N. J. Wyeth.

Ice Elevator.

No 2,380. Patented Dec. 10, 1841.

Fig 1.

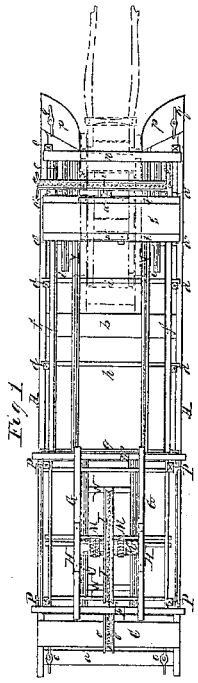


Fig 6.

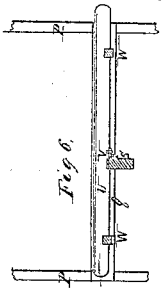


Fig 4.

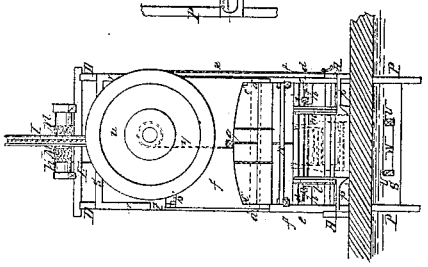


Fig 3.

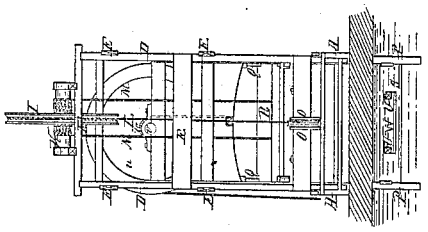


Fig 2.

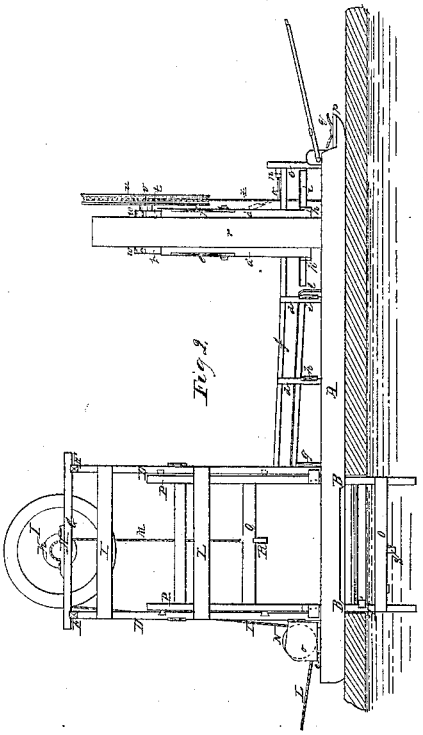
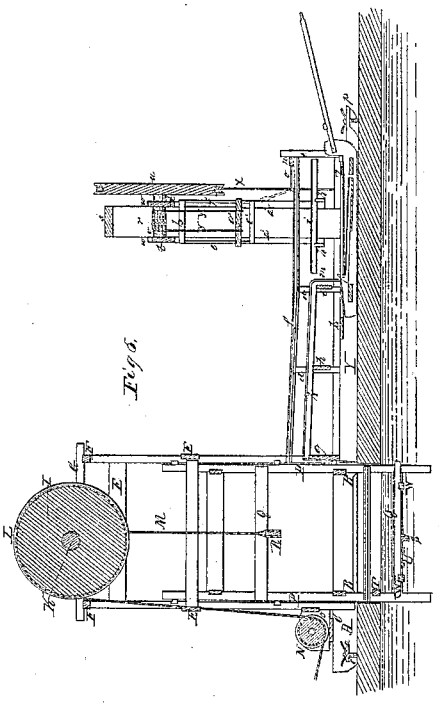


Fig 5.



UNITED STATES PATENT OFFICE.

N. J. WYETH, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN MACHINERY FOR RAISING BLOCKS OF ICE FROM THE WATER AND DEPOSITING THE SAME ON A SLED.

Specification forming part of Letters Patent No. 2,380, dated December 10, 1841.

To all whom it may concern:

Be it known that I, NATHANIEL J. WYETH, of Cambridge, in the county of Middlesex, in the State of Massachusetts, have invented new and useful Improvements in Machinery for Raising Blocks of Ice from the Water of a Pond or Lake and Depositing the Same on a Sled, on which they are carried to the storing-houses or elsewhere; and I do hereby declare that the following is a full and exact description of my new improvements, reference being therein had to the accompanying drawings, which, combined herewith, form my specification.

In the same I have set forth the nature of my invention, by which it may be distinguised from others of a like character, together with such parts or combinations of the same as I claim, and for which I solicit Letters Patent.

