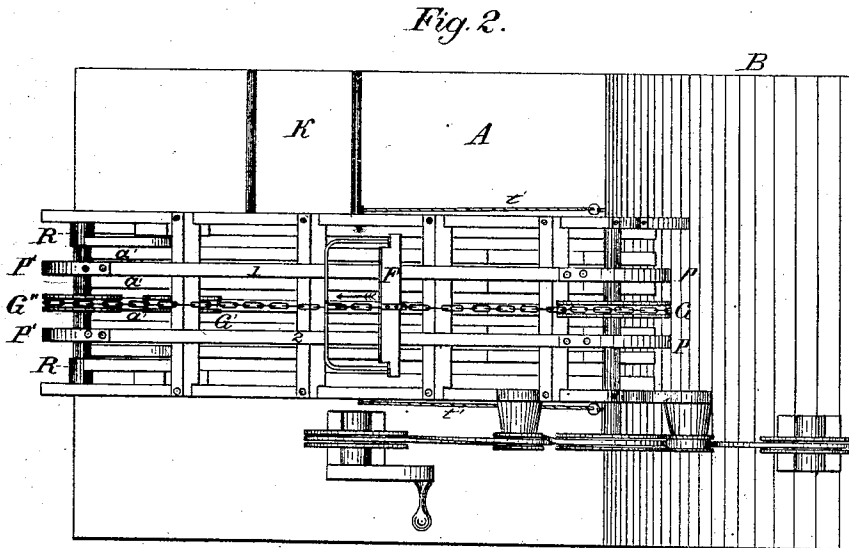
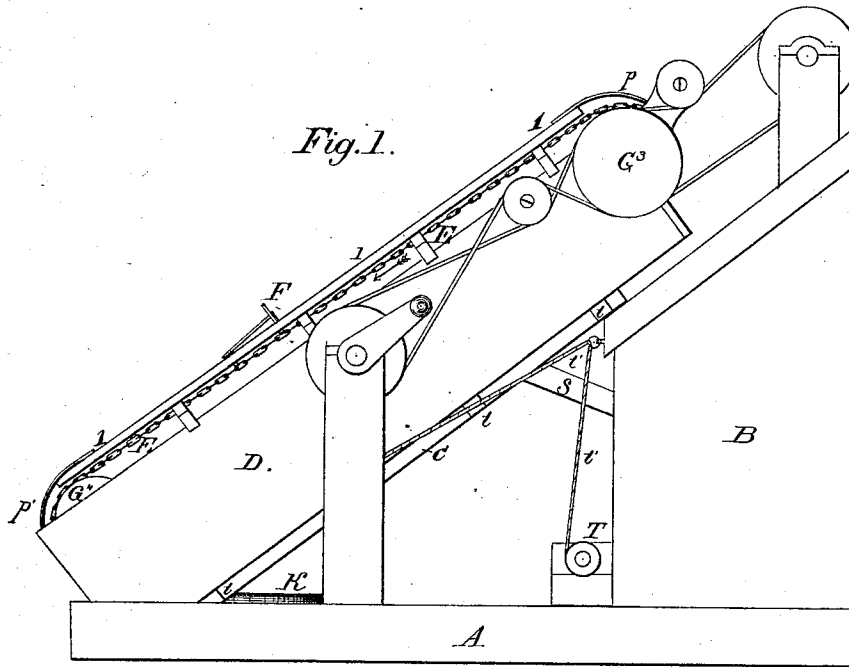


X. WITTMER.
Ice-Elevator.

No. 160,250.

Patented Feb. 23, 1875.



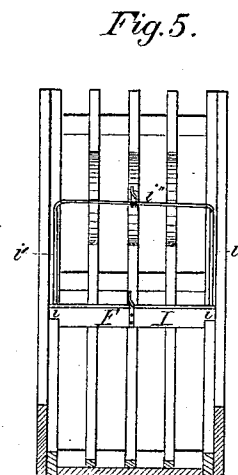
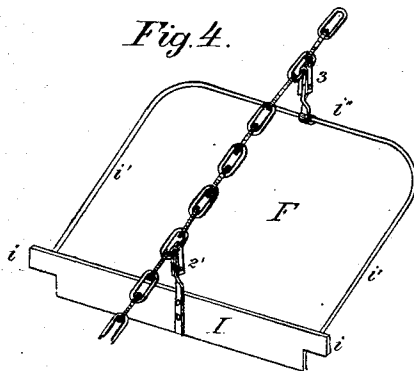
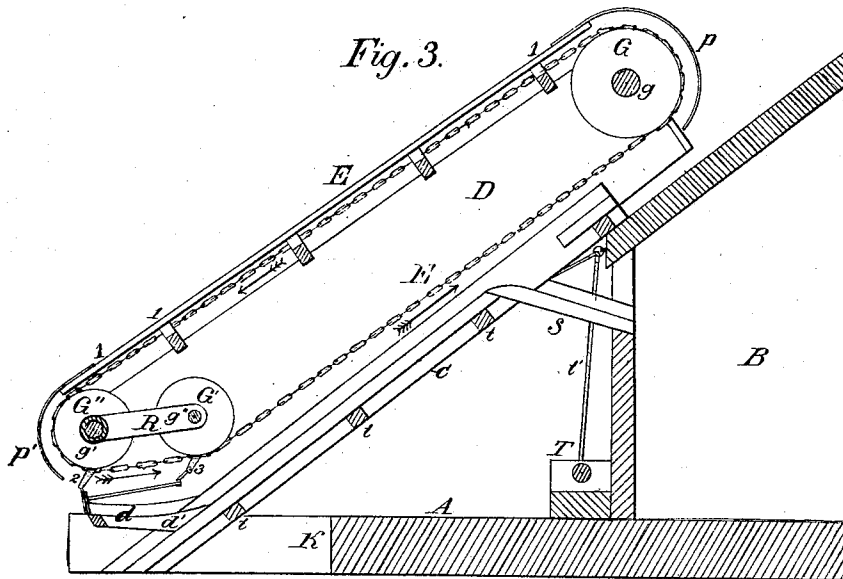
WITNESSES
Philip W. Hale,
J. Mason Cozler

