

J. BROWN.

Portable Caissons for Repairing Vessels.

No. 147,040.

Patented Feb. 3, 1874.

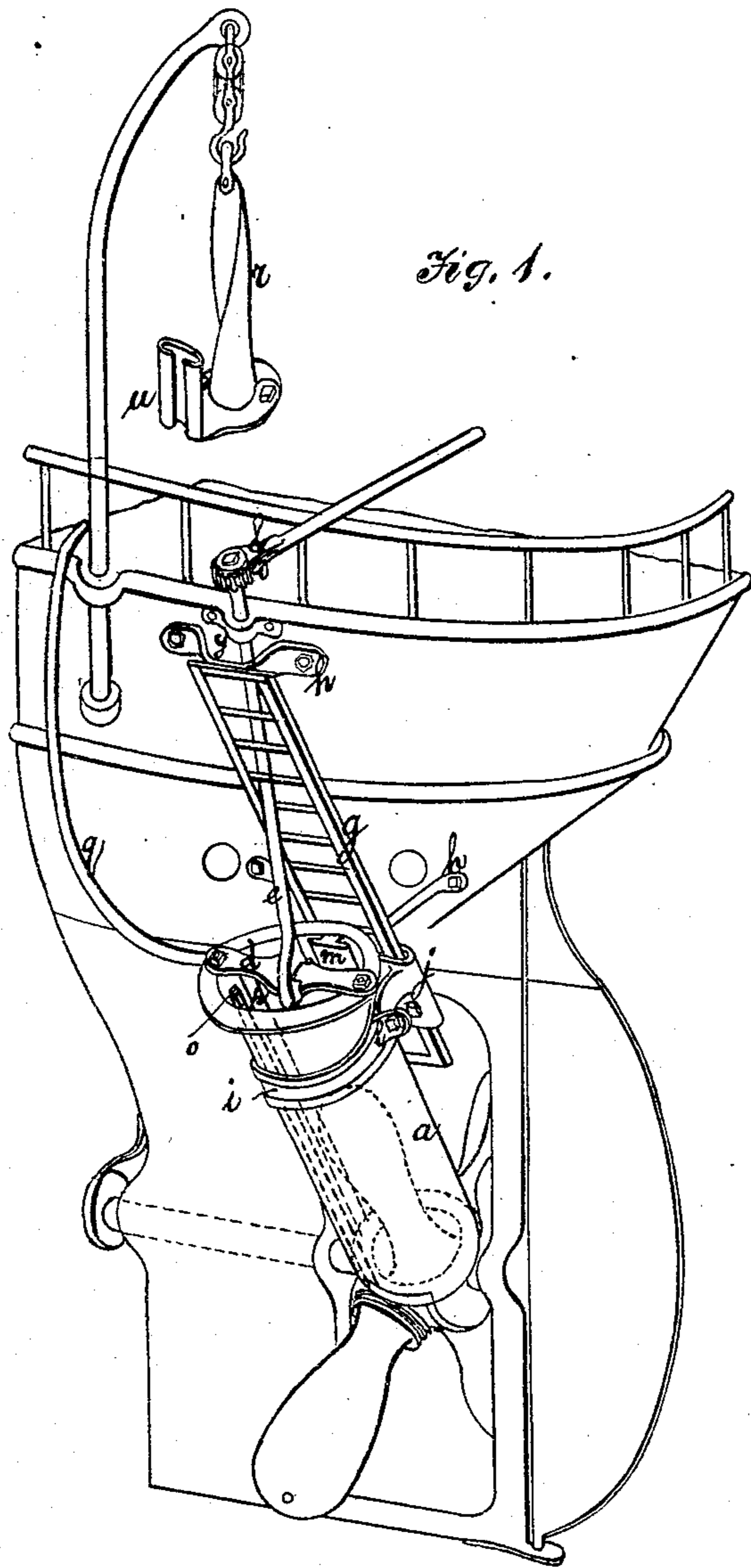


Fig. 1.