Figure 1 of the above-mentioned drawings represents a top view or plan of my improved machinery. Fig. 2 is a side elevation. Fig. 3 is an elevation of one end, or that at which the hoisting-gig is situated; and Fig. 4 is an elevation of the other or opposite end. Fig. 5 is a vertical longitudinal and central section.

The remaining figures represent parts in detail which will be hereinafter described.

In the above figures, A A are two bed sills or runners, about thirty-five feet in length, eighteen inches in depth, and three inches in thickness. They are placed on the ice of the frozen lake with their edges upward and parallel to each other at a distance apart of about thirteen inches greater than the width of the blocks of ice intended to be elevated. The part B B of the lower edge of each of these bed-sills which is opposite to the gig may be cut away a little, as seen in Fig. 2, so as to permit the blocks of ice to be freely floated under the same; and in order to prevent wear or abrasion of their edges they should be plated with iron or other suitable material. On these bed-sills the superstructure is erected.

C is a plank extending across from one of the bed-sills to the other and bolted down upon their upper edges. It is situated at about two feet from their ends, nearest the place from which the ice is taken, its office being to aid in keeping the bed-sills at their proper distance asunder.

D D, Figs. 2, 3, 4, 5, are four posts bolted to the inner sides of the bed-sills and projecting inward from each side about four inches. One of these posts on each bed-sill should be placed with one of its sides nearly in contact with the rear edge of the cross-plank C, as seen in Fig. 2. Each of the other two of these posts should be bolted to its bed-sill at a distance from the other post on the same side with it of about eight inches greater than the size of the block of ice to be raised. The lower ends of these posts, as well as all the other posts of the machinery, should not reach quite down to the lower edge of the bed-sill, in order that they may not interfere with the snow or ice and offer any obstructions to the movements of the machinery over its surface. The posts D D D D may be about fifteen feet in height and secured in their perpendicular positions by intermediate ties, E E E E, extending from one to the other and bolted to their exterior faces.

F F, Figs. 1, 2, 3, are two horizontal and transverse caps of timber, each resting and being secured on the tops of two opposite posts.

G G G, Figs. 1, 2, 3, are two box-plates or timbers arranged parallel to each other at a suitable distance apart, with their ends resting and confined down upon the caps F F at equal distances each way from the centers of the same and perpendicular to said caps. The boxes or bearings H H for the journals of the hoisting-wheel are placed on the upper surfaces of the plates G G, as seen in Figs. 1, 2.

I, Figs. 1, 2, 3, is a hoisting-wheel of a diameter about equal to the size of the ice to be raised, built on the center of a cylindrical axis, K, of about one-eighth the diameter of the hoisting-wheel, and having iron gudgeons at its ends, which rest and revolve in the bearings H H. The hoisting-wheel should have its cylindrical surface or periphery of sufficient width to admit a suitable rope, L, to be wound thereon without riding, and the cylindrical axis K should have space enough on each side of the wheel for one of the ropes M M to wind on it, the said ropes depending and being fastened to the gig. The rope L is passed through a leading-pulley, N, arranged and turning between the cheeks O O, Figs. 1, 2, 3, resting and secured on the transverse plank C. A horse being attached to that extremity of the rope L in proximity to the

leading-pulley draws the rope through the pulley and elevates the gig, which I shall now describe. It is that part of the machine into which the ice is floated, and by which it is raised and deposited on the rails of the receiving-railway. It plays between the posts D D D D, and is guided and kept in place by them. It is constructed as follows:

P P P P, Figs. 1, 2, 3, are four uprights or timbers secured together by any suitable number of transverse ties, Q Q, extending from each to the opposite, as seen in the drawings, the inner faces or sides of the ties on opposite sides of the gig being situated at a distance from each other of about five inches greater than the width of the blocks of ice to be elevated. The length of the uprights P is very nearly equal to that of the posts D. A bar, R, Figs. 1, 2, extends across the gig and is bolted to the under side of two of the ties Q in the position seen in the drawings. To this bar the ropes M M, connecting the gig with the hoisting-wheel, are attached.

S is a bottom bar, also extending transversely or parallel with the bar R, and attached by its ends to the under sides of the lower ties, Q Q, at points somewhat forward of the center of the same or in the direction toward the leading pulley, as seen in the drawings.

T, Figs. 2, 3, is a transverse guide-bar, bolted to the rear sides of the two front uprights. For the sake of distinction, I shall consider that end of the machinery on which the hoisting apparatus is raised the front end, and the other part, or that on which the lowering-gig is situated, the rear end, and shall designate or distinguish the several parts by the terms "front" or "rear," according to their respective positions to their ends. The guide-bar T is attached to the front uprights of the gig at about nine inches above the tops of the lower ties, Q Q, Figs. 2, 3. This bar may project rearward from the rear face of the uprights at about two inches. It serves to guide the ice when floated into the gig, and should be plated on its rear face with a smooth bar of iron.