INVENTOR
Xavier Wittmer,
per Richards & Hale,
Attorneys.

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WITNESSES-

Philip W. Hale
Mason S. Saylor

INVENTOR-

Xavier Wittmer,
per Richards & Hale,
Attorneys.

UNITED STATES PATENT OFFICE.

XAVIER WITTMER, OF ETNA, PENNSYLVANIA.

IMPROVEMENT IN ICE-ELEVATORS.

Specification forming part of Letters Patent No. **160,250**, dated February 23, 1875; application filed December 30, 1874.

To all whom it may concern:

Be it known that I, XAVIER WITTMER, of Etna, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Ice-Elevators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

My invention consists in a permanent inclined railway, leading from a foundation or base at low-water mark to any desired height at which ice drawn from a river, creek, or lake is to be delivered, and in arranging over and upon this railway an adjustable elevator-frame of sufficient length to reach from the water to a short distance beyond the point of delivery, and having at each end one or more pulleys, around which passes a single endless chain provided with ice-hooks of a novel construction, which will be hereinafter particularly described; and my invention consists, further, in a device for permitting the use of different-sized ice-hooks, and for preventing the stoppage or breakage of the apparatus by misplaced cakes of ice. It consists, also, in an arrangement for keeping the entrance to the elevator clear of slush and small ice, and the peculiar construction whereby all pulleys, the chain, and the hook-fastenings are kept clear of the water while working.

The details of my invention will be fully explained in the following specification, reference being made to the accompanying drawings, in the several figures of which similar parts are indicated by like letters.

In the drawings, Figure 1 is a side elevation of my invention. Fig. 2 is a plan view. Fig. 3 is a vertical section on the line *x x*, Fig. 2. Fig. 4 is a view of the ice-hook, showing the mode of its attachment to the endless chain. Fig. 5 is a partly-sectional view, showing how the ice-hook fits in the elevator-frame and upon the railway.

A is the foundation or base, extending a short distance out from shore, and back as far as desired, or as circumstances will permit, on

a level, or nearly so, with low-water mark in the ice-cutting season. This foundation may be built of masonry, or as an ordinary wooden pier, on piles. At the inner terminus of this foundation or pier, or beyond, is erected a tower or scaffold, B, and from a recess in the front of the foundation or pier a stationary inclined railway leads to the top of the tower; or the railway may lead up to an ice-house, or to the top of a river-bank. D is the adjustable frame, resting upon the projecting ends of the ties of the inclined railway, and having pulleys G G' G'' arranged upon transverse shafts *g g' g''* at its ends. Around the pulleys G and G'', and under pulley G', passes an endless chain, E, to which are attached the ice-hooks F F, which will be more particularly described hereinafter. Upon each end of the fixed pulley-shaft *g''* are arranged rocking arms R R, extending to near the lower end of frame D, and having at their outer ends bearings for shaft *g'* of pulley G'. Projecting below the lower end of frame D, and firmly attached thereto, is a horizontal shoe or grating, *d*, composed of rails or slats *d'*, the inner ends of which extend between the rails of the permanent inclined railway, the rails or slats of said shoe being slightly concave longitudinally on their upper surfaces. When the lower end of frame D rests upon the foundation A, the shoe *d* extends slightly below the surface of the water at low-water mark, and over said shoe the cakes of ice are floated into position to be taken hold of by the ice-hooks of the elevator. The chain E passes around the upper pulley G, over the vibrating pulley G'', and thence on around the fixed pulley G', its motion being on a horizontal line from pulley G' to pulley G'', in the direction of the arrow, when at work, in order that the ice-hooks F may catch any sized cakes of ice within a given range, which may be in position over the shoe *d*. The shaft of pulley G'' is mounted upon the swinging arms, in order that, should the ice-hook strike upon the top of a cake of ice which has not been floated in far enough, or from any other cause has become misplaced so as to be struck on top by the hook, the swinging arms will yield, and allow the hook to slip over the surface of the cake. If the pulley G'' were rigidly fixed, and a cake of ice should be caught

between the ice-hook and the shoe *d*, it will be readily seen that either the ice or apparatus must break, or work be suspended until the obstruction shall have been removed.

