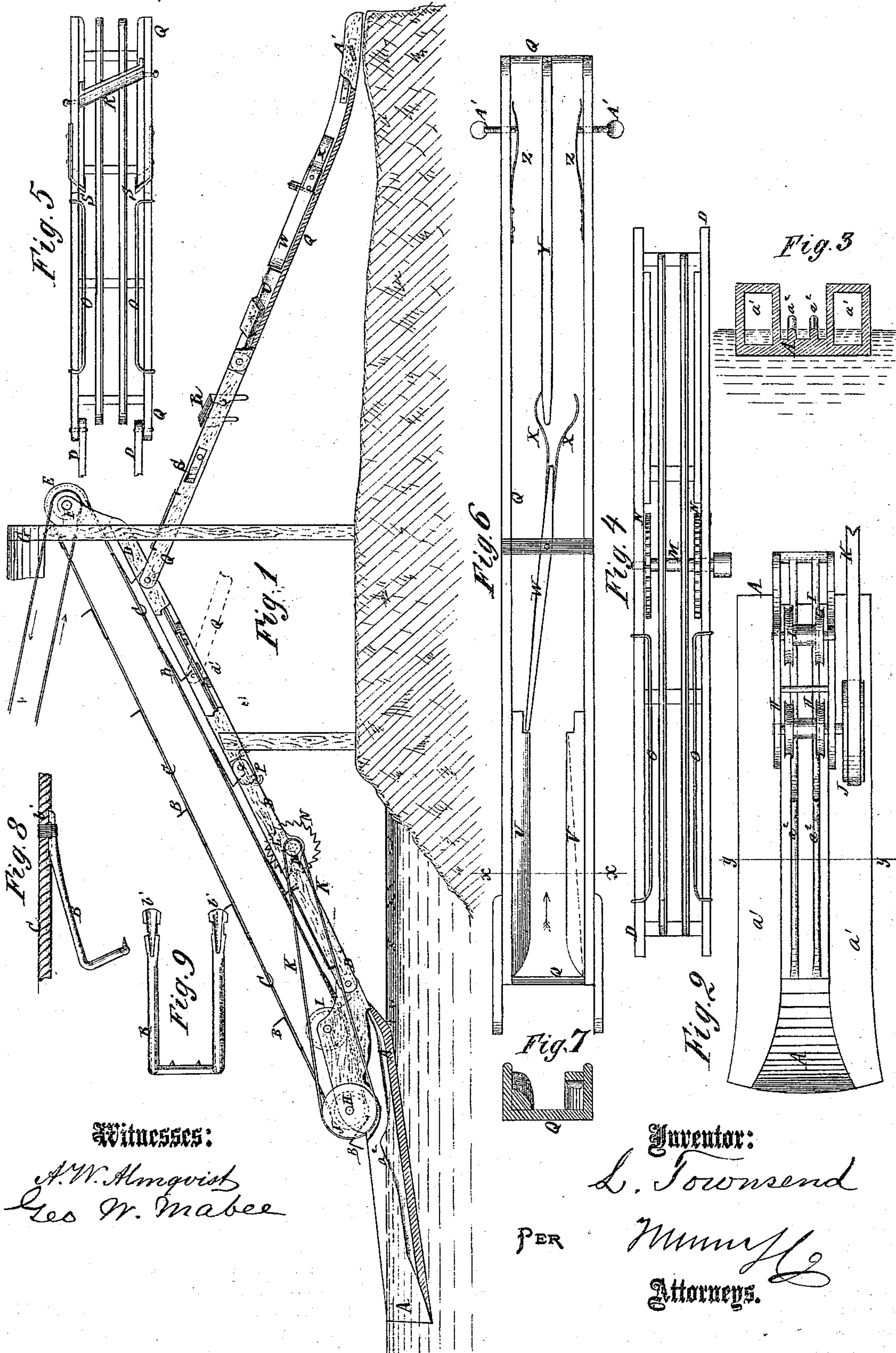


L. TOWNSEND.

Improvement in Ice-Elevators.

No. 126,106.

Patented April 23, 1872.



Witnesses:

A. W. Almqvist
Geo W. Mabee

Inventor:

L. Townsend

PER

Munn & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

LOUIS TOWNSEND, OF TERRE HAUTE, INDIANA.

IMPROVEMENT IN ICE-ELEVATORS.

Specification forming part of Letters Patent No. 126,106, dated April 23, 1872.

Specification describing a new and useful Improvement in Ice-Elevators, invented by LOUIS TOWNSEND, of Terre Haute, in the county of Vigo and State of Indiana.

