

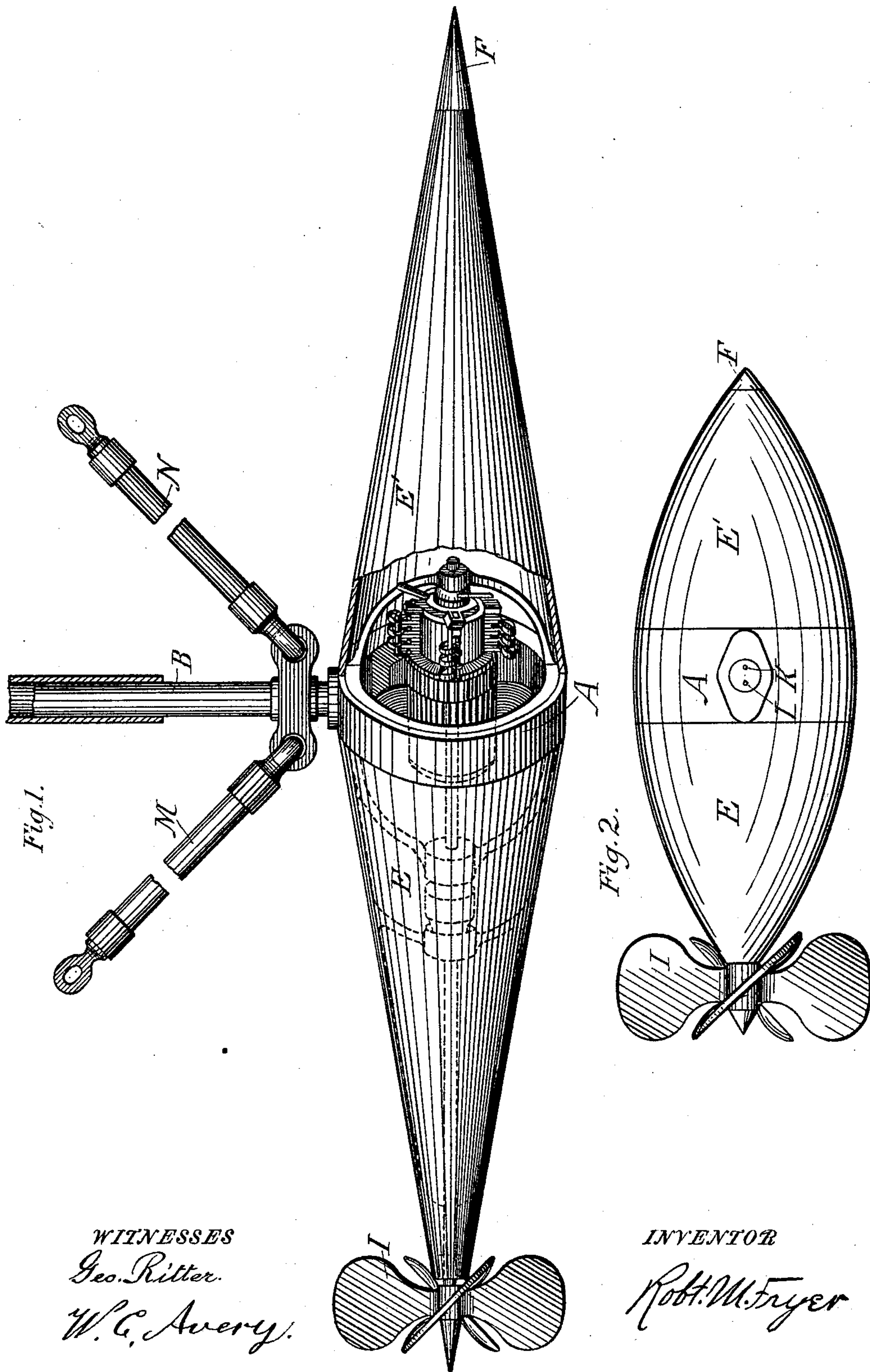
(No Model.)

3 Sheets—Sheet 1.

R. M. FRYER.
AUXILIARY PROPELLING DEVICE.

No. 583,740.

Patented June 1, 1897.



