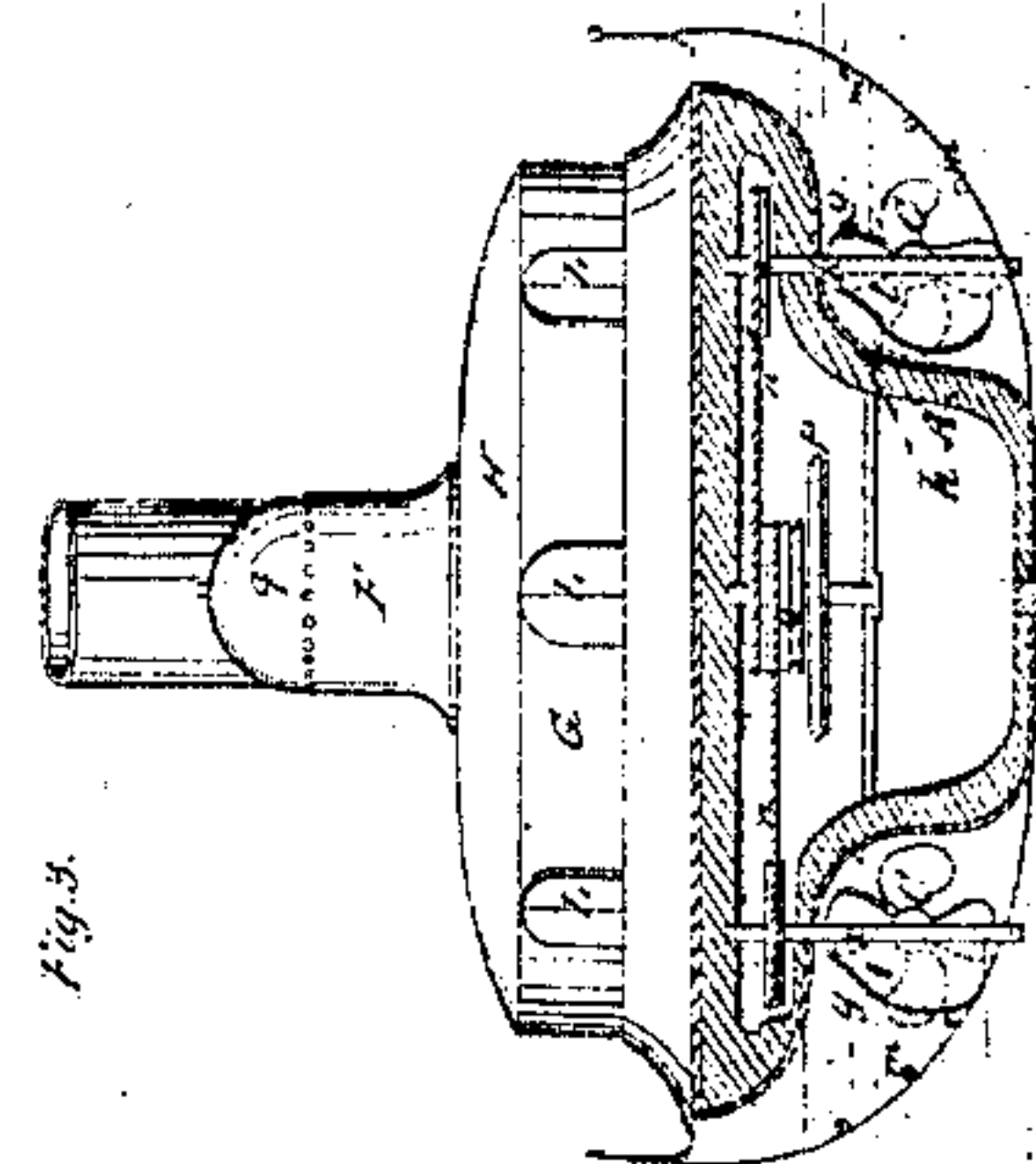