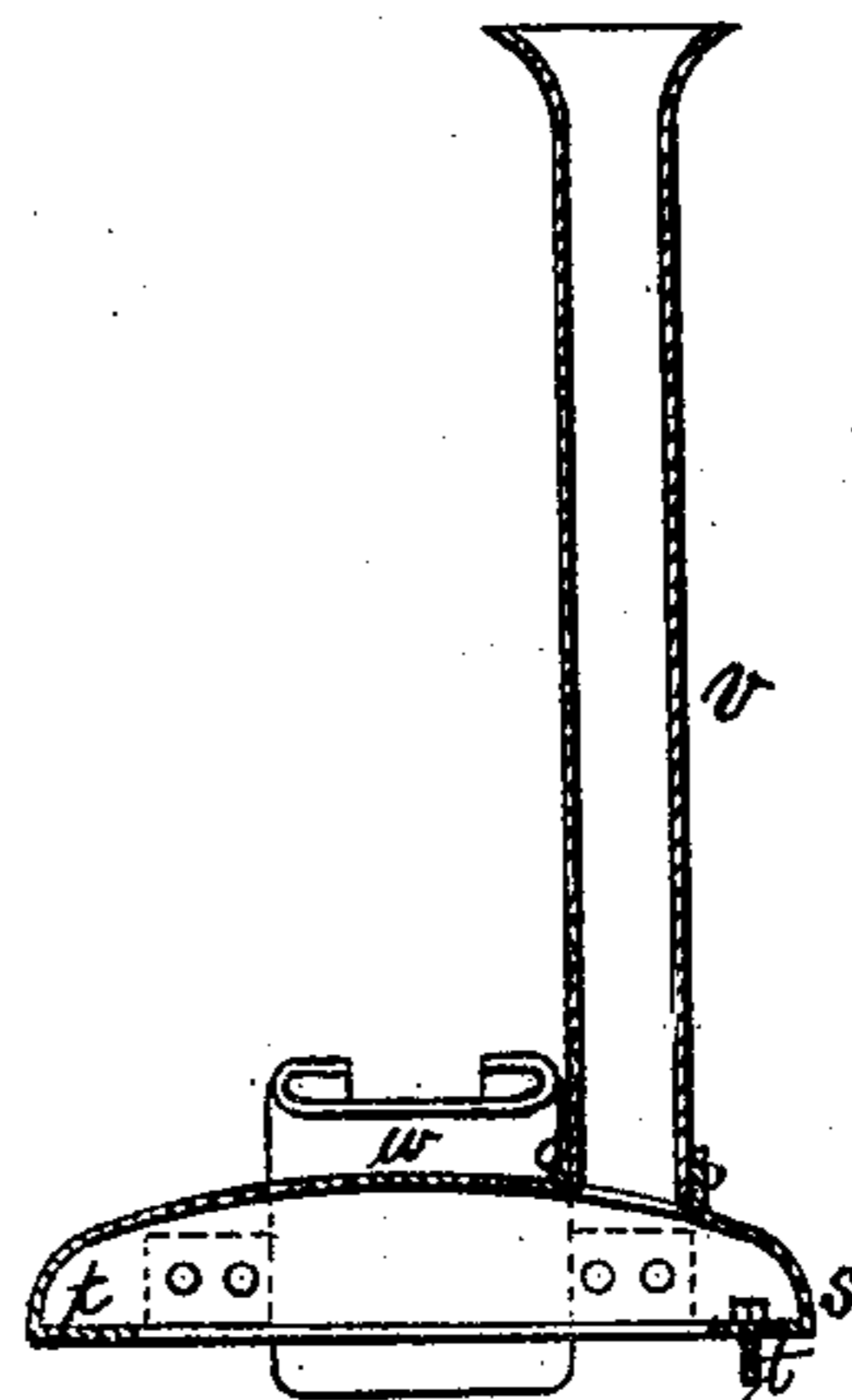


Fig. 4.

