

Sept. 2, 1958

E. J. DURHAM

2,849,978

BOAT CONSTRUCTION FOR SUBMERGED OR SURFACE OPERATION

Filed April 10, 1956

3 Sheets-Sheet 1

Fig. 1.

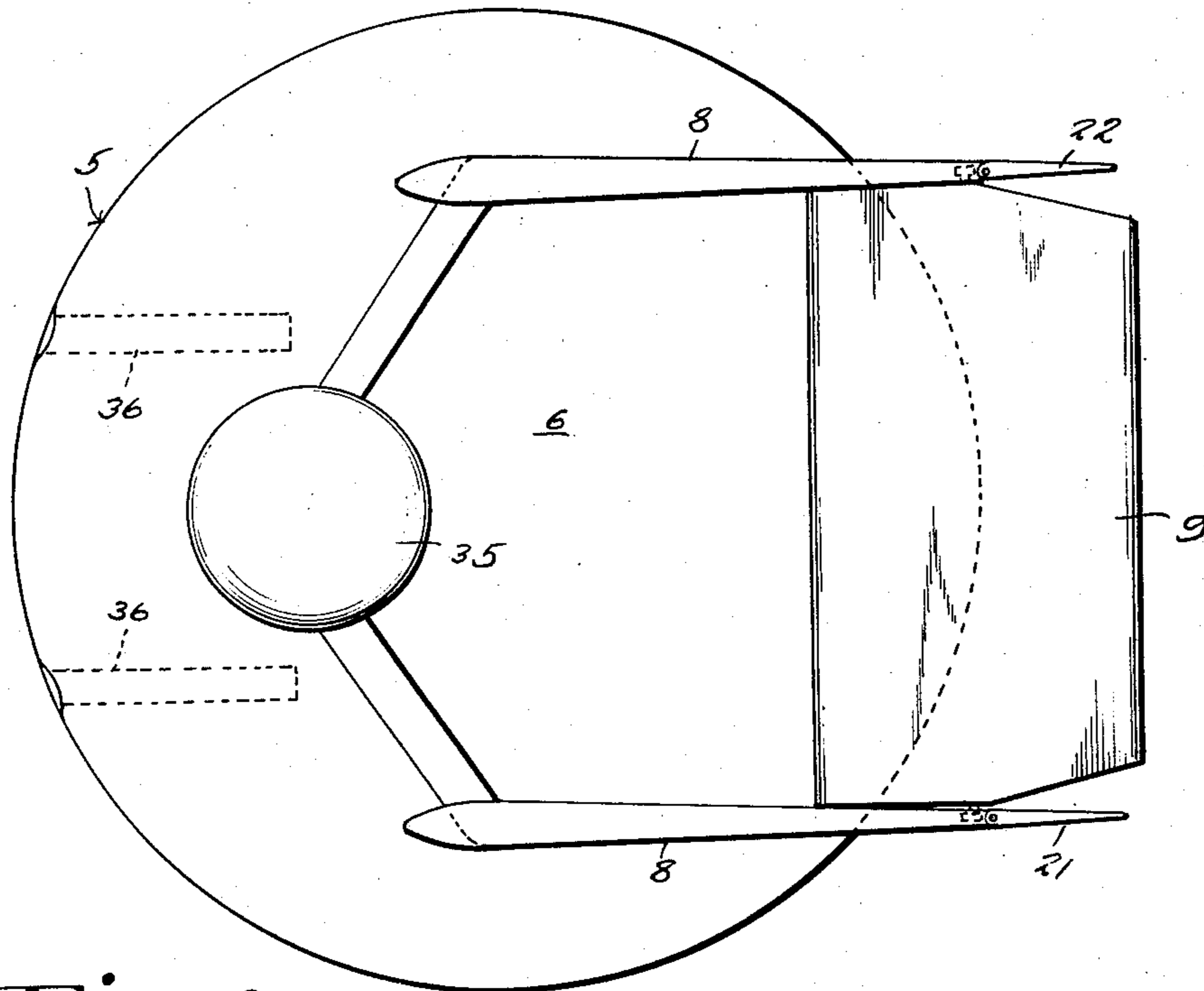
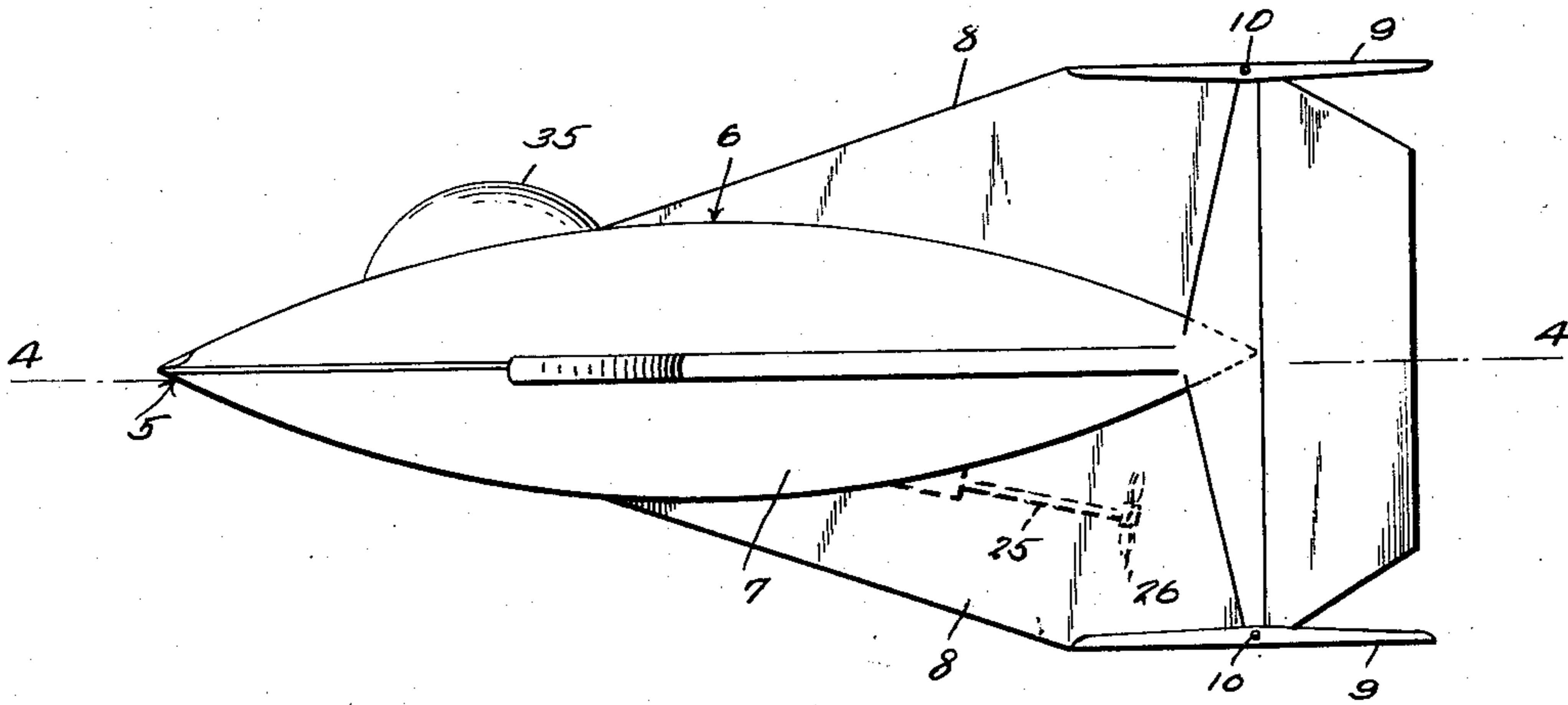


Fig. 2.

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Fig. 3.