I have before alluded to the fact that I use a single endless chain in my elevator, instead of two chains, as is customary, and this I am enabled to do by the peculiar construction of my ice-hook, (shown in Figs. 3 and 4,) and the manner of its attachment. I is a bar of wood or metal, having arms *ii* at its ends. The body of the bar is of proper length to fit loosely between the side rails of the inclined railway, said side rails being somewhat higher than the intermediate rails, and the arms *ii* extend over said side rails to the sides of the elevator-frame. From points near the ends of bar I, on a line through its longitudinal center, project two arms, *i' i'*, which, at their outer ends, are connected by a rod, *i''*. The bars *i' i'* I make of a length about equal to two-thirds of the diameter of the upper or larger pulley G, and they are placed somewhat farther apart than are the top rails 1 2 of the elevator-frame. To the middle of the bar I is attached a small swinging bail, 2', and to the middle of bar *i' i'* is attached a link, 3, and this bail and link are attached to the endless chain in any suitable manner, so that the hook F has a slight play in the line of the chain. From both the upper and lower ends of the top rails 1 2 of the elevator-frame extend downward prolongations P P', in the shape of arcs of circles of slightly less diameter than the pulleys which are between the pairs of arcs, respectively. The shaft *g* of pulley G projects outside of the elevator-frame D, and carries another fast pulley, G³, at its outer end. To this pulley G³ motion may be communicated by a belt from any suitable motive power.

In the drawing I have shown simply a method of driving the apparatus by hand, which will be readily understood without particular description, and may be varied according to circumstances.

As creeks and rivers are liable to frequent variations of their water-level during the ice-cutting season, I have constructed the elevator so that it may be adjusted to suit the water-level at the time of working—that is, so that the shoe *d* may be arranged at the proper point to allow the cakes of ice to be floated over it into position to be caught by the hooks F F. This is effected by allowing the sides of the elevator-frame to rest upon the projecting ends of ties *t t t* of the inclined railway without being permanently fixed thereto.

By means of the windlass T and ropes *t' t'*, arranged as shown in Fig. 1, or in any suitable manner, the movable elevator-frame may be adjusted to any desired point, in order to bring shoe *d* into proper position.

The elevator may deliver the ice directly into an ice-house or wagons, or upon a slide or chute, S, by which it may be conveyed to any desired point.

It will be seen that, the bar I of my ice-hook fitting between the high rails of the inclined railway, and being connected to chain E, as is also rod *i''*, the ice-hook cannot swerve or wobble from side to side sufficiently to allow the cakes of ice to escape or become wedged in the frame D; and after each hook has delivered its load and passes on, the rod *i''* and bar I pass outside of the arcs P P, which support the hook in proper position until it reaches the top rails 1 1 of the elevator-frame, down which it passes to the arcs P' P', which guide it to its proper position for catching a cake of ice and again making the ascent.

In ordinary ice-elevators two chains are used, and two hooks or pins are arranged upon said chains opposite each other; but great increase of economy in construction over these results from my method without loss of efficiency.

Any number of the ice-hooks F which may be found convenient or desirable may be attached to the endless chain or cable.

In order to keep the entrance of the elevator-frame clear of slush and small pieces of ice I construct a canal, K, through the foundation A, said canal leading away from the rear of the inclined railway, and emptying into the body of water at a point distant from the locality of the apparatus. The continual passing of the ice-hooks through the water at the entrance of the elevator-frame creates a current, which carries the slush and small ice between the rails of the railway, and off through the canal; or openings may be made in the inclined railway for the passage of small ice.

Having now fully described the construction and operation of my invention, I claim and desire to secure by Letters Patent—

1. The combination of inclosed sliding frame D, foot *d*, pulleys G G', vibratory pulley G'', endless chain E, having ice-hooks attached thereto, and stationary railway C, substantially as and for the purpose set forth.

2. The ice-hook F, composed of bar I, bars *i' i'*, and rod *i''*, in combination with chain or cable E and inclined railway C, substantially as described.

3. The ice-hook F, composed of bar I, bars *i' i'*, and rod *i''*, in combination with chain or cable E, stationary railway C, pulleys G G', and upper rails 1 2, having the arc-shaped prolongations P P P' P', substantially as and for the purpose set forth.

4. In combination with an ice-elevator, constructed substantially as described, the chute or canal K, leading from the rear of the foot of the railway C, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own invention I affix hereto my signature in presence of two witnesses.

XAVIER WITTMER.

Witnesses:

JOHN L. HAYS,
JOSEPH C. GURGE.