July 5, 1960 J. ANDRAS 2,943,440

PROPULSION OF BOATS OR THE LIKE

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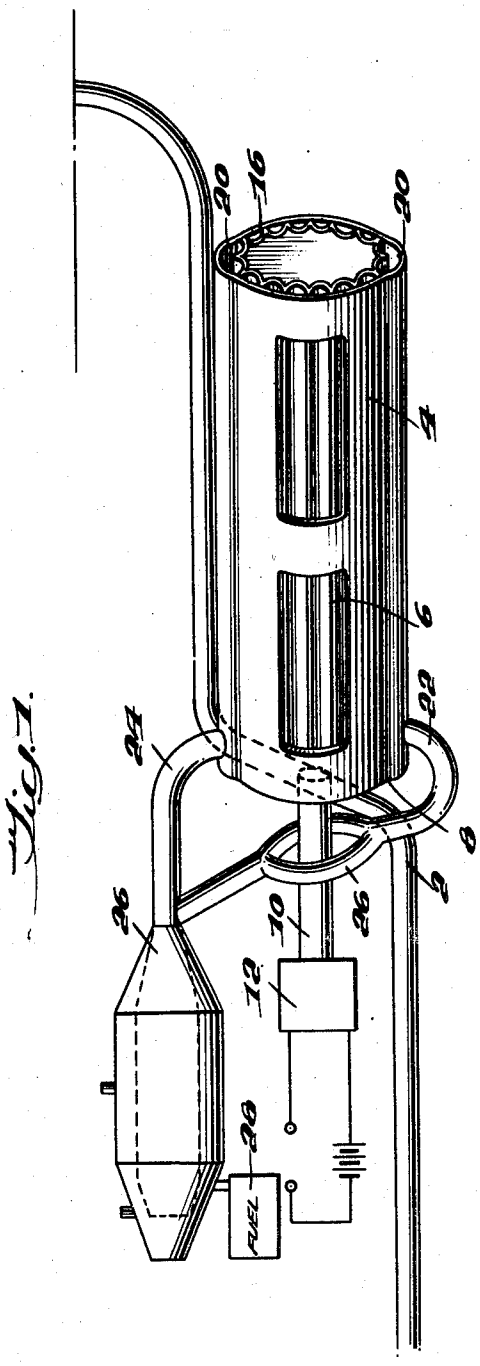


Fig. 1.

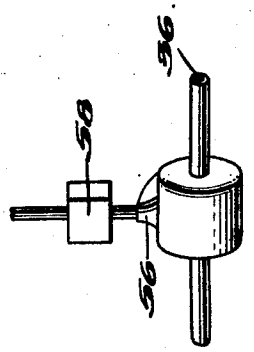


Fig. 7.

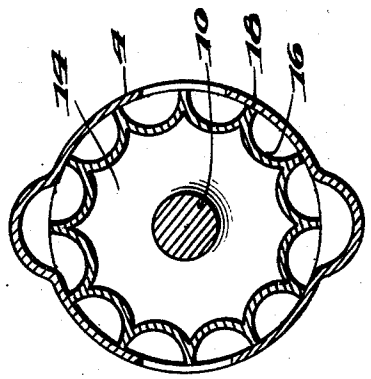


Fig. 2.

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Fig. 3.

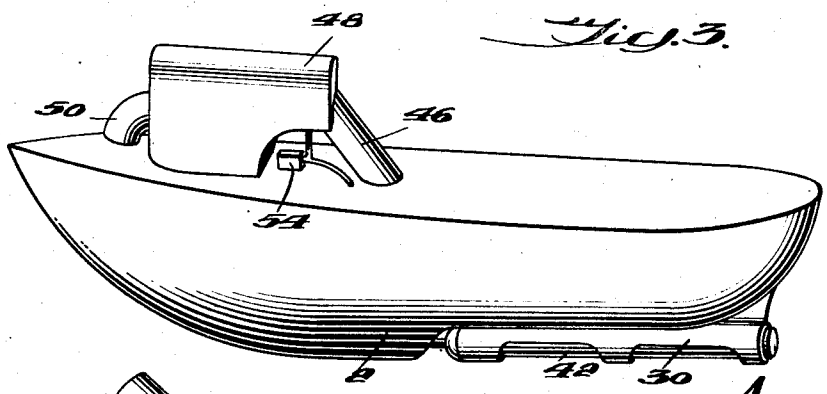


Fig. 5.

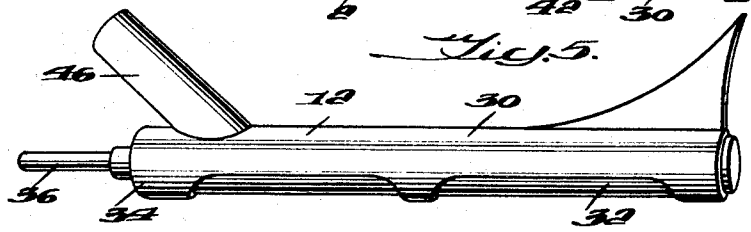


Fig. 6.