Figure 1 is a side view of my improved apparatus, parts being broken away to show the construction. Fig. 2 is a top view of the lower part of the water-chute. Fig. 3 is a detail cross-section of the same taken through the line $y y$, Fig. 2. Fig. 4 is a top view of the lower part of the skids or elevator. Fig. 5 is a top view of the upper part of the discharge-chute. Fig. 6 is a top view of the lower part of the discharge-chute. Fig. 7 is a detail cross-section of the same taken through the line $x x$, Fig. 6. Fig. 8 is a detail side view of a part of the carrier. Fig. 9 is a detail view of one of the carrier-hooks.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved apparatus for raising ice from a river, pond, lake, or other place, and discharging it into an ice-house, wagon, boat, or other receiver, and which shall be simple in construction, convenient in use, and effective in operation, smoothing off the side edges and top of the blocks of ice, and turning them up upon their edges as they are discharged from the chute; and it consists in the construction and combination of the various parts of the elevator, as hereinafter more fully described.

A is the water-chute, which floats upon the water near the bank, and rises and falls with the rise and fall of the water, and its outer end is designed to be sunk in the water so that the ice may be conveniently floated into it. In the sides of the chute A are formed boxes or boats a^1 to receive water, sand, or other material to sink the outer end of the chute A to the desired depth and anchor it in place. The mouth of the chute A is made flaring, so that the blocks of ice may be conveniently floated into it, and to its bottom are attached ribs a^2 , which are made with a rise as they approach the lower end of the carrier, up which the blocks are readily pushed to raise them out of the water, so that none of the apparatus, unless it be the extreme end of the hooks, can come in contact with the water to become incrustated with ice and clogged or impeded in their operation. The ribs a^2 slightly descend

as they pass beneath the lower end of the carrier, so that the blocks of ice, when pushed over the rise of the ribs a^2 , will readily and surely pass into such a position that the hooks B, attached to the endless ropes C of the carrier, may readily take hold of them to carry them up the skids or elevators D. The hooks B are made in the form of a U-shaped loop, which is bent over at right angles, as shown in Figs. 1 and 8. In the ends of the shanks of the hooks B are formed tapering grooves b' to fit upon the ropes C, and with notches to receive the wire or cord by which they are secured to said ropes, as shown in Fig. 9. The bearings thus formed not only connect the hooks B to the ropes C securely, but connect them in such a way that they always keep their places as they pass around the guide-pulleys to insure their always being in position to take hold of the blocks of ice, and prevent noise when the machine is being operated. The ropes C of the carrier B C pass around grooved pulleys E attached to the shaft F, to which the power is applied. The shaft F is pivoted to the frame G, which may be the frame of the ice-house or a frame built expressly to receive and support the said shaft F and the upper end of the skids or elevators. The lower end of the carrier B C passes around two sets of grooved pulleys, H I, pivoted to the sides of the water-chute A. The pulleys H are pivoted to the chute A a little above the rise in the ribs a^2 , and the pulleys I are pivoted to the chute A near its inner end, as shown in Fig. 1. By this arrangement the carrier B C will be kept parallel with the bottom of the chute A and the skids or elevator D, however the angle of inclination between said chute and elevator may be varied. The elevator D may be made of any desired length, and may be arranged at any desired inclination, as the circumstances of each case may require. The upper part of the elevator D is made with several detachable parts, d' , in its bottom or rails, as shown in Fig. 1, to allow the blocks of ice to pass out into the discharge-chute at any desired elevation. To one of the journals of the pulleys H is attached a large band-pulley, J, around which passes a belt, K, which also passes around a small band-pulley, L, attached to the shaft M, which revolves in bearings attached to the under part of the elevator D, and to which, at