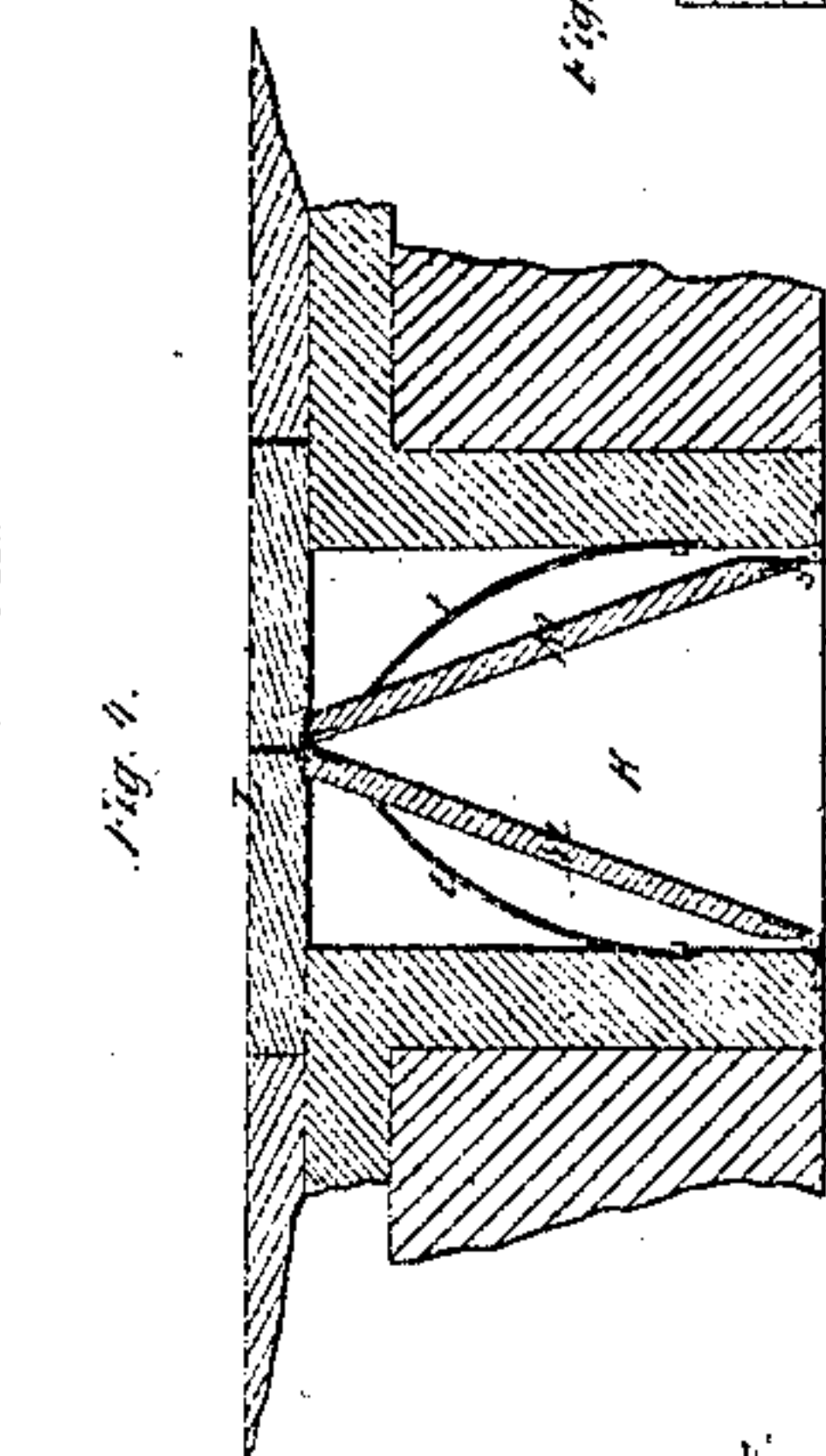
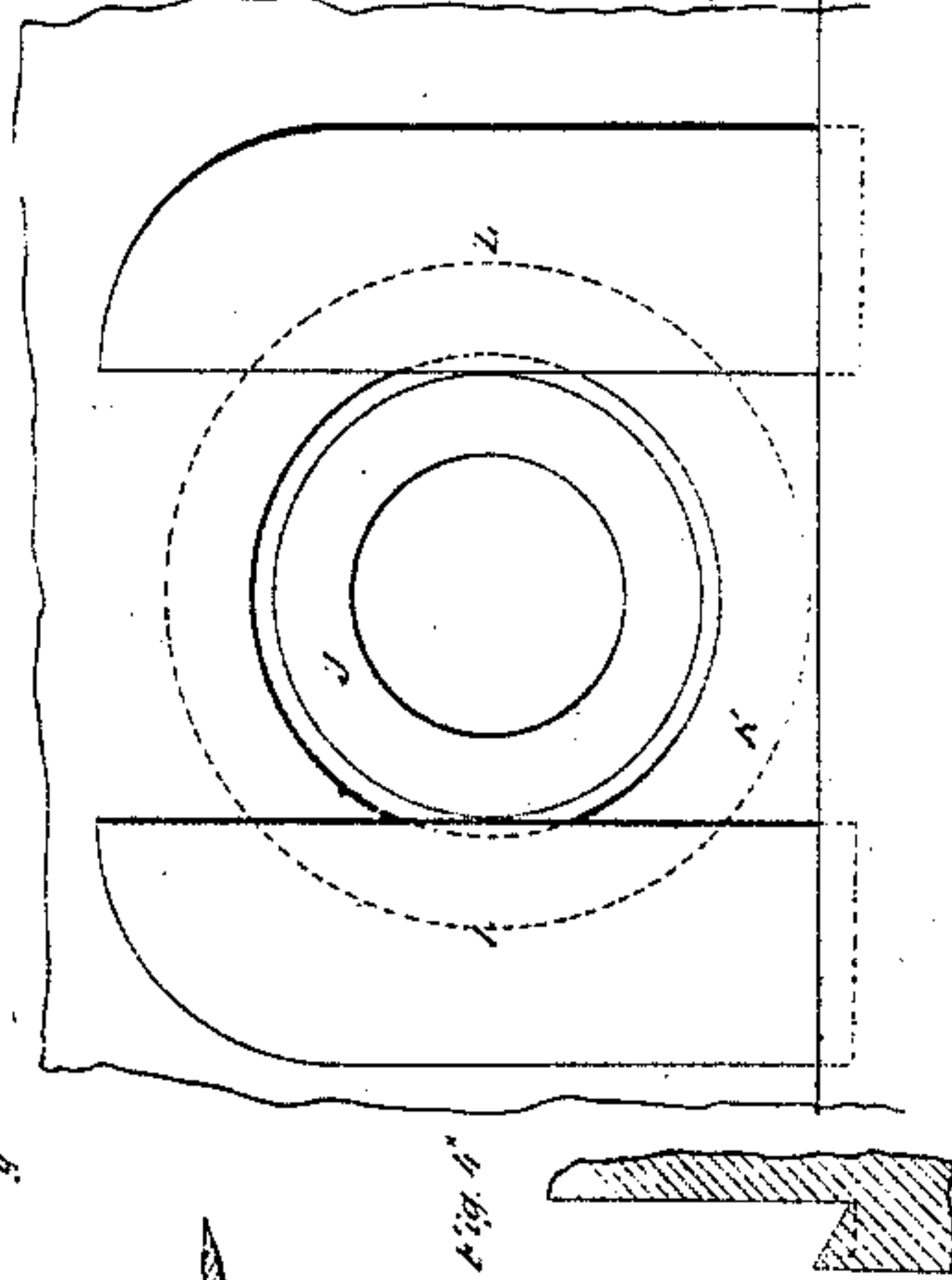