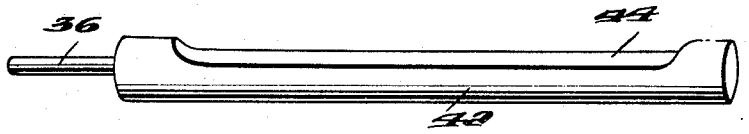
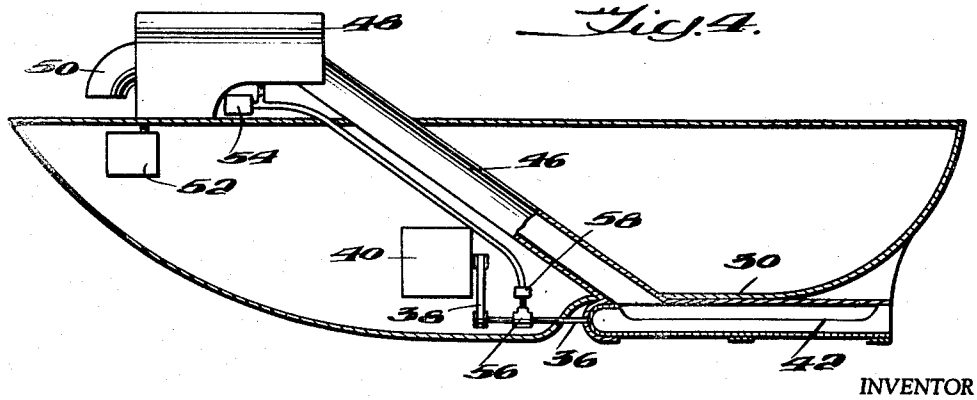


Fig. 4.



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United States Patent Office

2,943,440

Patented July 5, 1960

2,943,440

PROPULSION OF BOATS OR THE LIKE

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Filed Aug. 27, 1959, Ser. No. 836,482

11 Claims. (Cl. 60—35.5)

The invention relates to the propulsion of boats or other objects in the water, and more particularly to a propulsive mechanism utilizing a gas under pressure produced by the combustion of a fuel for driving the boat.

The driving of a boat by the mere projection of a stream of gas into the water at the rear end of a boat has not proven to be efficient or satisfactory. Apparently the gas merely disperses to a considerable degree in the water and much of its energy is wasted.

I am aware that structures have been proposed in which a mass of water is acted on by the gas, but these likewise have not been entirely satisfactory. Most of them are incapable of operating other than intermittently, and the structures involved are complicated and likely to get out of order, particularly because they primarily involve the use of oscillating or reciprocating control parts for supplying the water on which the gas acts.

The primary object of the present invention is to provide a simple yet effective driving mechanism for boats or the like, which imparts the energy contained in the gas to a body of water which is then discharged below the boat at the rear end thereof.

Another object of the invention is to provide an arrangement of this kind in which the water supplying means is constantly rotated about a horizontal axis and is not subjected to the shocks which act on reciprocating or oscillating parts.

An additional object of the invention is to provide, in one of its aspects, an arrangement which automatically shuts off the water from the gas supply unit during the time when water is being taken in.

In another of its aspects, the invention provides an arrangement by which a continuously operating gas producing device such as a ram-jet unit can be supplied constantly with water which is then ejected at the rear of the unit to propel the boat.

Further objects and advantages of the invention will appear more fully from the following description especially when taken in conjunction with the accompanying drawings, which form a part thereof.

In the drawings:

Fig. 1 shows in perspective a boat propelling unit embodying the invention;

Fig. 2 is a cross-section through the water supply mechanism;

Fig. 3 shows in perspective a modified form of propelling unit;

Fig. 4 is a vertical cross-section through such a unit;

Fig. 5 shows in perspective the outer part of the water supply mechanism;

Fig. 6 shows in perspective the inner part thereof; and

Fig. 7 is a detail view of the timing mechanism.

In the form of Figs. 1 and 2, there is a boat having a hull 2 with a suitable raised section at its rear end for receiving the outer stationary tubular member 4. This member has on each side elongated slots 6 passing

through its longitudinal side walls. The front end 8 is closed, except for an opening for a shaft 10 driven by a motor 12. Mounted on this shaft is a hollow member with a closed rear end 14 mounted on shaft 10 and having its longitudinal side walls provided with longitudinal grooves 16 separated by ribs 18 which are substantially in contact with the inner walls of the tube 4.

At top and bottom, the tube 4 has upward and downward projecting ridges 20 which form at this point somewhat enlarged passages in conjunction with the grooves 16. At the front ends, these passages communicate with pipes 22, 24, the pipe 22 having a split portion 26 passing around the shaft 10. Tubes 22 and 24 communicate with the output of a jet propulsion unit 26, which may, for instance, be of the type shown in the Probert Patent 2,679,137, or of any other suitable type which produces a continuous flow of pressure gases. The engine is furnished with fuel from a tank 28.

In the operation of the device, the jet propulsion unit will furnish gas continuously through pipes 22 and 24 to the passages formed by projections 20 and grooves 16. The motor 12 is driven continuously, and turns the inner hollow member so that the grooves 16 constantly pick up water through slots 6 and feed this water to the passages within projections 20. Here the water is mixed with the gas flowing from the propulsion unit and is projected out at the rear end with substantial velocity and power so as to drive the boat through the water.

