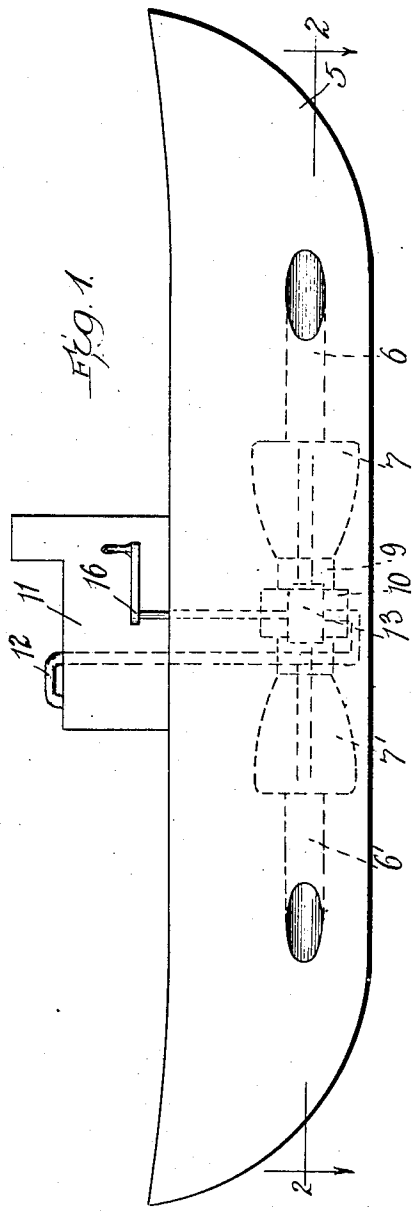
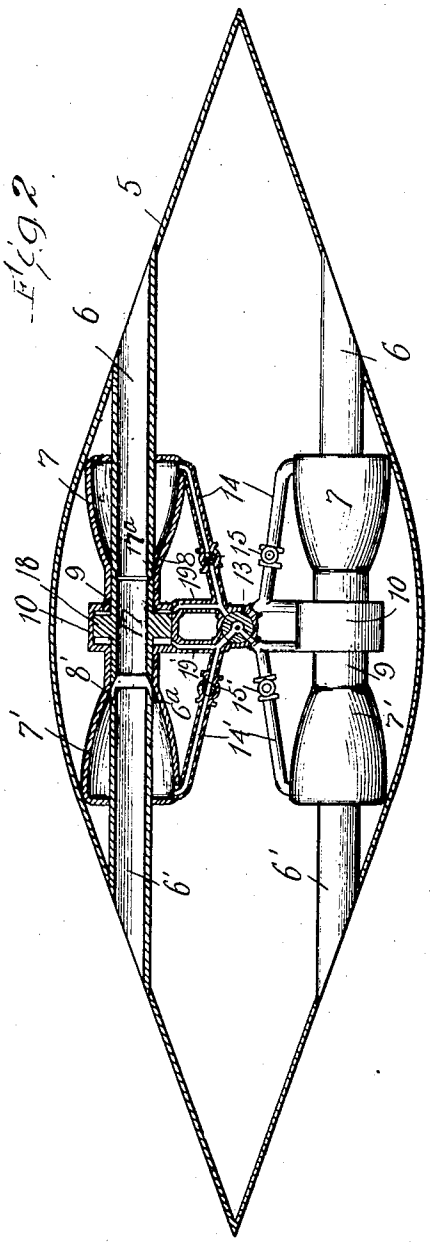
No. 892,454. PATENTED JULY 7, 1908.

A. T. RONSTROM.

BOAT PROPULSION.

APPLICATION FILED OCT. 30, 1905.





Witnesses

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UNITED STATES PATENT OFFICE.

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BOAT PROPULSION.

No. 892,454. Specification of Letters Patent. Patented July 7, 1908.

Application filed October 30, 1905. Serial No. 284,995.

To all whom it may concern:

Be it known that I, ARVID THOMAS RONSTROM, a subject of the King of Sweden, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boat Propulsion, of which the following is a specification.

My invention relates to boat propulsion, and has for its general object to provide means whereby steam may be directly utilized to propel and steer boats without the intervention of an engine and mechanical driving and steering mechanism.

To this end my invention consists in the features of construction and the combinations and arrangements of parts hereinafter more fully described and specified in the claims.

In the drawings: Figure 1 is a side elevation of a boat equipped for propulsion in accordance with my invention. Fig. 2 is a section on line 2—2 of Fig. 1, showing half of the steam-directing means in section and the other half thereof in elevation.

Throughout the drawings like numerals of reference refer always to like parts.

In the drawings, 5 indicates in general the hull of a boat which may be of any suitable general configuration, but preferably is symmetrical relative to a transverse line, so that it may be driven with equal facility in either direction.

6—6′ indicate pairs of conduit sections extending lengthwise of the boat, a pair being on each side of the longitudinal axis of the boat below the water line. These conduits of each pair terminate at suitably separated points, preferably adjacent the center of the boat, but an intervening shell is interposed to connect the two conduit sections 6, 6′ on each side of the boat, so that said conduits and shell afford water-passage, extending longitudinally through the hull. Preferably the exterior edges of the conduit members 6, 6′ are tapered at their outer surfaces as shown at 6^a in the drawing adjacent the end thereof, such surfaces forming part of the steam nozzle to be hereafter mentioned.

The parts associated with each section are similar to like parts of all other sections, so I will describe only the parts associated with one section 6, it being understood that the like parts associated with sections 6′ are indicated by like numerals distinguished by the exponent character prime (′).