WITNESSES
Geo. Ritter.
W. C. Avery.

INVENTOR
Robt. M. Fryer

(No Model.)

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Fig. 3.

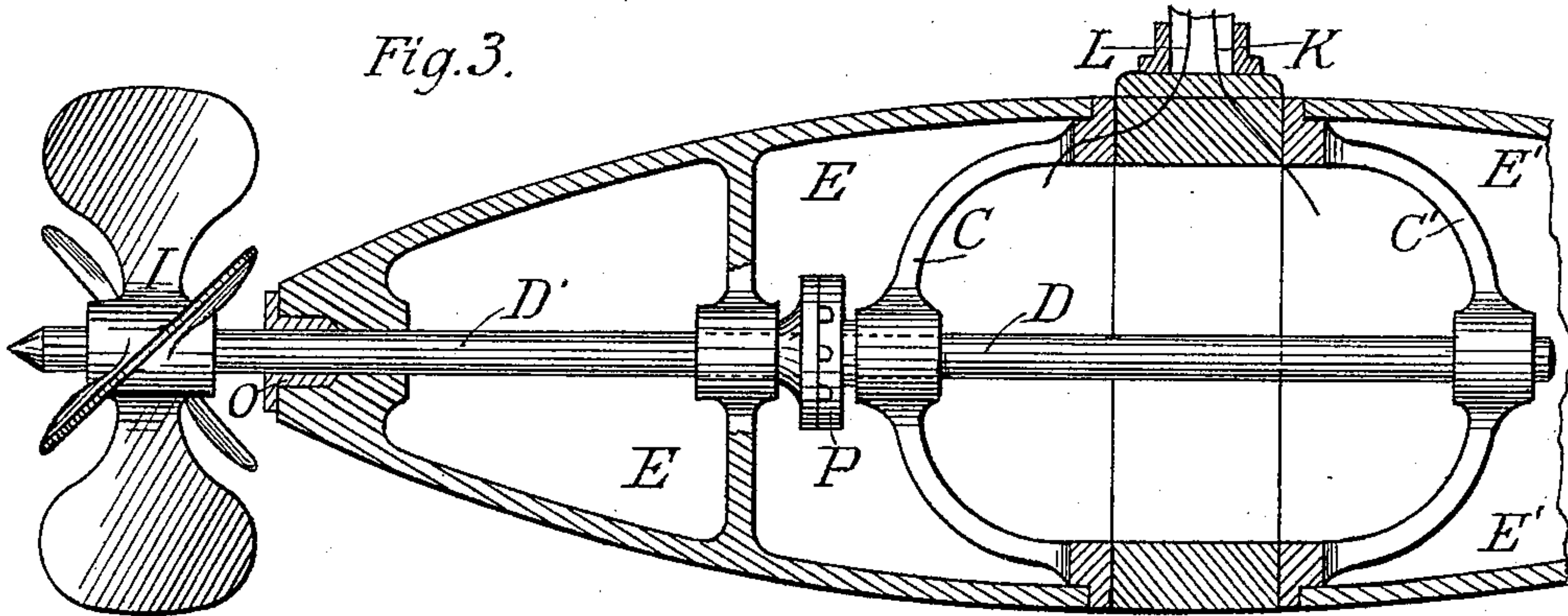


Fig. 4.