In the modification of Figs. 3 to 7, there is a stationary tube 30 mounted at the rear end below the boat 2 with slots 32 in its lower side and a front end 34 closed except for drive shaft 36 connected by a chain mechanism 38 to the motor 40. Mounted on shaft 36 and fitting closely within member 30 is the interior member 42 having an elongated opening 44 in one of its longitudinal sides.

Communicating with the top part of the tube 30 near its front end is a pipe 46 which connects with an intermittent gas producing propulsion unit 48, such as a pulsating jet unit, which may be of the type, for example, shown in the patent to Congwer, 2,522,945.

The intake 50 of the jet propulsion unit is turned downwardly so as to prevent the splashing of water into the unit. The unit is supplied with fuel from a suitable tank 52, and the ignition of the fuel is produced by an intermittent spark generator 54. This generator is synchronized with the operation of the water admitting member 42 by providing a cam 56 on shaft 36 which intermittently opens and closes a shaft 58 connected in the circuit of the spark generator 54.

The device described operates as follows:

Assuming the parts to be in the relative position shown in Figs. 5 and 6, the tube 30 will be filled with water and the cam 56 will produce an explosion which will cause gas under pressure to be passed through tube 46 to the interior of tube 30. This will propel the water from the tube 30 at high velocity into the water behind the boat, so that the boat will be propelled. Now, as the member 42 turns, its slot 44 comes into alignment with slots 32 of the tube 30, and at the same time tube 46 is closed off. Water then fills the tube 30. As the member 42 continues to turn, it traps water within the tube and opens the pipe 46, whereupon an explosion is produced by cam 56, driving another body of water from the tube.

While I have described herein some embodiments of my invention, I wish it to be understood that I do not intend to limit myself thereby except within the scope of the claims hereto or hereinafter appended.

I claim:

1. Boat propulsion mechanism comprising a tube mounted on the boat below the water line and having an open rear end and a closed front end, said tube having at least one elongated opening in its longitudinal wall, a

source of gas under pressure, means connecting said gas source to the interior of said tube at a point spaced from the rear end thereof and located forwardly of at least the greater part of said opening, an elongated member turnably mounted within the tube having portions angularly spaced around its longitudinal axis engageable with the inside of the longitudinal wall of the tube on opposite sides of the opening, and means to rotate said member.

2. Boat propulsion mechanism comprising a tube mounted on the boat below the water line and having an open rear end and a closed front end, said tube having at least one elongated opening in its longitudinal wall, a source of gas under pressure, means connecting said gas source to the interior of said tube at a point spaced from the rear end thereof and located forwardly of at least the greater part of said opening, an elongated member turnably mounted within the tube having its outer surface provided with longitudinal grooves and ribs separating the grooves, said ribs being engageable with the inside of the longitudinal wall of the tube on opposite sides of the opening, and means to rotate said member, said connecting means communicating with a part of the tube lying between different axial planes from the axial planes between which said opening in the tube is positioned.

3. In a device as claimed in claim 2, said last part of the tube having a greater radius of curvature than the radius of said ribs.

4. In a device as claimed in claim 3, said gas source being a ram-jet unit.

5. Boat propulsion mechanism comprising a tube mounted on the boat below the water line and having an open rear end and a closed front end, said tube having elongated openings in its longitudinal side walls, a source of gas under pressure, means connecting said gas source to the interior of said tube at points at the top and bottom of the tube spaced from the rear end thereof and located forwardly of at least the greater part of said openings, an elongated member turnably mounted within the tube having its outer surface provided with longitudinal grooves and ribs separating the grooves, said ribs being

engageable with the inside of the longitudinal wall of the tube on opposite sides of the openings, and means to rotate said member.

6. In a device as claimed in claim 5, said last part of the tube having a greater radius of curvature than the radius of said ribs.

7. Boat propulsion mechanism comprising a tube mounted on the boat below the water line and having an open rear end and a closed front end, said tube having at least one elongated opening in its longitudinal wall, a source of gas under pressure, means connecting said gas source to the interior of said tube at a point spaced from the rear end thereof and located forwardly of at least the greater part of said opening, an elongated hollow member having an open rear end turnably mounted within the tube and having at least one elongated opening in its longitudinal side wall capable of registering with the opening in the tube and with the connecting means, said connecting means communicating with a part of the tube lying between different axial planes from the axial planes between which said opening in the tube is positioned.

8. In a device as claimed in claim 7, said tube opening being in the bottom of the tube and said last part of the tube being in the top.

9. In a device as claimed in claim 7, said gas source being a pulsating jet device having intermittently operating ignition means, and means operatively connected to said member-rotating means to operate said ignition means synchronously with the turning of said member to produce pulses of gas under pressure each time the openings in the member pass out of registry with the opening in the tube.

10. In a device as claimed in claim 9, said member closing said connecting means when the openings are in registry.

11. In a device as claimed in claim 7, said member closing said connecting means when the openings are in registry.

No references cited.