U U, Figs. 1, 5, 3, 6, are two balance-bars, having their bottom edges resting on the bottom beam, S. They are each attached by a hinge or joint, B, (see Fig. 6,) on the rear side and upper corner or edge of said bar, so that their rear ends can be depressed until their front ends are arrested by coming in contact with the under side of the guide-bar T. These balance-bars are placed on the bottom bar at points equidistant from its center, and at a distance apart equal to about half the width of the block of ice to be hoisted. They should project from the bottom bar toward the front of the machine a sufficient distance to reach under the guide-bar, and to the rearward a distance about even with the plane of the rear sides of the rear posts, D D. These balance-bars are secured together near their ends by cross-bars W W, Figs. 1, 3, 6, extending from one to the other, and bolted to their under sides. The front end of these balance-bars is loaded with a weight which will cause them to remain horizontal when the gig is unloaded, although, when the block of ice is on the gig, its end which rests on the rear ends of the balance-bars will overbalance or depress them until their front ends rise into contact with the under side of the guide-bar T. This depression will cause the ice to slide out of the gig and upon the railway when it arrives at a proper height.

X, Figs. 2, 5, is another guide-bar extending from the inner face of one of the front uprights, P, to that of the opposite on the same side of the machine. It is situated a short distance above the guide-bar T, and serves the purpose of a stop for the block of ice to abut against when floated into the gig. In order to prevent abrasion of its inner surface, it may be plated with metal. The receiving-railway leads from the gig which raises the ice to the loading-gig, and is constructed as follows:

Y Y, Figs. 1, 5, are two sled-guides, which may be composed of planks placed edge up, and between the bed-sills equidistant from the center of the machine and far enough apart to admit the sled to be backed between them. Their rear ends should project rearward about two feet less than the ends of the bed-sills of the elevator, and should commence on their upper edges to be slightly inclined rearward at about two feet from their extremities, so as to be of less height than the top of the runners of the sled, as seen at Z, Fig. 5. The front ends of the sled-guides should terminate in the plane of the rear sides of the rear posts, D D.

a b, Figs. 1, 5, are two cross-planks, extending transversely from one bed-sill to the other in the position shown in the drawings, Figs. 1, 5. A screw or screws, *c c*, is passed through the first plank into the frozen surface of the pond to confine the front end of the apparatus thereto. The other plank serves to secure the sled-guides in their places and to form a stop for the sled when backed between the guides. Four posts, *d d d d*, Figs. 1, 2, 5, are bolted vertically to the inner sides of the bed-sills, two on each side and opposite each other.

e e are two other posts similarly arranged near the rear extremities of the bed-sills. Side guide-rails, *f f*, are attached, as seen in Figs. 1, 2, 5, to the inner sides of these posts near their tops, and two transverse bearing-planks, *h i*, placed edge upward are bolted to the rear sides of the opposite posts, *d d*, and another plank, *g*, to those of the rear posts, D D. The rails *k k* of the receiving-railway are fastened on the upper edges of the planks *g h i*, extending from the first to the last, situated at a suitable distance apart and having a slight or sufficient inclination rearward to cause a block of ice to slide by its gravity

over them. The extremites of these rails project about four inches beyond the beams *g i*, and are connected with the sled-guides by vertical posts *l m*, Figs. 5, 2, 4, whose external sides, which are a continuation of the upper surfaces of the rails *k k*, as well as the rails, should be suitably plated with iron. An end rail, *n*, which regulates the distance to which the ice may slide rearward, is arranged transversely on the tops of the side guide-rails, *f f*, resting near the rear extremities of the same, as seen in Figs. 1, 2, 4, 5. This end rail is attached to the upper surfaces of the guide-rails by two arms or bars, *o o*, Figs. 1, 2, 5, extending from it and hinged or jointed at their front ends to the guide-bars. The object of this arrangement is to facilitate the removing of the end rail when the ice laden on the sled reaches above the rail. This is accomplished by raising the end rail upward into the position represented by the dotted lines in Figs. 2, 5.

