(No Model.)

F. W. SCHILLER.

ICE BREAKER FOR VESSELS.

No. 384,593. Patented June 12, 1888.

FIG I.

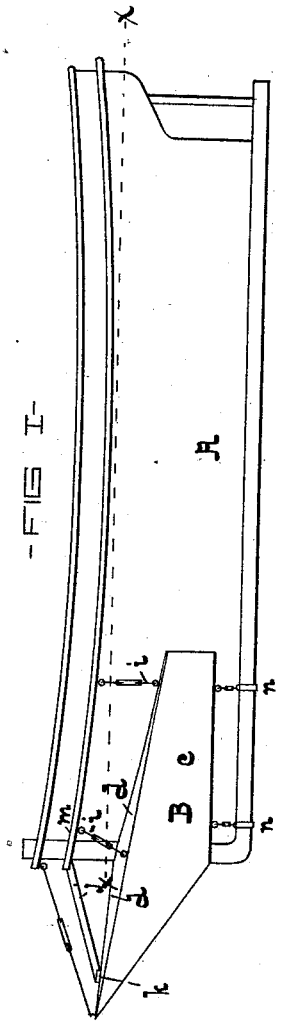


FIG II.

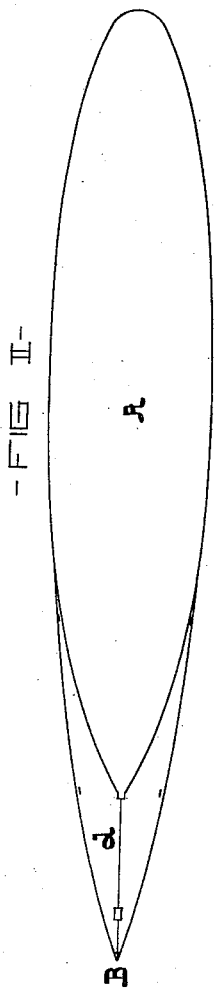


FIG IV.

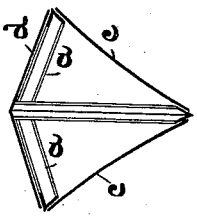
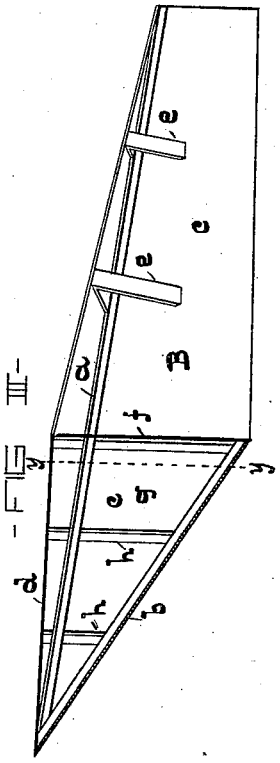


FIG III.



WITNESSES.

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UNITED STATES PATENT OFFICE.

FREDERICK W. SCHILLER, OF BALTIMORE, MARYLAND, ASSIGNOR OF TWO-THIRDS TO H. HERMANN PETZE AND GEORGE W. UMBACH, BOTH OF SAME PLACE.

ICE-BREAKER FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 384,593, dated June 12, 1888.

Application filed May 26, 1887. Serial No. 239,382. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. SCHILLER, of the city of Baltimore and State of Maryland, have invented certain Improvements in Ice-Breakers for Vessels, of which the following is a specification.

This invention relates to certain improvements in a prow adapted for attachment to the bow of a vessel to break ice and protect the vessel against injury from the same, as will hereinafter fully appear.

In the further description of the said invention which follows reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure I is an exterior side elevation of a tow-boat to which is applied the improved ice-breaker. Fig. II is a sectional plan of Fig. I, taken on the dotted line *x x*. Fig. III is a longitudinal central section of the improved prow, the same being shown on an enlarged scale. Fig. IV is a section of Fig. III, taken on the dotted line *y y*.

Similar letters of reference indicate similar parts in all the figures.

A is the hull of the vessel, and B the ice-breaker. The ice-breaker consists of the angle-iron side bars, *a a*, and the stem-iron *b*, which are riveted together and covered with the side sheets, *c c*, and the deck-sheet *d*. The side sheets of the prow are of such curvature and length as to give to the prow the character of an elongation of the hull to which it is applied, there being practically no break where the sides of the prow unite with the sides of the vessel. (See Fig. II.)

The deck-sheet *d* is sloped from the longitudinal center toward the sides or edges, as shown in Fig. IV, to shed ice piled thereon in the ice-breaking operation, and it is cut out to fit around the stem and bow of the vessel, as shown in Fig. II. The side sheets, *c c*, beyond the point of contact with the sides of the vessel, are provided with knees *e e*, (see Fig. III,) which fit the sides of the vessel, and at their upper ends support the deck-sheet *d*.

A bulk-head, *f*, is placed across the prow to form a water-tight chamber or compartment, *g*, which is strengthened by means of angle-iron frames *h h*. (See Fig. III.) This water-tight compartment serves to give flotation to the prow, and it can be further strengthened without destroying the flotative character by being filled with wood. The prow is held to the bow of the vessel by means of rods *i i*, having swivels therein, and its forward end is stayed by a beam, *j*, which extends from a lug, *k*, on the deck-sheet to underneath a guard, *m*, of the hull.

Straps *n*, placed under the keel and attached to the under side of the prow by bolts and swivels, serve to keep the prow from lifting as it breaks the ice.

By having the side sheets arranged to form a continuation of the sides of the vessel, as shown, the broken ice meets with no obstruction, as will be readily understood.

I claim as my invention—

A prow adapted for attachment to the bow of a vessel, which consists in a stem-iron, side bars, side and deck sheets, and a water-tight bulk-head placed transversely of the prow, the whole being fastened together, substantially as and for the purpose specified.

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Witnesses:
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