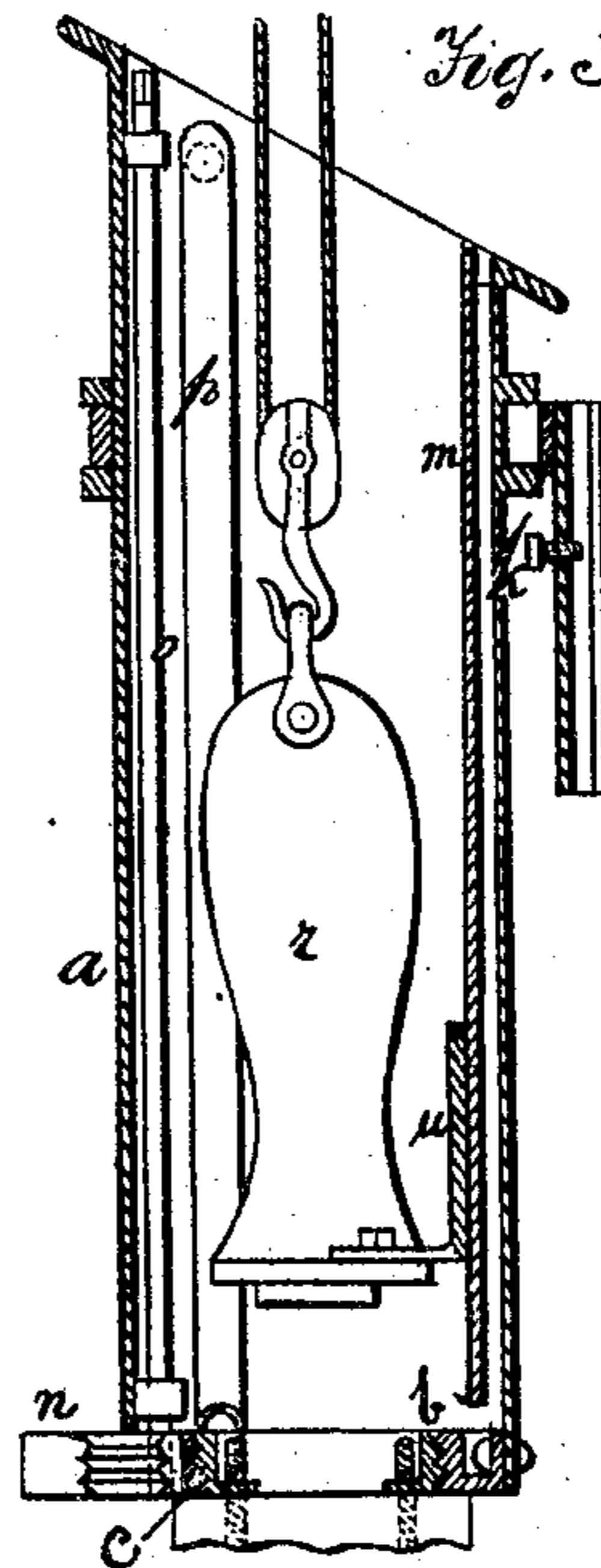
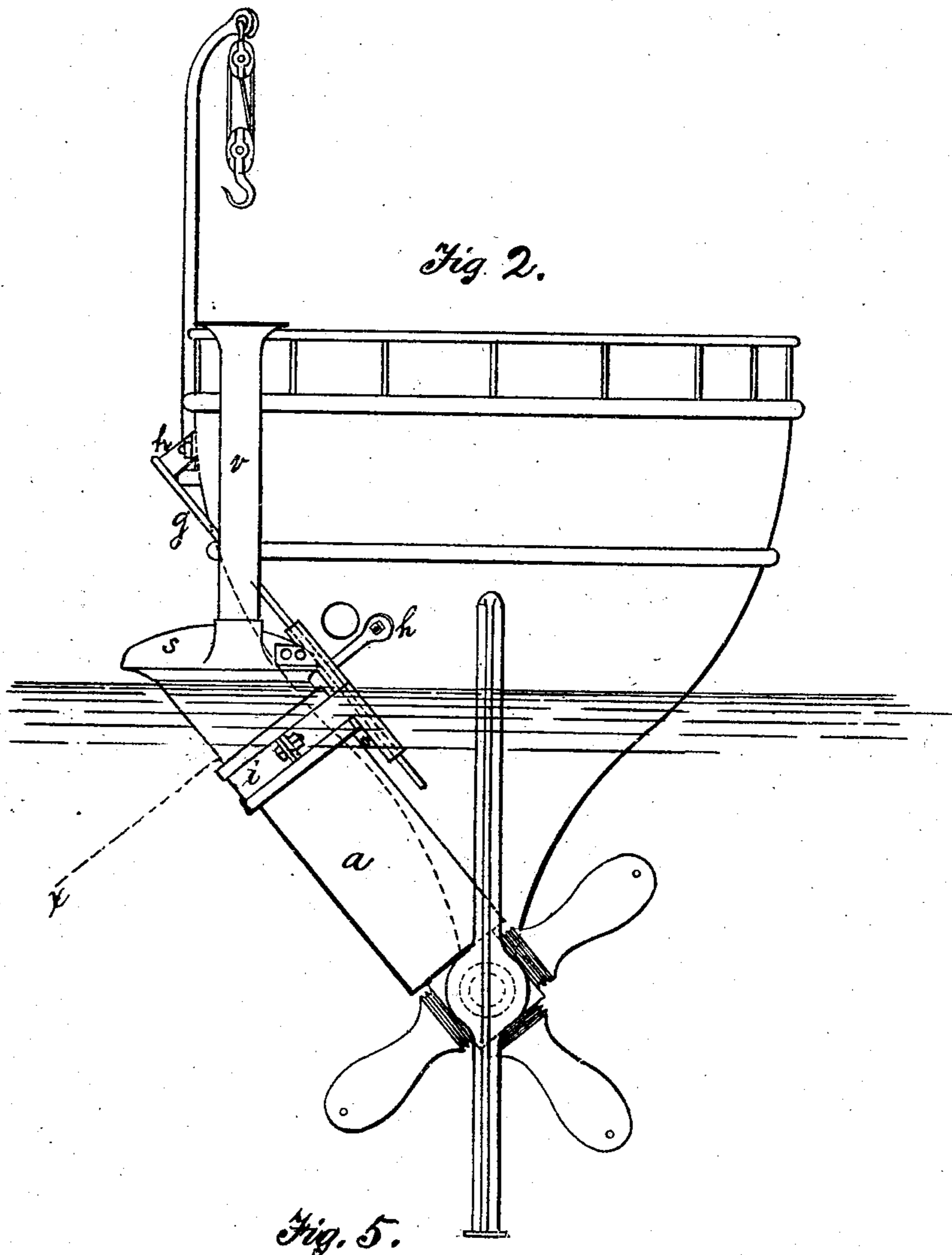