p p, Figs. 1, 2, 4, 5, are two planks, one being situated on each side of the apparatus. They are alike in form and use. One end of each of these is bolted to the top edge of the sled-guides, the other end to the bed-sill, the latter being cut down at its extremity sufficiently for that purpose. The rear edge or inner end of each of these planks *p p* is rounded off or flares off so as to form a continuation of the sled-guides, and permit the sled to be easily introduced between the same. Screws *q q* pass through the planks *p p* into the ice of the pond and confine the rear end of the machinery thereto. The loading or lowering apparatus is to transfer the blocks of ice from the receiving-railway to the sleds, and is made as follows:

r r, Figs. 2, 4, 5, are two vertical supports, bolted at their lower ends to the inner sides of the bed-sills, and connected together at their tops by a cap, *s*, extending transversely from one to the other. Two horizontal box or bearing bars, *t t*, Figs. 1, 2, are bolted to the supporting-planks *r r*, at a suitable distance below the top of the same, one bar being on the front sides of the supports and the other being on the rear sides of the same, as denoted by the drawings. They are intended to support the gudgeons of the lowering-wheel *u*, which latter is arranged vertically and transverse-wise and is connected to a cylindrical windlass, *v*, whose journals revolve and are supported in the boxes *w w* on the bearing-bars *t t*. The lowering-wheel should be of sufficient diameter to have an eighteen or twenty fold purchase, and its periphery should be of such width as to receive as many turns of a rope, *x*, as may be required to lower the ice from the elevation of the receiving-rails to that of the sled on which it is to be placed. The lowering-gig is connected to the cylinder or windlass *v* by the rope or ropes *y*, Fig. 5, and is thus constructed.

a' a' a' a', Figs. 1, 2, 4, 5, are four uprights placed perpendicular, and each arranged with one of its edges in contact with one of the edges of the supports *r r* of the loading apparatus. The two uprights on the same side are secured together, near their upper and lower extremities and middle, by a cross-tie, *b' c' d'*, Figs. 4, 5, bolted on their inner sides, the said cross-ties passing in contact with the inner faces of the supports *r r* when the gig is raised or depressed. The supports *r r* are still further connected together by wide transverse planks *e' f'*, Figs. 2, 4, 5, extending from one of the supports to that on the opposite side of the apparatus, as seen in the drawings. A suspending-bar, *g'*, Fig. 5, is secured by its ends to the lower edges of the planks *f' e'*, and is arranged in the center between the supports *r r*. The rope *y*, which raises the gig, is tied to this bar.

h' h' h' h', Figs. 2, 4, 5, are four arms secured to the outer faces or sides of the uprights *a'* at their lower extremities, and extending inward toward the sled-guides so as to come nearly in contact with them. These arms support two pieces of timber, *i' i'*, Figs. 4, 5, each arranged on two of the same over their inner ends. These pieces of timber should be strong enough to sustain the blocks of ice which are to be received upon them from the railways and lowered upon the sled.

Thus it will be seen I have described my improvements, the main intention of which is to load sleds with several blocks or layers of ice, placed one above the other, to be thereon transported to a railway or to store-houses. A common ice-sled may be used; but I intend generally to employ one with improvements which I have invented. The sled, with two blocks of ice thereon, is represented in section in Figs. 1, 5, by red lines. The block of ice is floated into the gig of the elevator or upon the balance-bars, is raised by the same to the elevation of the receiving-railway, when it immediately slides from the balance-bars upon the railway, and continues down the same until it arrives at and is received upon the bars *i' i'* of the lowering-gig, upon which it rests, while the attendant, who has hold of the rope *x*, lowers it toward the sled until its upper surface comes level or even with the tops of the ends of the rails of the receiving-railway adjacent to it. It is then ready to receive another block of ice, which, sliding down the railway, is received therefrom upon the top surface of the block of ice already deposited in the gig. The gig may then be lowered still farther to receive another block, if necessary; or it may be depressed so as to deposit the pile of blocks so formed upon the runners of the sled. When the ice is thus placed on the sled the bars *i' i'* may be depressed a short distance below the lower surface of the inferior block, so that when the horse draws out the sled the ice will meet with no obstruction from the bars *i' i'*.

Were the balance-bars immovably fixed upon the lower cross-beam of the hoisting-gig, the elevating apparatus and receiving-railway would

be, in many respects, substantially similar to those described in one of my former patents; but were these balance-bars stationary, it would be necessary for the attendant to push the ice from the same upon the receiving-railway; but being movable and self-acting, the gravitating power of the ice causes it to slide out of the gig.

Having thus described my invention, I shall claim—

1. The application to the hoisting-gig of the balance-bars, constructed and operating substantially as above set forth.

2. The combination of the depressing-gig with the receiving-railway, and the combining of the said depressing-gig and receiving-railway with the elevating-gig, the whole being constructed, arranged, and operating substantially in manner and for the purposes hereinbefore explained.

In testimony that the foregoing is a true description of my said invention and improvement I have hereto set my signature this 26th day of October, in the year 1841.

NATHL. J. WYETH.

Witnesses:

R. H. EDDY,

EZRA LINCOLN, Jr.