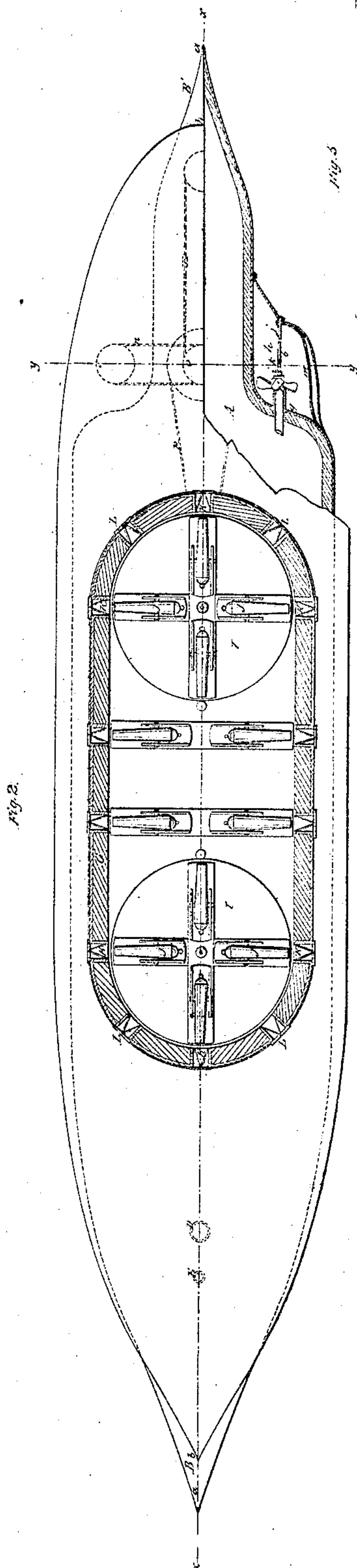