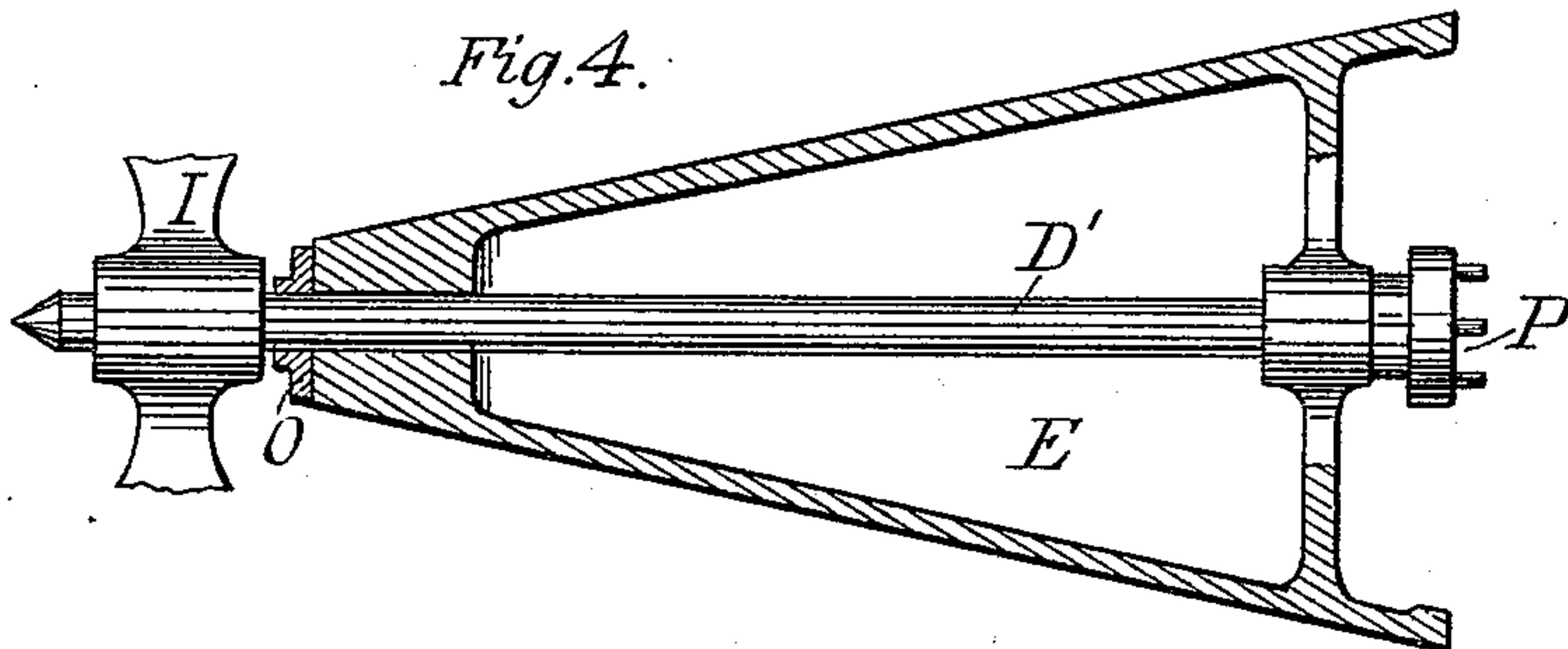


Fig. 5.