Fig. 3.

Witnesses
A. Stuart.
M. A. Shaw

Inventor.
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UNITED STATES PATENT OFFICE.

JAMES BROWN, OF CHESTER, PENNSYLVANIA.

IMPROVEMENT IN PORTABLE CAISSONS FOR REPAIRING VESSELS.

Specification forming part of Letters Patent No. **147,040**, dated February 3, 1874; application filed December 10, 1873.

To all whom it may concern:

Be it known that I, JAMES BROWN, of Chester, Delaware county, Pennsylvania, have invented a Portable Caisson for use on Ships, of which the following is a specification:

The said caisson is intended to facilitate access to the propellers of ships at all times when afloat, either in port or at sea, whether for the removal of the blades when the engine is disabled, or for the removal of portions of broken blades and the insertion of new blades, or for altering the pitch of the blades, or for any other purpose.

In the drawings, Figure 1 is a perspective view of a ship's stern and propeller with my apparatus as applied to the hub of a propeller. Fig. 2 is an elevation of the stern with the caisson in position. Fig. 3 is a longitudinal section of the caisson, showing the screw at the bottom of the caisson for attaching it to the hub of the propeller, showing also a part of the propeller-hub, and also showing a blade in elevation in connection with the carriage and slide for holding and guiding the blade when it is being passed up or down through tube *a*. Fig. 4 is a vertical section of the caisson-cover and its appendages. Fig. 5 is a cross-section of the caisson on the line *x* of Fig. 2.

a, Figs. 1, 2, and 3, is a tube of iron, copper, or other suitable material, provided at the bottom with a three-threaded or quick screw, *b*, by which it is attached to a corresponding screw, *c*, formed on or secured to the hub of the propeller at the base of each blade, and shown in section, as regards one blade, in Fig. 3. *d*, Fig. 1, is a removable cross-bar, temporarily attached to the upper end of the tube *a*, when said tube is to be lowered down and screwed to the hub, or drawn up on the ship's deck. *e* is a detachable wrench, connected with the cross-bar *d* by a flexible joint. *f* is a reversible ratchet, operated from the ship's deck, for screwing tube *a* on and off the propeller-hub. *g* is a combined ladder and slide, fastened to the hull of the ship by brackets *h*, the lower bracket being preferably secured by bolts from the inside of the ship. *i* is a strap for securing tube *a* to the carriage *j*, and at