the inner sides of the side boards of said elevator, are attached saws N, set at such a distance apart as to smooth off the side edges of the blocks of ice as they pass up the said elevator. To the side boards of the elevator, a little below the saws N, are attached guide-rods O, which are designed to bear against the smooth part of the side edges of the blocks of ice and guide them into the central part of the elevator, and insure their coming to the saws in proper position for their edges to be trimmed off by said saws N. The guide-rods O should be adjustable, so that they may be raised, more or less, according to the thickness of the ice and the depth of the saw-cut when the ice is separated into blocks. The elevator D is usually made in sections, the ends of which are connected together by bolts, screws, or other convenient means. P are short rods, having a hook formed upon each end to be hooked over the end cross-bars of said adjacent ends to span the joint, and thus prevent the possibility of the ends of the blocks of ice catching upon the end of the sections should they sag, or warp, or get slightly out of place. Q is the discharge-chute, which may also be made in sections, and the upper end of which is attached to the upper part of the elevator D, just below its upper end or just below one of the openings d' in the bottom of said elevator, so as to receive the blocks of ice from the elevator D, and guide them into the ice-house, wagon, boat, or other receiver. To the chute Q a little below its upper end is attached a knife, R, set in an inclined position to trim or shave the snow and rough ice from the surface of the blocks of ice as they slide down the chute. The knife R is made with an arm at each end, projecting downward at right angles to enter sockets in the sides of the chute Q where they are adjustably secured in place by set-screws, or other convenient means, so that knife R may be raised or lowered as may be desired to adjust it to the thickness of the blocks of ice. S are knives, the plates of which are attached to the sides of the chute Q, and their cutting parts are inclined inward and project through holes in the sides of the chute to smooth off the side edges of blocks of ice as they slide down the chute. To the sides of the upper part of the chute Q just above the smoothing-knife or knives are attached guide-rods O to guide the blocks of ice into the central part of the chute Q, and thus into proper position for the knives S to smooth off their side edges. The rods O should be adjustably attached to the sides of the chute Q, so that they may be raised and lowered to adjust them according to the thickness of the ice, to bear against the part of the edges of the blocks of ice made smooth by the saws in cutting the blocks. To the chute Q, a little below the knife R, upon the opposite sides of the bottom of said chute, are attached guide-blocks U V. The block U is beveled and rounded off somewhat spirally or scroll-shaped, as shown Figs. 1 and 6, to raise one edge of the

blocks of ice and turn said blocks upon their edges. The other block V is made with a tapering groove in its inner side to prevent the other edge of the blocks of ice from rising as the first edge rises to insure the said blocks taking and keeping a position upon their edges. W is a switch-bar, which is pivoted a little below its center to the center of the bottom of the chute Q in such a position that its upper end, when moved from side to side, may enter rabbets formed to receive it in the inner sides of the lower ends of the guide-blocks U V, as shown in Figs. 1 and 6. To the opposite sides of the lower end of the switch-bar W are attached springs X, which act as levers to cause the descending block of ice to shift the switch so that the descending blocks of ice may pass alternately upon the opposite side of the lower part of the chute Q, and at the same time to act as springs to prevent the switch-bar W from being moved with violence by the blow of the descending blocks of ice. The chute Q below the switch-bar W, is divided into two channels by a central rib, Y, to keep each block of ice at its own side of the chute. The lower end of the chute Q is provided with springs Z attached to its side flanges to check or stop the motion of the descending blocks of ice at the lower end of the chute where said blocks are received by the ice-carrier, wagon, boat, or other receptacle.

The force with which the springs Z are required to act depends upon the inclination of the chute and the size of the blocks of ice, and consequently requires to be occasionally changed. The springs Z are regulated by set-screws A' , which pass in through the side flanges of the lower end of the chute Q.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The water-chute A, provided with boats or boxes a^1 to enable it to be ballasted to stand at any desired depth and inclination in the water, in combination with the lower end of the skids or elevator D, substantially as herein shown and described, and for the purpose set forth.

2. The combination, with the floating water-chute A $a^1 a^2$, of the two sets of grooved pulleys, H I, that receive the ropes C of the car-carrier, and the band pulley J that drives the trimming-saws N, substantially as herein shown and described, and for the purpose set forth.

3. The combination of the smoothing-saws N with the skids or elevator D, substantially as herein shown and described, and for the purpose set forth.

4. The combination of the adjustable knife R and the knives S, either or both, with the upper part of the discharge-chute of an ice-elevator, substantially as herein shown and described, and for the purpose set forth.

5. The combination of the adjustable guide-rods O with the saws N and knives S, either or both, substantially as herein shown and described, and for the purpose set forth.

6. The guide-blocks U V, constructed and operating in connection with the discharge-chute of an ice-elevator, substantially as herein shown and described, and for the purpose set forth.

7. The combination of the pivoted switch-bar W with the guide-blocks U V and the discharge-chute of an ice-elevator, substantially as herein shown and described, and for the purpose set forth.

8. The combination of the springs X with the pivoted switch-bar W and central rib Y of the discharge-chute of an ice-elevator, substantially as herein shown and described, and for the purpose set forth.

9. The combination of the adjustable springs Z and adjustable screws A' with the lower end of the discharge-chute of an ice-elevator, substantially as herein shown and described, and for the purpose set forth.

10. The hooks B, formed with tapering grooves or bearings *b'* to adapt them to be securely attached to the endless ropes C, substantially as herein shown and described, and for the purpose set forth.

LOUIS TOWNSEND.

Witnesses:

JAMES T. GRAHAM,
T. B. MOSHER.