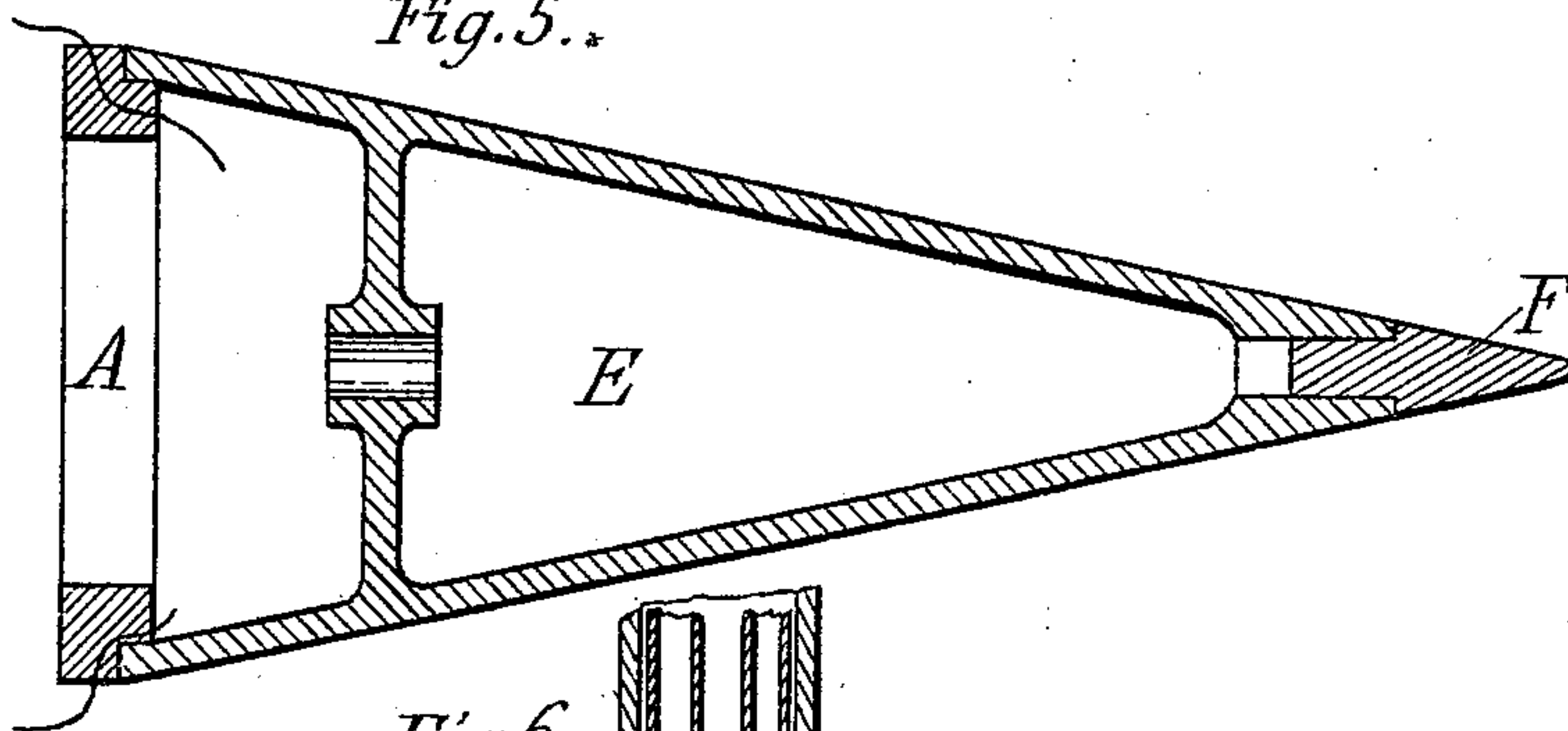
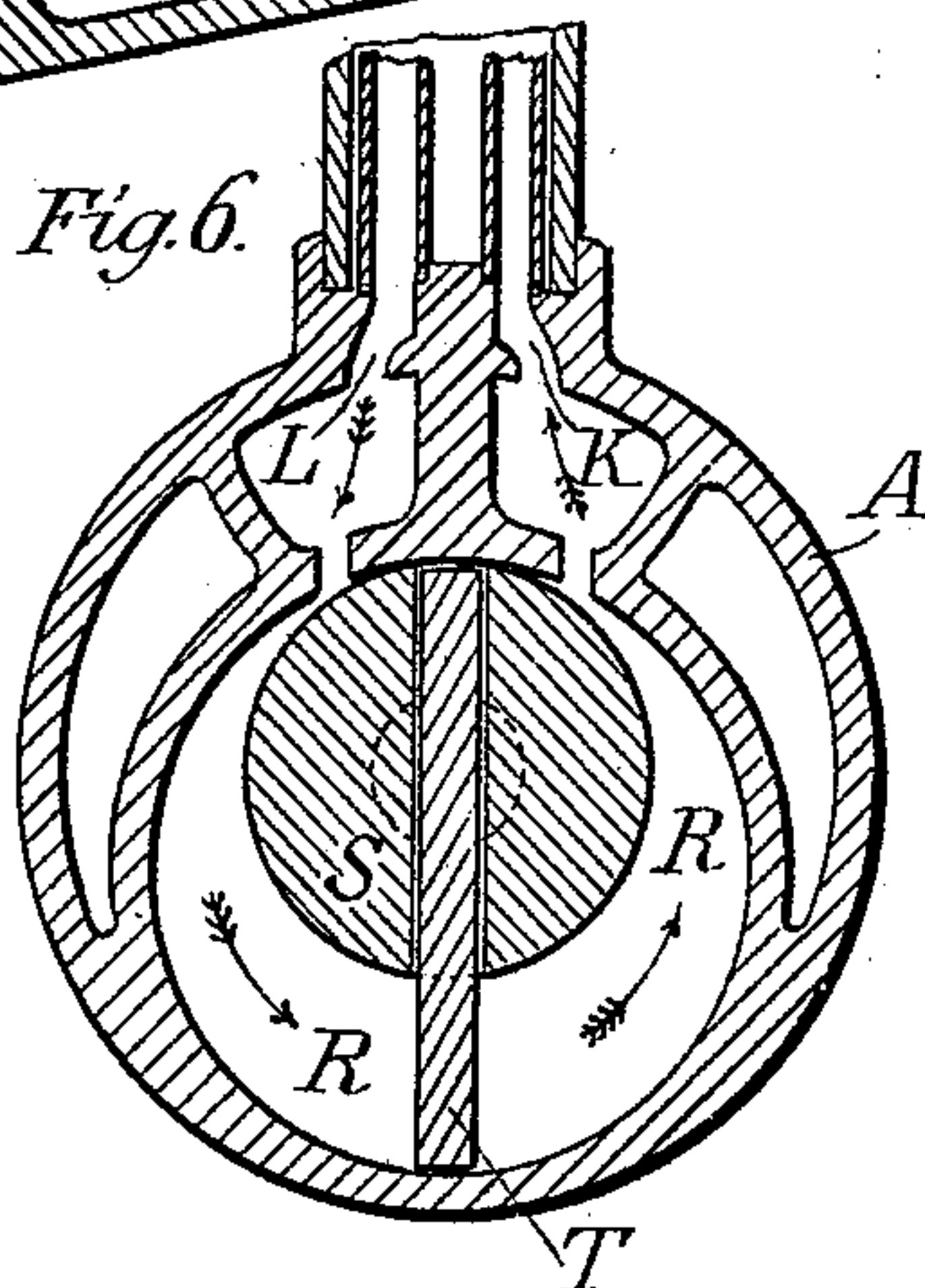