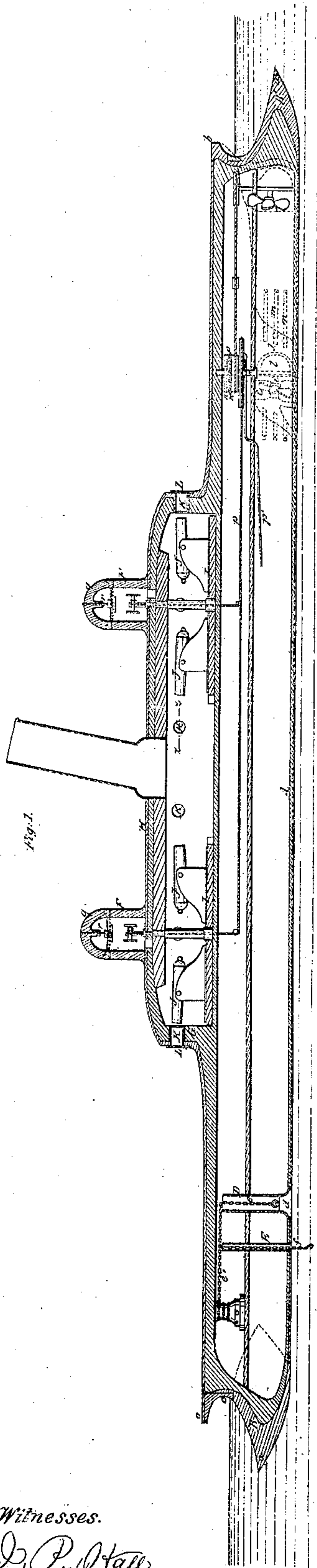


