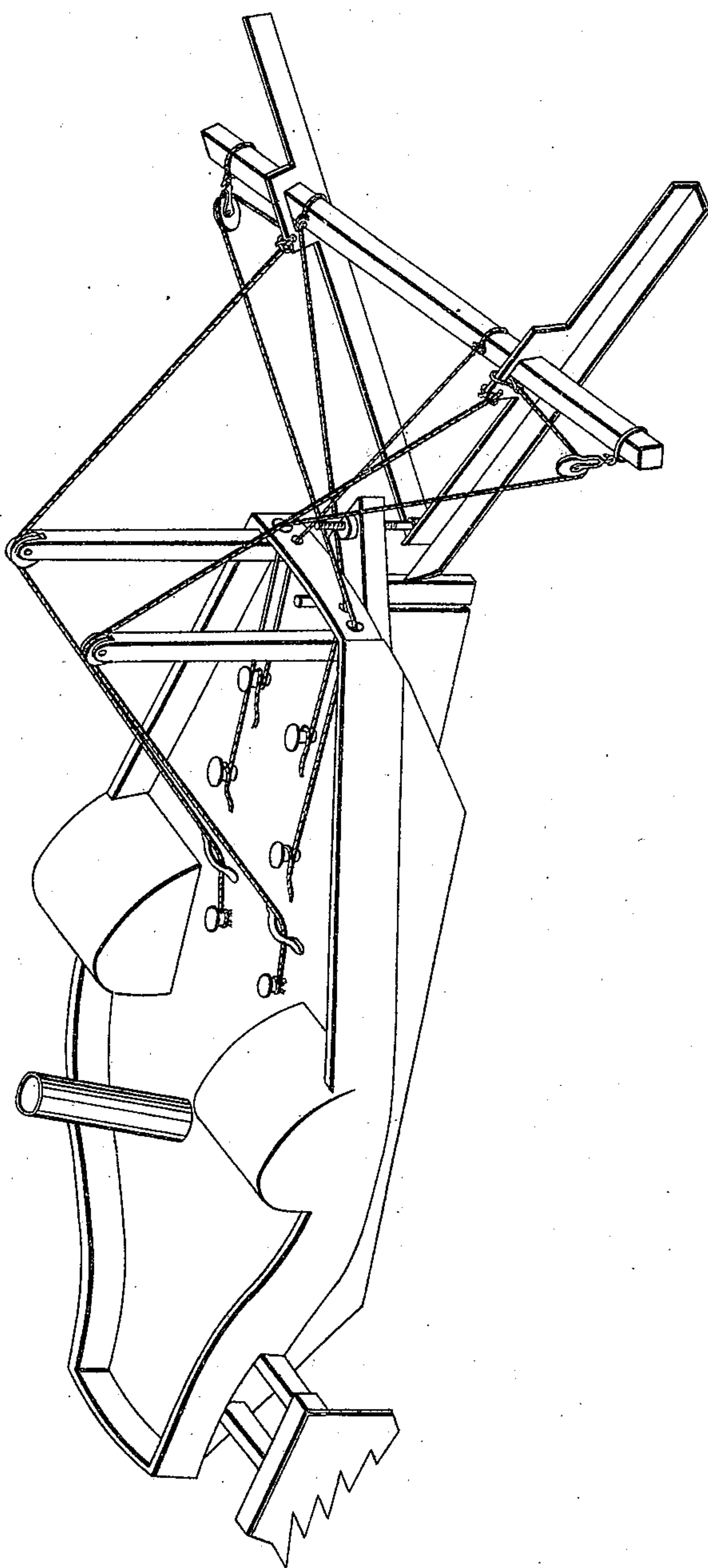


*D. Large.
Ice Boat.*

N^o 15,187.

Patented Jun. 24, 1856.

Fig 1



Witnesses:

*A. B. Stoughton
Thos. H. Mepperman.*

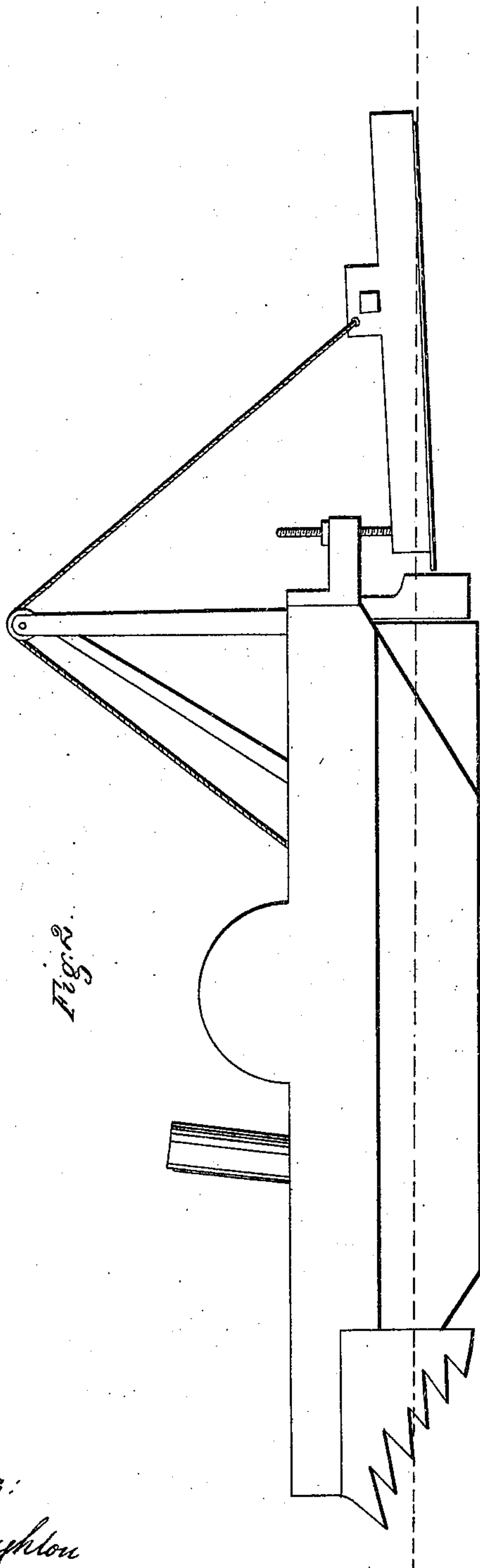
Inventor:

Daniel Large.

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Ice Boat.

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A. B. Houghton
Thos. H. Wepferman.

Inventor:
Daniel Large.

UNITED STATES PATENT OFFICE.

DANIEL LARGE, OF PHILADELPHIA, PENNSYLVANIA.

ARRANGEMENT OF MEANS ATTACHED TO ICE-BOATS.

Specification of Letters Patent No. 15,187, dated June 24, 1856.

To all whom it may concern:

Be it known that I, DANIEL LARGE, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and improved mode of cutting a channel through large bodies or fields of ice, such as generally interrupts or prevents the navigation of most of the rivers and harbors of the United States during the winter months, and of keeping the same open and unobstructed for the passage of ships and other vessels during the lowest temperature of the atmosphere; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in attaching two troughs made of wrought iron or other suitable material and formed of two sides at or near right angles to each other, to the stern of a steamboat of the required form, size, and powers, immediately behind the rudder. The two troughs being united at the point nearest the rudder and there forming an angle by their sides of about fifty degrees or of any other number of degrees that may be found most effective and convenient for the work to be performed. One side of the two troughs is to be placed on a level with the water or horizontally which will cause the other sides to stand perpendicularly. At the point nearest the rudder when the troughs form an angle they are to be strongly united, and by means of a screw and lever or other analogous mechanical device to be raised or lowered to such a point below the level of the water as may be most suitable to receive floating ice while in motion from the impulse imparted to it by the action of the paddle wheels of the steamboat to which the two troughs are attached. The two troughs to spread open from the said angular point, in the shape of a V, to the width of the channel cut through the ice, and secured in that position by iron bars or other suitable device; and the ends of the troughs next the solid ice raised and guided by means of chains attached to them and passing over friction roller on a king post placed upon the stern of the boat; or other

equivalent mechanical arrangement so as to raise and keep the extreme or discharging ends of the said troughs on a level with the adjoining solid ice and causing the action of the paddle wheels to throw the broken and floating ice first into or upon the said troughs and through them to shoot it upon the solid ice on each side and out the channel which has been cut.

To enable others skilled in the art, to make use of my invention I will proceed to describe its construction and operation more particularly.

First in case I should construct a steamboat for the purpose of putting my invention in operation, I should build the hull of iron with a flat or scow-shaped bow on a right line from the water to the gunwale and forming an angle of about forty degrees with the water in front, with an iron stem or cutwater of about 8 inches square, iron drawn to an edge in front. On the bow of the boat and extending from where the bow first breaks the water to three or four feet beyond and a little above the water line I should build a strong frame of that width extending at each end about one foot beyond the paddle wheels. On the outside of each end of this frame I should place what I denominate an ice plow which is constructed by placing a sufficient number of bits of the shape designated as hawks bills by mechanics upon a plate of iron with a spread of the lips of the bit sufficient to give a free passage to the plate and other parts of the plow—the end next the ice to be cut. I should fasten to the frame by a strong pin with the first tooth of the plow on a level with the top of the ice to be cut, and the end next the boat depressed and secured in a position that the last tooth of the plow would be on a level with the underside of the ice to be cut—so that the ice intended to be removed from the channel is cut through by the two plows before the stem of the boat strikes it in the center. Should I make use of a steamboat already built I should construct the frame and ice plows in the same manner and if the paddle wheels were of sufficient strength, should deem it unnecessary to make any alteration beyond sheathing the bow and sides on the water

line with boiler iron and putting on an iron stem or cut-water of the kind and shape and in the position above described.

What I claim as my invention and desire to secure by Letters Patent is—

The arranging in the after part of the boat of the two troughs, for throwing, by the power and impulse given by the paddle

wheels, the broken and floating ice upon the fast ice on each side of the channel, and thereby keeping the water clear for the passage of vessels as herein described.

DANIEL LARGE.

Witnesses:

S. M. POOL,

T. SELDEN.