Surrounding the inner end of the conduit section 6 is a steam jacket 7, preferably tapering somewhat toward the extremity of the conduit section, and approaching closely to the tapered portion 6^a of said conduit section, so that with said conduit section and the smaller portion of the jacket an annular inclined steam nozzle 8 is arranged and steam projected therethrough is forced radially inward toward the center of the water flow space between the conduit sections. The steam chamber jackets 7 and 7′ are connected by a part 9 of the jacket structure, preferably having a cylindrical enlargement 10 therein, which forms a steam cylinder for a purpose to be hereafter described.

11 indicates a source of steam supply, such as a boiler and 12 a supply pipe extending therefrom to a suitable valve 13, preferably having two eduction ports adapted for simultaneous communication with like steam pipes upon opposite sides of the boat. Upon each side of the boat the steam pipes 14 and 14′ communicate respectively with the steam chambers inclosed by jackets 7 and 7′, and the valve 13 is adapted to simultaneously connect both jackets 7, or both jackets 7′ with the source of steam supply. The pipes 14 or 14′ may, if desired, have therein the auxiliary valves 15, 15′ respectively, for independent control of the steam supply to their respective steam chambers.

It will be apparent that the valve 13 may be adjusted through the medium of handle 16, or other suitable device, conveniently located.

It will be apparent now that if the parts be in the position shown in Fig. 2, steam will be supplied through the pipe 12, the valve 13, and pipes 14′ to the steam chamber jackets 7′—7′. The steam expanding in said chambers traverses the tapering steam chamber to the narrow discharge nozzle 8′ and escapes at high velocity into the water passages of which the conduit sections 6, 6′ form the major part. The impact of the escaping steam upon the water drives the water entering the conduit section 6′ out through the conduit section 6, thereby propelling the boat in the direction which I may arbitrarily term forward. If on the other hand valve 13 be moved to connect the steam jackets 7—7 with the steam supply pipe 12, and the valves 15 be opened, the direction of steam projection is opposite to that last described and consequently the direction of

water flow will be opposite, so that the boat is propelled in a relatively rearward direction. It will be apparent furthermore that in which ever direction the boat may be proceeding, by varying the supply to the steam jacket upon the proper side of the boat by manipulation of the auxiliary valves 15—15, the force applied in propulsion on one side of the boat may be reduced below that applied to the other side of the boat so that the boat will turn. Thus the propelling agencies may also be employed in steering the boat.

I prefer to provide in conjunction with the parts described means for automatically cutting off the communication of the disused steam jackets with the water flow conduit, and to this end I provide within the jacket-part 9 associated with the jackets 7, 7′, a sleeve 17 having exteriorly connected therewith an annular piston 18 interfitting for reciprocating movement in the cylinder 10. The extremities 17^a of the sleeve 17 are shaped to interfit with the extremities of the conduit sections 6, 6′, so that when said sleeve be properly moved so that its extremity engages one of the conduit sections it forms a practical continuation of said conduit section. Furthermore, the length of the sleeve is such that when at one extremity of its range of movement it makes close connection with the extremity of one conduit section and is sufficiently removed from the extremity of the opposite conduit section to open the annular port 8 or 8′, surrounding the latter.

Branch pipes 19 and 19′ are led from the pipes 14, 14′ respectively to the opposite sides of the cylinder 10, so that as steam is directed to one of the jackets 7 or 7′ it is automatically directed to the like side of the piston 18, which is thereby automatically moved in such direction that the sleeve 17 carried thereby closes the opposite port forming the outlet from the disused steam jacket, and opens the port of the steam jacket to be utilized. Thus the filling of the steam jacket with water is prevented, a passage for the water is provided uninterrupted save at the narrow open steam nozzle then in use.

While I have herein described in some detail a specific embodiment of my invention which I believe to disclose valuable improvements in detail, and the details whereof I may claim, I do not desire to be understood as limiting the broader aspect of my invention to the specific embodiment herein shown and described.

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

1. In combination, the hull of a vessel, a water way extending through said vessel longitudinally thereof, a source of steam supply, a steam jacket surrounding the water passage, there being a constant annular nozzle opening from the steam jacket through the walls of the water passage a means forming part of the water way, for closing said nozzle and a connection between the source of steam supply and the steam jacket.

2. In combination, a vessel hull, a water passage therethrough comprising two conduit members suitably separated at their inner ends, steam jackets surrounding the ends of said conduit sections, and coöperating with the extremities thereof to form steam nozzles, a movable member adapted to close either port and simultaneously open the opposite port, said member being adapted to constitute a practical continuation of the conduit sections, means for moving said member, a source of steam supply for the steam jacket, and means for controlling said steam supply arranged to control the means for moving said movable member, whereby said movable member operates to automatically and positively close the port of the disused steam jacket.

3. In combination with the hull of a vessel having a water way extending through said vessel longitudinally thereof, a source of fluid pressure supply, a jacket surrounding the water passage, and opening to the water passage through an annular nozzle; a movable means for closing said nozzle constituting part of the water way and a connection between the source of fluid pressure supply and the jacket.

4. In combination, the hull of a vessel, a water passage therethrough comprising two conduit members suitably separated at their inner ends, jackets surrounding the ends of said conduit sections and coöperating with the extremity thereof to form nozzles; a movable member adapted to close either nozzle and simultaneously open the other nozzle; said member being adapted to constitute a practical continuation of the conduit section; means for moving said member; a source of fluid pressure supply for the jacket; and means for controlling said fluid pressure supply arranged to control the means for moving said movable member, whereby said movable member operates to automatically and positively close the nozzle of the disused jacket.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

ARVID THOMAS RONSTROM.

In the presence of—

GEO. T. MAY, Jr.,

GEO. R. CLIFFORD.