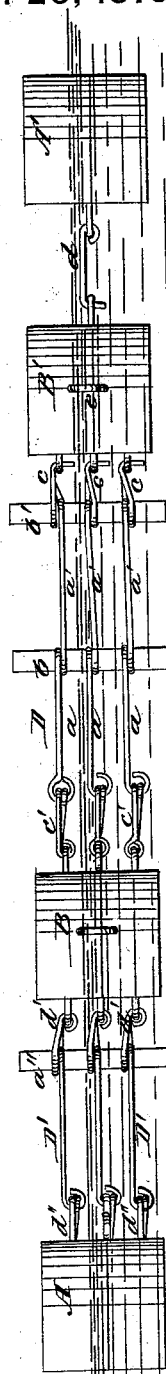
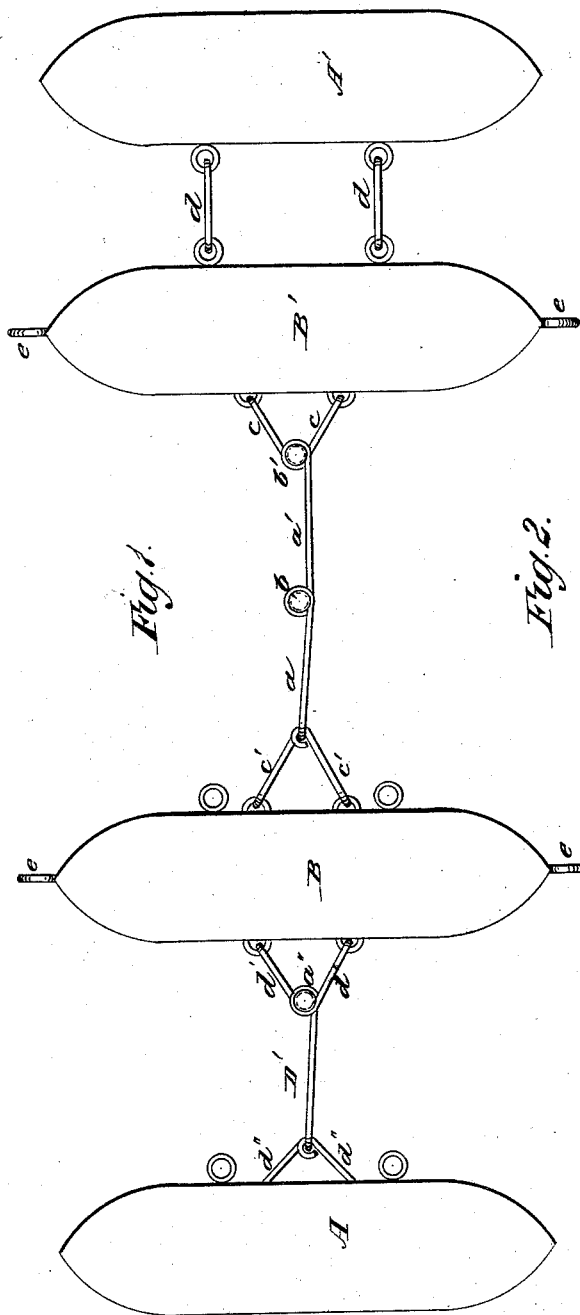


J. B. HANSLER.
Ice-Boom.

No. 218,962.

Patented Aug. 26, 1879.



WITNESSES:

Francis McArdle
C. Sedgwick

INVENTOR:

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UNITED STATES PATENT OFFICE

JOHN B. HANSLER, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN ICE-BOOMS.

Specification forming part of Letters Patent No. **218,962**, dated August 26, 1879; application filed January 30, 1879.

To all whom it may concern:

Be it known that I, JOHN B. HANSLER, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Ice-Boom, of which the following is a specification.

The object of this invention is to provide a boom for keeping cut or broken drift-ice from floating farther up and down stream than is desired, and also to prevent ice from descending the rivers and entering the harbors.

It consists of an arrangement of wire-netting or a net-work of iron rods and cables connected to floats, and joined to the shores, piers, or docks on either side, and arranged to swing open for the passage of vessels; also possessing sufficient elasticity to yield without breaking to the force of the current and tides, and to the impact of the floating ice.

In the accompanying drawings, Figure 1 is a plan of the improved ice-boom, and Fig. 2 is a side elevation of the same in position in the water.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A A' are timbers, which may represent either docks, piers, the two banks of a river, or the shores at the entrance of a harbor. These form the fixed part of the boom, to which the other parts are anchored.

B B' are the floats, to which the wire-netting is connected, and by which it is floated. This netting is composed of two sections of wire, *a a'*, connected together at adjacent ends by a vertical post, *b*, around which their ends are wrapped, so that it acts as a pintle, whereon they turn freely, thus forming a hinge-joint, whereby they are given sufficient elasticity to yield to the force of the current and to the pressure of the ice without breaking.

The outer ends of wires *a'* are wrapped around a post, *b'*, and this in turn is connected by links *c* with the float B', and the ends of wires *a* are connected with float B by links *c'*. The float B', next to timber A', is connected therewith by links *d* in such a manner that it can be readily and easily unhooked for the passage of vessels and then replaced again. Float B, near timber A, is connected therewith by a wire-netting, D', in one section,

hinged at the end adjacent to the float by a post-connection, *a''*, like those above described, which in turn is connected with the float by links *d'*, and at the opposite end connected by links *d''* with the timber A.

In the ends of the floats are placed eyebolts *e*, to which may be attached anchor-cables for the purpose of anchoring the floats when necessary. The boom thus constructed is stretched across the river or harbor-mouth and the ends firmly connected with the shore. The drift-ice floating against it is stopped, and thus where the river or harbor below is free from ice this will prevent it from entering from the river above. In like manner it will prevent the ice from being carried back by the tide after it is once carried out when it is stretched across at the proper point. Further, where they are cutting ice in a river, this boom can be used to keep it from being carried off by the current.

By hinging the wire-netting to the posts perfect freedom of movement is allowed to the boom, enabling it to yield all that may be necessary without liability to break. Further, the connection of the floats with one of the shore-lines by means of links easily hooked and unhooked enables the boom to be opened at pleasure for the passage of vessels, and thus navigation is not interfered with.

The boom-netting is shown in the drawings made of parallel bars of iron and hinged sections between the floats; but this arrangement may be varied if thought proper by making a grating of wire, placing the wire rods diagonally to length of the boom, and connecting them by hinged joints with links, and these latter to the floats, or any other convenient form of netting or net-work attached to the float, so as to present an efficient obstruction to the drift-ice, and at the same time have the proper strength and elasticity.

The depth of the boom must, of course, depend upon the force of the current, and the floats must be proportioned to the size and weight of the boom.

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

1. An ice-boom for rivers and harbors, composed of floats B B', in combination with a

netting, D, and adapted to be anchored to the shore, for the purpose of obstructing the movement of drift-ice, substantially as described.

2. The netting D, composed of two sections, *a a'*, hinged together by a post, *b*, in combination with floats B B', for the purpose of giving elasticity to the boom, substantially as described.

3. The combination and arrangement of floats B B', netting D, composed of two sections, *a a'*, hinged together by post *b*, post *b'*,

for forming a hinged connection between section *a'* and links *c* of float B', and the netting D', hinged to post *a''*, for the purpose of furnishing a hinged elastic connection between float B and the shore-timber A, substantially as described.

JOHN B. HANSLER.

Witnesses:

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