*R. G. McDougall,
Armor Clad.*

N^o 43,322.

Patented June 28, 1864.



*Witnesses.
J. P. Hall.
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UNITED STATES PATENT OFFICE.

R. G. McDOUGALL, OF NEW YORK, N. Y.

IMPROVED CONSTRUCTION AND EQUIPMENT OF SHIPS OF WAR.

Specification forming part of Letters Patent No. 43,322, dated June 28, 1864.

To all whom it may concern:

Be it known that I, Capt. R. G. McDougall, of the city, county, and State of New York, have invented new and useful Improvements in the Construction of Iron-Clad or other Vessels; 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 make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, the line *x x*, Fig. 2, indicating the plane of section. Fig. 2 is a horizontal section of the same. Fig. 3 is a transverse vertical section of the same, taken in the plane indicated by the line *y y*, Fig. 2. Fig. 4 is a detached horizontal section of one of the ports and port-closers, taken in the plane indicated by the line *z z*, Fig. 1, in a larger scale than the previous figures. Fig. 5 is an outside view of the same.

Similar letters of reference indicate like parts.

This invention consists in certain improvements in the construction and shape of the beak of the ram; also, in the use of a stand-pipe closed by a valve in its bottom, and extending above the water-line in such a manner that a convenient egress for divers from the vessel is afforded from the interior of the vessel for the purpose of removing torpedoes or effecting other submarine operations; further, in forming the after part of the vessel with double-ogee lines in such a manner that room is afforded for the side screws and rudders within the ordinary bilge-line of the vessel, and that said parts are fully protected against accidents or against the effect of a hostile attack; also, in concentrating the chains or ropes of two or more rudders on one central drum in such a manner that by the motion of this single drum two or more rudders can be operated simultaneously; also, in the employment or use of a rod extending from the steering-gear to the throttle-valve of the steam-engine in such a manner that by turning said gear the pilot from his stand is enabled to throttle the steam off or onto either the starboard or port engine, thereby giving them more or less revolutions, so as to steer the vessel by the difference in the speed

of her propellers; also, in two or more turn-tables, each provided with a series of radiating guns, in combination with an iron-clad casemate completely covering and protecting said guns and turn-tables, and provided with a series of radiating ports in such a manner that each gun on the table or tables can be readily trained from starboard to port or in line with the keel, and one gun can be loaded while the other is being discharged; further, in the use of an oblong cylindrical casemate with an arched roof in such a manner that great strength is combined with ample room to work the turn-tables and the broadside-guns; also, in a port-closer consisting of two sliding doors hinged to spring-levers, which are placed in an angular position in such a manner that the muzzle of the gun, when brought in contact with said levers in the act of running out the gun, will open the port, and when the gun recoils said port will close automatically; finally, in the application of a movable top to the pilot-houses, in combination with one or more screws, in such a manner that said top can be readily raised when the vessel is not in action, to admit of fresh air, and when preparing for action it can be readily fastened down.

A represents the hull of my vessel, which is built with a flat bottom and provided with a beak, B, at the stem, and another beak, B', at the stern. These forward beaks are of peculiar form. They are provided with a long prong, *a*, below the water-line, and with another short prong, *b*, above. The space between the two prongs forms a movable steel cutting-edge, *c*, and a log raft or any other similar obstruction which may come in the way of the vessel, instead of passing up the inclined upper edge of the prong *a* and lodging on the vessel's deck, is caught by the concave cutting-edge between the two prongs and cut through or broken, and the progress of the vessel is not impeded.

I have attached a ram at each end of my vessel, in order to render it more formidable for offense and defense.

E is a hawse-pipe, and D is a well or stand-pipe, which are secured in the fore part of the vessel. They rise above the water-line, and the pipe D is closed by a plug or valve, *d*, which is suspended from a chain, *e*, wound around a windlass or other suitable mechan-

ism. This pipe serves as a means of egress for divers who may be engaged in submarine operations—such as removing torpedoes in the channel or obstructions in a harbor—and in order to assist in these operations a chain, *f*, may be let down through the hawse-pipe *E*, so that the divers can hitch onto piles or other obstructions to be removed.

The after part of my vessel is built with a double ogee, *g h*, on each side, one set of ogees running fore and aft and the other set cross-wise, as clearly shown in Figs. 2 and 3 of the drawings. By these double ogee lines a recess is formed on each side of the hull to receive the two side propellers, *C*, and rudder *l*. The shafts of these propellers extend through sockets or stuffing-boxes inserted in the vessel in the ordinary manner, and their outer bearings are in uprights *i*, which form a portion of the skegs *j*. These skegs are cut out, as indicated in dotted lines in Fig. 1, and they form the steps for the rudder-posts *k*, which are situated behind the propellers, and to which the rudders *l* are attached in the usual manner. The rudders and propellers are situated within the ordinary bilge-lines of the vessel, and they are protected by rails *m*, extending around them to the skeg *j*, and from it to the hull of the vessel, as clearly shown in Fig. 2. If a third propeller is used at the stern of the vessel, as shown in red outline in Fig. 1, similar guard-rails extend back far enough to form a protection for this additional propeller and rudder. By this arrangement the propellers and rudders are entirely out of harm's way. They are not liable to run foul of some obstruction floating on the water, neither can they easily be hit by the enemy's shot, and if it should happen that one of the propellers should be disabled, the other one retains its propelling-power, and the vessel is not helpless. By having the two side propellers one independent of the other the vessel can be turned on its center, and thereby great facility in maneuvering the same is obtained in bringing the port-ranges to bear in action.