Fig. 6.



WITNESSES

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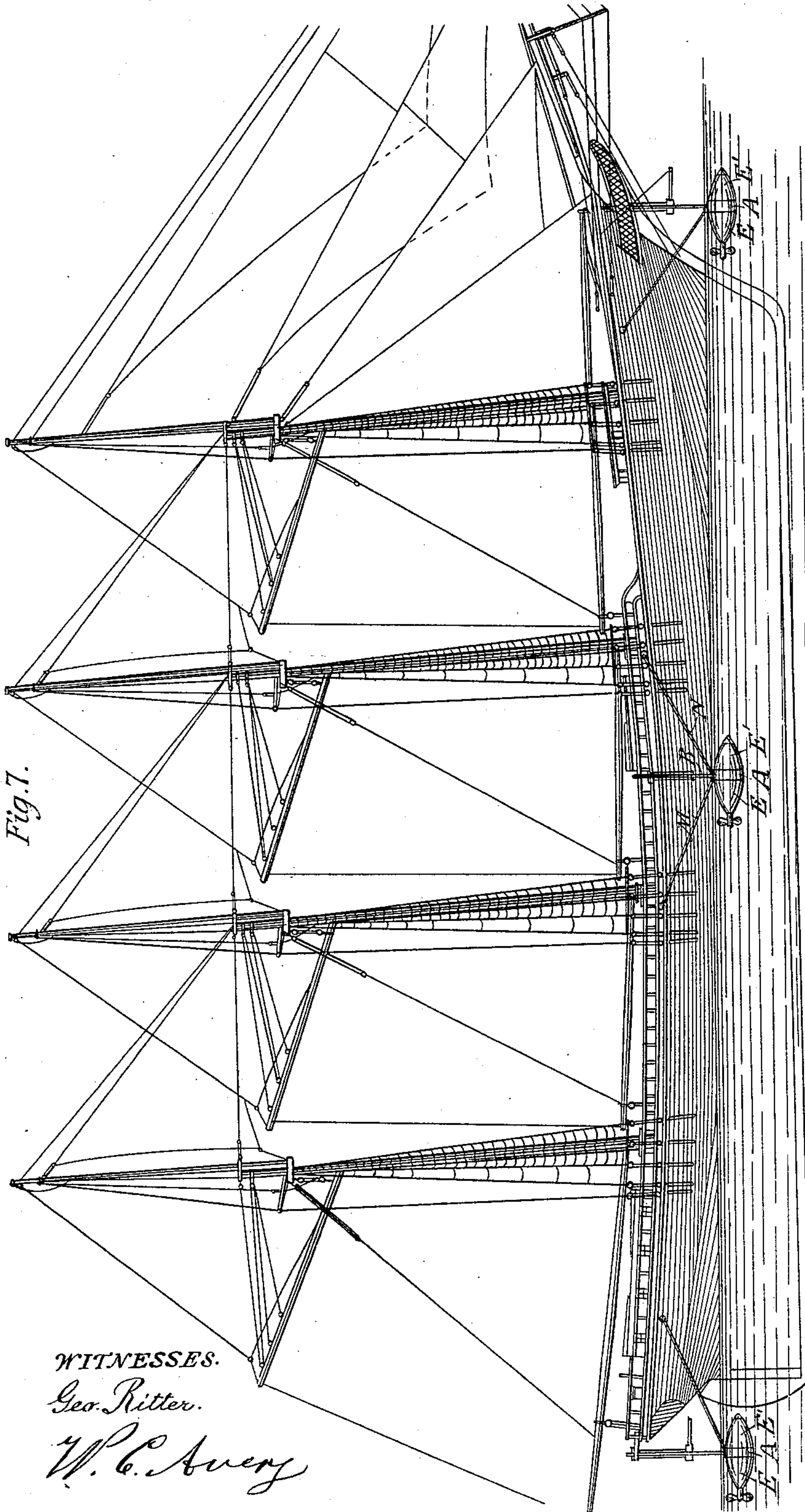
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UNITED STATES PATENT OFFICE.

