* on the upper surface of each which should also extend for some distance around the ends of the same.

Near the front ends of each of the slide bars a strong iron point *w*, Fig. 2, should  
 30 project upward from the surface of the slide bars about one inch, which is intended to prevent the block of ice from sliding off the gig while the same is being raised to the requisite elevation. The ice when sliding into  
 35 the gig from the slide rails *E E* is prevented from touching these points by their depression of about four inches below the said rails. A hoisting rope *x* is attached to the top of the upper bar *q*, proceeding therefrom to and  
 40 around the shaft or barrel *h*, to which the same is secured as seen in the drawing. This gig is hoisted with the ice thereon by one or more horses or other animals attached to one end of a rope *y* which passes through  
 45 the leading block *z* upward to and around, the periphery of the wheel, *a*. As the horses draw outward, they unwind the rope *y* from the barrel *a* thereby turning the same and winding up the rope *x* at the same time rais-  
 50 ing the gig to the receiver hereinafter to be described, and depositing the block of ice on the same.

The receiver is constructed in the following manner: *a' a'* are two side pieces of  
 55 strong wood placed edge upward, there being one on each side of the hoisting run, with their outer faces in contact with the insides of the gig posts and with their front ends flush with the front sides of the same. It is  
 60 intended that their rear ends which are beveled or made angular or pointed as seen in Fig. 2, should extend into and rest on the floor of the ice house at the commencement of filling the same, and afterward on the  
 65 front edge of every succeeding layer of ice

therein deposited. The rear ends of the side pieces *a' a'* should be protected by plates or bars of iron *h' h'* secured along their upper and under edges and extending over the top of the same to a point near the  
 70 front side of the rear gig-post as seen in Fig. 2. The outer or front end of each of these side pieces should be sustained by a bolt passing through the same outward and through either of the holes  
 75 in the front gig posts as seen at *c'* Fig. 2, where the bolt is represented as having a hand nut *d'* screwed upon it on the outside of the gig posts. As the filling of the ice house progresses, the bolts above  
 80 described may be passed through the higher holes, always keeping the two sides level with each other and somewhat inclining toward the ice in the house so that the block may slide readily from the receiver into the  
 85 same.

Near the front ends of the side pieces there should be a cross plank *e'* of the same width and thickness as the side pieces connecting the two together. It should be  
 90 placed edge up and be firmly secured at each end to the side pieces. The side pieces *a' a'* are also connected together near the rear posts of the gig frame, by another transverse tie *f'*, Fig. 1. From this last  
 95 mentioned transverse tie *f'*, two slide bars *g g'*, Fig. 1, having their ends formed pointed, and shod with an iron plate or bar similar to those of the side pieces *a' a'* should proceed rearward between and parallel to  
 100 the side pieces and they should be strengthened laterally by being connected by one or more cross bars *h'* which shall proceed through the whole and be confined by a bolt passing through the junctions of each  
 105 piece with said bar *h'*.

At a suitable distance below and parallel with each of the side pieces *a' a'*, there should be a side plank *i'* which should be  
 110 connected to the same by cross planks *k' k'* and very firmly secured at their joinings by bolts and straps of iron, passing around the same or in any convenient manner. Connected with each of the side bars *i'* should be two receiving bars *l' l'* ironed on  
 115 each end and top with a smooth iron plate or bar *m'* well secured to the bar. Two opposite receiving bars should be on each side of the hoisting gig. The connection between each of the receiving bars *l'* and the  
 120 side planks is formed by diagonal struts or bars of iron *n' n'* hinged at their lower ends to the bars *k' k'* and firmly fastened at their upper ends to the lower sides of the receiving bars *l'* their relative position with  
 125 respect to the adjacent parts being seen in Fig. 3, as also their hinges *o' o'*. These hinges should be set somewhat back so that when the receiving bars are raised into their upright position, the center of gravity of  
 130

the bars and their struts *n' n'* should be out (in a direction toward the center of the gig), of the perpendicular passing through the hinge. By this arrangement the receiving bars always have a tendency to fall downward to the position seen in the drawings. The receiving bars are each connected with the side pieces *a' a'* by a chain *p'* extending from the bar to the same near the adjacent ends of each of the bars. The opposite ends of the receiving bars may rest in a suitable manner on the transverse bars *e' f'*. As the hoisting gig rises with a block of ice thereon the sides of the block meet the inner sides of the inclined bars, or struts *n' n'* of the receiving bars and cause them to rise upward into a perpendicular position until the lower side of the block of ice has risen above the receiving bars when they are relieved and fall into their former position under the block. Then, on lowering the hoisting gig a sufficient distance the block of ice is carried down on the tops of the receiving bars and immediately slides therefrom by the action of gravity or a force applied thereto, into the ice house.

From the above the operation of receiving the ice from the sled and depositing the same in the house will be easily understood. The sled is simply backed with its load into the open space at the front of the railway and at the time when this operation is being performed the persons attending on the railway should place their ice hooks into the

block of ice, which last leaves the sled and continue the impulse given to the ice by the horse in backing and slide the ice upon the receiving railway until it reaches and rests on the slide bars of the hoisting gig, which is then raised with the ice in the manner hereinbefore described and deposited on the receiving bars *i'* and slides from thence into the ice house where it should be stowed with its edges about two inches apart each from the other.

Having thus described my invention I shall now point out my claims in the same.

I claim—

1. Raising blocks of ice to any required height and depositing the same in a structure by means of a hoisting gig in combination with the receiving bars *l' l'* and side and center pieces or rails *a' a' g' g'*.

2. And I also claim the combination of the above with the railway which receives the blocks of ice from the sled, the whole being arranged and operating together substantially in the manner herein above set forth and described.

In testimony that the above is a true description of my said invention and improvements I have hereto set my signature this fourteenth day of October in the year eighteen hundred and forty.

NATHL. J. WYETH.

Witnesses:

R. H. EDDY,  
JAMES W. FENNO.