The rudders are operated by chains or ropes *n*, which concentrate upon a drum, *o*, from which a chain or rope, *p*, extends to the pilot-house *F*. I have shown two pilot-houses, though only one will be in use at a time, and the other may be considered as a reserve in case the first should be disabled. The drum *o* connects by a rod, *p'*, (see Fig. 1,) with the throttle-valves of the steam-engines, so that in case of an emergency the pilot is enabled to throttle the steam on or off without giving a signal to the engineer, and to steer the vessel by the difference in the speed of the two propellers. The pilot-houses *F* are supported by the casemate *G*, which occupies the space amidships of the vessel. Each of said pilot-houses is provided with a movable top, *q*, which can be raised when it is desired to admit fresh air, and fastened down by means of a screw, *r*, when preparing for action. The

casemate *G* is made in the form of an oblong cylinder, as clearly shown in Fig. 2, and its roof *H* is arched to obtain the greatest possible strength. The two ends of the casemate are occupied by the turn-tables *I*, each of which is furnished with four (more or less) guns, *J*, radiating from the center with their muzzles standing outward. By rotating the turn-tables each gun can be readily brought opposite to one of the port-holes *K*, and thus trained to any desired point of the compass, and while one gun is discharged another is in convenient position for swabbing and introducing the charge.

The number of guns and of port-holes in the casemate may be increased or decreased, as circumstances may demand, and, if desired, a series of broadside-guns may be placed between the two turn-tables. The ports *K* are closed by shutters *L*, which are hinged to the outer ends of converging levers *M*, and slide or roll back in guide-grooves on the outside of the casemate, as clearly shown in Figs. 4 and 5.

Fig. 4^x shows the shape of the V-shaped guide-groove.

The inner ends of the levers *M* are connected by hinges *s* to the edges or sides of the port-holes, and springs *t*, pressing on said levers, have a tendency to hold the shutters *L* closed, as shown in Fig. 4. If the gun is run out, the muzzle of the same, on coming in contact with the converging levers *M*, forces open the shutters, and when the gun is discharged and recoils the shutters, impelled by the springs *t*, close automatically.

By referring to Fig. 4 it will be seen that the levers *M*, on being forced apart, describe segments of circles round the pivots of the hinges *s* as centers, and in order to prevent the shutters being forced off from the sides of the casemate or vessel said pivots must either be arranged to move in longitudinal slots or the connection at the outer ends of the levers must be so arranged that it compensates for the circular motion.

It is obvious that the improvements hereinbefore described are applicable singly or combined, and some of them can be used for vessels of any description as well as for iron-clads.

I claim as new and desire to secure by Letters Patent—

1. The removable cutting edges *c*, applied to a beak or prow of any suitable form.

2. The well or stand-pipe *D*, closed by an adjustable valve, *d*, in combination with the vessel *A*, constructed and operating substantially as and for the purpose shown and described.

3. In combination with the aforesaid well *D*, the separate hawse-pipe *E*, extending down through the bottom of the vessel, and operating in combination with the chain *f* in the manner and for the purpose substantially as described.

4. Forming the after part of the vessel with double ogee lines *g h*, in combination with

screws and rudders, arranged substantially as and for the purposes set forth.

5. In a vessel constructed substantially as herein described, the open net-work skegs *j* and fore-and-aft braces *m*, applied to the vessel A, substantially in the manner herein described, to form counter-braces, and to receive and protect the screws and rudders, and at the same time give free access of water to the screws and rudders.

6. In a vessel constructed substantially as herein described, connecting the chains or ropes of two or more rudders upon one central drum, *o*, substantially as and for the purpose specified.

7. Connecting the steering-gear with the throttle-valve of the engines in the manner and for the purposes herein specified.

8. The use of two or more turn-tables, I, with guns J, in combination with an oblong cylin-

dricai casemate, G, constructed and operating substantially as and for the purpose set forth.

9. The oblong cylindrical casemate G, with ached roof H and radiating ports K, constructed, arranged, and operating as and for the purpose specified.

10. In a vessel constructed substantially as herein described, the double sliding doors L, in combination with converging spring-levers M, applied substantially as and for the purpose described.

11. The removable top *g* of the pilot-house F, raised and lowered substantially as herein described, for purposes of ventilation and protection.

R. G. McDOUGALL.

Witnesses :

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JOHN D. SECOR.