ROBERT M. FRYER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
OF ONE-HALF TO WILLIAM C. AVERY, OF SAME PLACE.

AUXILIARY PROPELLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 583,740, dated June 1, 1897.

Application filed August 18, 1896. Serial No. 603,153. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. FRYER, of Washington, District of Columbia, have invented a new and useful Device for the Propulsion of Vessels, of which the following is a specification.

The object of this invention is to overcome the dangers and difficulties met with in the operation of vessels in absence of other means for propelling or steering such vessels when from any cause the expedients originally designed for that purpose become disabled or ineffective, as with sailing vessels in absence of wind, or in any vessel with the breakage of a rudder, or in steam vessels, as with the breakage of propeller or its shaft.

The further object of the invention is to provide for the above purpose an apparatus which shall be inexpensive and easy of adjustment.

This invention consists, primarily, of a motor-case of peculiar construction and means for securing it to the vessel in such a manner as to adapt it to meet the various conditions found under circumstances where such a device would be most needed. The case or chamber herein referred to is preferably cylindrical in form and no larger in any of its proportions than would be necessary to form a circular electric motor or a rotary engine of sufficient capacity to carry out the objects of the invention. Attached to each end of this central field or cylinder is a conical or tapering chamber, so that when all these parts are united the apparatus has the appearance of a double cone with bases united at the center. The displacement thus created is calculated to a little more than balance the weight of the structure in the water, so that if accidentally lost overboard it would not sink. Otherwise it might be made heavier than water with no evil effect so far as working qualities are concerned. Attached to the upper portion of the central chamber or cylinder is a transverse, lever preferably in the shape of a hollow rod or pipe, so as to admit of receiving conducting-wires or pneumatic pipes to and from the motor or engine, as hereinafter more fully described. Leading from the motor or engine here is a common propeller-

shaft which connects with a propeller-wheel at one of its conical ends, or the said shaft may be extended through both conical ends and a propeller-wheel attached thereto at the two extremities of said conical chambers. It will be readily seen that the action of the propeller wheel or wheels here would tend to revolve the chambers, connected as they are and furnishing the rotary power from within, and to overcome this action comparatively heavy ballast would need to be used; but with the use of the transverse lever herein referred to, which, besides being securely fastened to the central cylinder, is likewise fastened to the side of the vessel and conveys to this propelling device all of the needed electricity or other power-giving fluid to drive it, there is here produced an apparatus for propulsion as light and simple of construction as it is possible to design within the scope of known forces.