the same time allowing said tube to be turned around freely in screwing it on and off the hub. *k* and *l* are set-screws, the former for tightening the carriage *j*, when the tube *a* has been screwed to the hub of the propeller, and the latter for fastening the sections of the strap together. *m*, Figs. 1 and 3, is a slide, extending the length of tube *a* inside, for guiding the blades down through said tube at the proper pitch into their respective places on the hub. *n*, Figs. 3 and 5, is a screw-faced valve, located at the bottom of tube *a*, and shown opened. *o*, Figs. 1 and 3, is a rod by which said valve is opened and closed. *p*, Fig. 3, is a flattened suction-pipe, through which the water is pumped out of the tube *a*. *q*, Fig. 1, is a hose or pipe, connected at one end to the suction-pipe *p* by an ordinary screwed nozzle, and connected at its other end to a pump. (Not shown.) *r*, Fig. 1, is a propeller-blade, suspended from a davit, as shown, preparatory to being lowered down into the tube *a*, the carriage *u* being temporarily bolted to the flange of the blade to guide the blade down slide *m* with exactness into its intended place on the hub. *s*, Figs. 2 and 4, is a cover for the tube *a*, intended to be used in rough weather. Said cover is provided with an internal flange, *t*, by which it is bolted from the inside to a corresponding flange on the tube. *v* is a detachable funnel, through which the workmen and tools are let down into and drawn up out of the caisson, and through which the caisson is ventilated in rough weather. To the cover *s* there is attached a carriage, *w*, by which said cover is slid down the ladder *g* into its place on the flange of tube *a*. *y*, Fig. 1, is a guard-bracket, for steadying the top end of the wrench *e*, when the tube *a* is being screwed on and off the propeller-hub.

To facilitate the use of the apparatus described, the propeller-shaft inside the ship is marked, when the ship is out of the water, or whenever the propeller is accessible, with marks which indicate the positions of the several propeller-blades, and in case it becomes necessary to have access to the ship's propeller at sea for the repair of the blades or any other purpose,

the propeller is turned by the aid of said marks into the exact position required for the attachment of tube *a* to the screw on the hub. The propeller-shaft is then firmly secured, so as to prevent accidental turning. The ladder *g* is then secured by the brackets *h* to the side of the ship, and the tube *a* is slid down the ladder *g* by its carriage *j*, the valve *n* being at the same time opened by means of a wrench brought to bear on the rod *o*, to allow the tube to pass the widest portion of the blade, and the valve being then closed, the tube *a* is screwed to the corresponding screw on the hub, and is thus made water-tight. The cross-bar *d* is then removed or turned on one of its bolts to one side out of the way, and the water is pumped out of the tube *a* through the hose *q*. Workmen can then descend into the tube and in safety perform such work as is required. In case a blade or remaining part of a broken blade is to be removed, after having been detached from the hub, it is attached to the carriage *u*, Fig. 3, and drawn out of the tube by means of hoisting apparatus. The carriage *u* is then detached from the removed blade or broken portion and attached to a new blade, which is lowered into tube *a*, the carriage *u* guiding it, as shown in Fig. 3, down the tube onto the bolts (see Fig. 3) commonly employed for attaching blades to the hub of a propeller. When the blade has been screwed fast, the workmen withdraw from the tube *a*, and the valve *n* being then opened for the double purpose of allowing said tube *a* to pass over the widest part of the blade and to admit water into the tube, the tube *a* is unscrewed from the hub and drawn up on deck. The ladder *g* can be left in its position on the ship's side at all times, if desired.

I have shown but one strap for attaching tube *a* to its carriage. Increased steadiness is secured by employing two such straps.

The tube *a* may be made in two sections or

lengths, bolted together through flanges, or otherwise securely joined, and in that case the sections can be used as ventilators when out of service as a caisson.

I claim—

1. The portable caisson consisting of a tube, *a*, which is provided with a bottom screw for attaching it to the propeller-hub, a valve at the bottom of said tube, a carriage for guiding blades or other objects up and down through said tube, and an internal slide, upon which said carriage travels, substantially as set forth.

2. The tube *a*, constructed as aforesaid, in combination with the screw formed or fastened on the propeller-hub around the base of each blade, substantially as set forth.

3. The tube *a*, constructed as aforesaid, in combination with the ladder and a carriage for sliding said tube down the ladder into its required position on the propeller-hub, or up said ladder onto the ship's deck, substantially as set forth.

4. The combination of the propeller-blade with a detachable carriage, by which, with a slide in tube *a*, the blades are guided through said tube to and from the propeller, substantially as set forth.

5. The cover *s*, constructed with a detachable funnel, *v*, an internal flange, *t*, through which it is fastened to tube *a* in rough weather, and a carriage, *w*, for guiding said cover down the ladder *g* into its position on the top of tube *a*, substantially as set forth.

6. The combination of the tube *a*, detachable cross-bar *d*, wrench *e*, and reversible ratchet *f*, or other means for performing from ships' decks the operation of screwing said tube *a* on and off the propeller-hub, substantially as set forth.

JAMES BROWN.

Witnesses:

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MARY ANN SHAW.