Referring to my drawings, Figure 1 represents the principal fixtures of the apparatus, for which purpose this view is made partially in perspective, partially in outline, and partially in dotted lines. The motor herein shown may be replaced by any other suitable driving device, preferably, however, by a pneumatic rotary engine, one form of which is shown in Fig. 6 hereof. Fig. 2 is an outline view of the apparatus herein described with conical ends proportionately shorter than shown in Fig. 1, but with power the same—that is, the center cylinder is the same and may be increased in length to receive additional motors to increase the power of the device without making the diameter here any greater. Fig. 3 represents in skeleton form various parts in readiness for the attachment of an electrical motor or other driving machinery for the shaft and wheel herein indicated. Fig. 4 is a sectional representation of one of the conical or tapering ends detached from the central chamber or case, to which it is readily secured by screw-threads, as shown in Fig. 1, or by any other suitable means. In this view it will be observed that the wheel-shaft is or may be independently carried within this cone, leaving the center case to support only that section of the shaft which carries

the armature or rotary piston, if need be, the two shafts or sections to become united only when they are brought together. Fig. 5 represents a similar conical end, except that here the shaft is dispensed with. It should, however, be here stated that both conical extensions of the central chamber may be identical and both carry a driving-shaft and propeller-wheel. When this is not done in practice, the opposite cone should be made heavy enough to balance the wheel and shaft of the driving end and other parts therewith connected. Fig. 6 represents in transverse section a common rotary engine composed of a cylinder within a cylinder and a traverse-plate to reciprocate through the center of shaft-cylinder. The secondary cylinder is located in an eccentric position within the former, as shown. When pressure is here applied on either side of the protruding portion of the plate, the inner cylinder, which is united with the driving-shaft, moves in the opposite direction, and vice versa. The pneumatic pressure used in this operation is brought in and discharged through the pipes M and N. By a shift of pressure from one to the other, while the opposite pipe acts as the exhaust-passage, this engine will be reversed in its action at the pleasure of the operator. While this description entered here to show the action of a rotary engine in one of its simplest forms, without claims to economy in this construction. Fig. 7 is a representation of the device herein described as applied to an ordinary sailing vessel at different places, wherein it will be seen that with the same relative parts the apparatus is adjusted to either side of the vessel or to either of its ends. At the bow it can be made to drag the boat along in any direction, as at the stern it can force it, while by adjusting one of the devices to each side of a vessel, being able to reverse as they are, such vessel be practically converted into a twin-screw propeller of moderate power at very little cost.

Referring to the accompanying drawings in detail, A is the central or power chamber, wherein the electrical motor or rotary engine is located.

B represents a lever, preferably hollow and telescopic, attached to the upper part of chamber A for preventing rotation of the same, and in connection with twin rods M and N fastens the propelling device herein described to the vessel by any suitable rigging, for which purpose eyes are provided at the upper end of said rods, as shown.

C and C represent yokes for the support of shaft D, and for the convenience of handling parts are preferably made adjustable on the end faces of chamber A, which arrangement admits of making this part of the device of composition metal, to the flange of which the conical chambers E and E' may then be fastened by screw-threads. (Not shown.) All chambers here are designed to be of cast metal,

so as to insure accuracy of fit and cheapness of construction, rendering all parts interchangeable of character.

K and L indicate electrical conducting-wires, and M and N indicate pipes for the supply and discharge of either electricity or pneumatic pressure, whichever fluid may be used to correspond with the character of motor herein used for the rotation of propeller-wheels I I by means of shaft D', as already described, which shaft is provided with a stuffing-box O to prevent the water from following the same to either of the chambers.

P represents a coupling between D and D', which unites these two sections of the driving-shaft when the conical chamber carrying section D' is secured to chamber A.

R represents a cylindrical chamber within chamber A, which is eccentric thereto and also with inner cylinder or shaft S, which it surrounds to form a rotary engine in connection with traverse-plate T and proper openings, as shown. This device is designed to revolve the driving-shaft D D' by pneumatic or other pressure when the electrical motor is dispensed with.

F represents an adjustable point to be used in the end of one of the conical chambers when the driving-shaft is not made to pass through the same.

Operation: Now that specially-driven dynamos are in common use, as are pneumatic pumps and receivers for air and other gases under high pressures, and whereas most large and many small vessels carry steam-generating boilers, it would cost very little comparatively to fit out all such vessels with a special dynamo and storage battery or pneumatic pump and receiver, together with one or more of the auxiliary devices herein described, whereby in case of need such device could be lowered from the vessel by ordinary davits or could be thrown overboard and then attached to the vessel (at the most convenient place selected) by the three members herein marked B, M, and N, after which by the application of either power for which the apparatus is designed, electrical or pneumatic, the vessel to which it is thus attached could be propelled, stopped, backed, or steered in any desired course without the use of any other force or expedient, and as soon as the vessel thus handled is overtaken with favorable winds or any other regular mode of propulsion comes to hand of a preferable nature the device here used can be easily taken on board or allowed to occupy any other place where it will not drag in the water to impede progress, as would be the case if such a device ever became a fixture to the vessel, while other powers tended to drive such vessel faster than the device is calculated to travel.

It will be seen from the drawings in this case that whether the apparatus is attached to the side or at either end of the vessel the three rods or bars above referred to as B, M, and N furnish adequate means for fastening

in connection with the common rigging and by the ordinary workmen found on such vessels wherever in commission.

5 Having thus described my invention, what I here claim, and desire to secure by Letters Patent of the United States, is—

1. An auxiliary propelling device consisting of an oblong or cylindrical chamber containing an electrical or other motor, a propeller-wheel driven by such motor, and a lateral shaft, lever or other suitable connection between said chamber and vessel to keep the chamber in place and to prevent rotation of the same, with means conveyed through said
15 connections for supplying electricity or pneumatic pressure to the motor for its operation substantially as and for the purposes above set forth.

2. An auxiliary propeller for vessels, the
20 same comprehending a motor, a shaft to be driven thereby, a screw or propeller wheel on said shaft, a case inclosing the motor and provided with bearings for the shaft, and a laterally-extending tube or pipe adapted to
25 be connected with a vessel to convey or conduct motive power to the motor, as, and for the purpose, described.

3. In an auxiliary propelling device a conical-ended chamber, inclosing an electrical or
30 other motor for the operation of a propeller wheel, or wheels, combined with a telescopic lateral bar or tube as a means for adjusting the propelling device to the water in connection with vessels of different heights of free-
35 board, to prevent the said chamber from being revolved by the action of the screw-propeller as herein shown and described.

4. An auxiliary propeller for vessels, the

same comprehending a motor, a shaft to be driven thereby, and a screw or propeller wheel
40 on said shaft, a double-cone-shaped casing inclosing the motor, and a laterally-extending tube or pipe projecting from the casing and adapted to be connected with a vessel for conveying motive power to the motor from
45 the interior of the vessel.

5. In an auxiliary propelling device a conical-ended chamber, inclosing an electrical or other motor for the operation of a screw-propeller, a lateral bar or pipe attached to said
50 chamber—and to the vessel with which it is to operate—with radial bars or rods fastened to and extending from the lateral bar or pipe to the vessel for the purpose of relieving said lateral bar of strain that would otherwise be
55 brought to bear thereon during its operation of moving the vessel in the manner set forth.

6. The combination with a ship or vessel, of a detachable propelling device consisting of an incased motor, a shaft to be driven thereby
60 extending through the casing, and a screw or propeller wheel on the projecting end of said shaft, a pipe or tube extending laterally from the casing containing the motor and adapted to be separably connected with the vessel, the
65 said pipe or tube serving to convey or conduct motive power to the motor, and stays or braces between the vessel and said casing for holding the latter in working position.

In testimony whereof I hereunto subscribe
70 my name in presence of two witnesses.

ROBT. M. FRYER.

Witnesses:

GEO. RITTER,

ROSS L. FRYER.