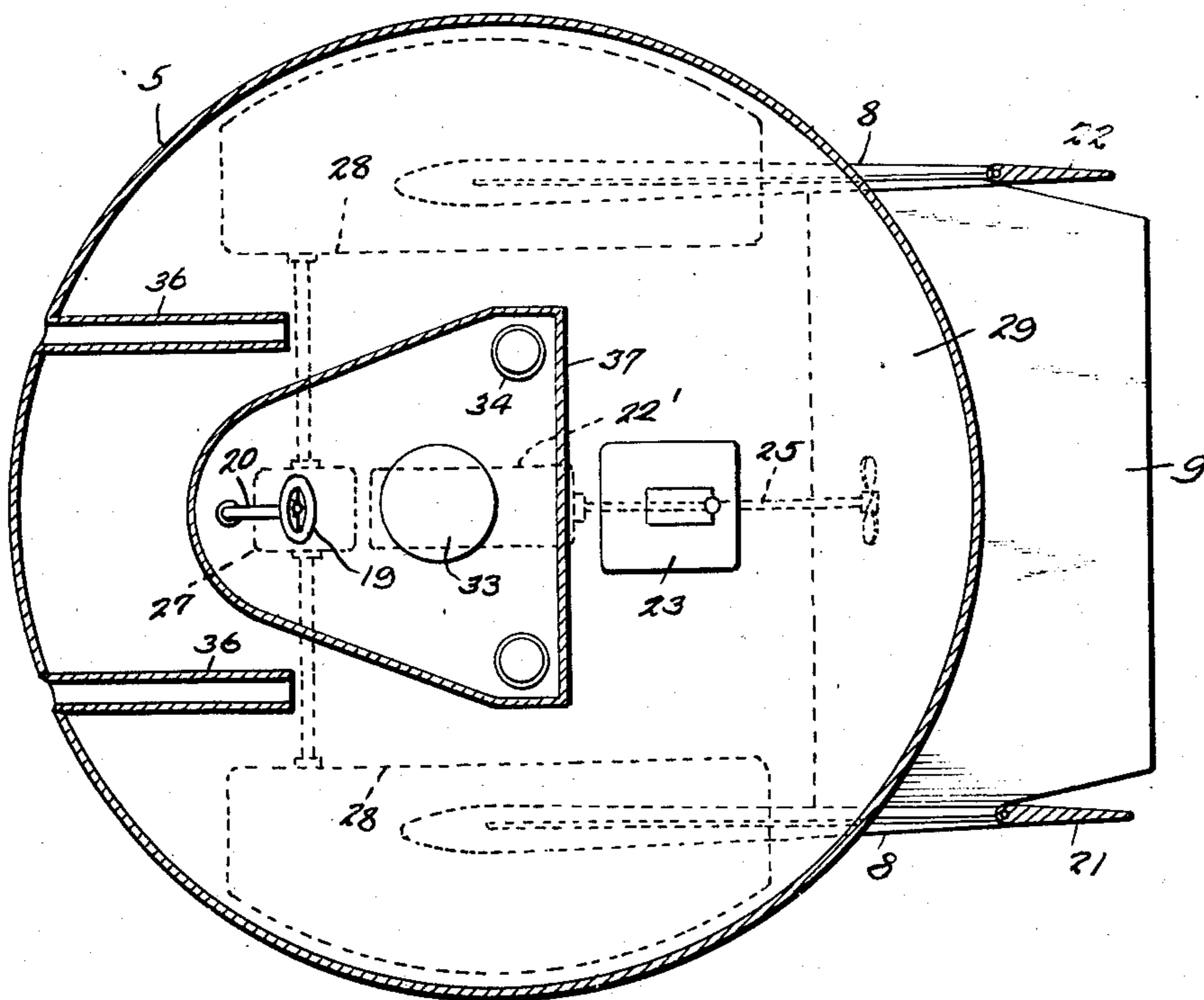
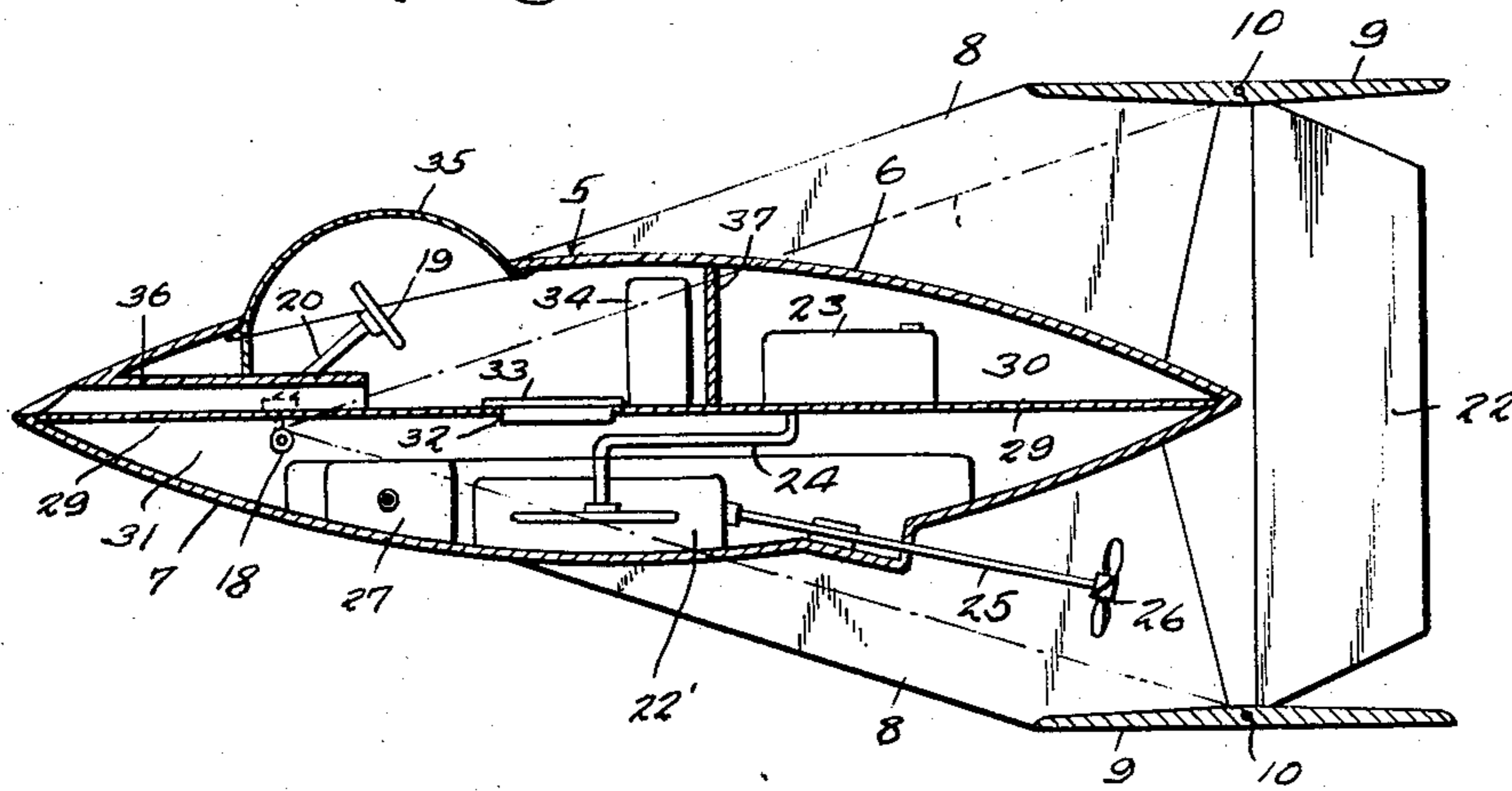


Fig. 4.

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Fig. 7.

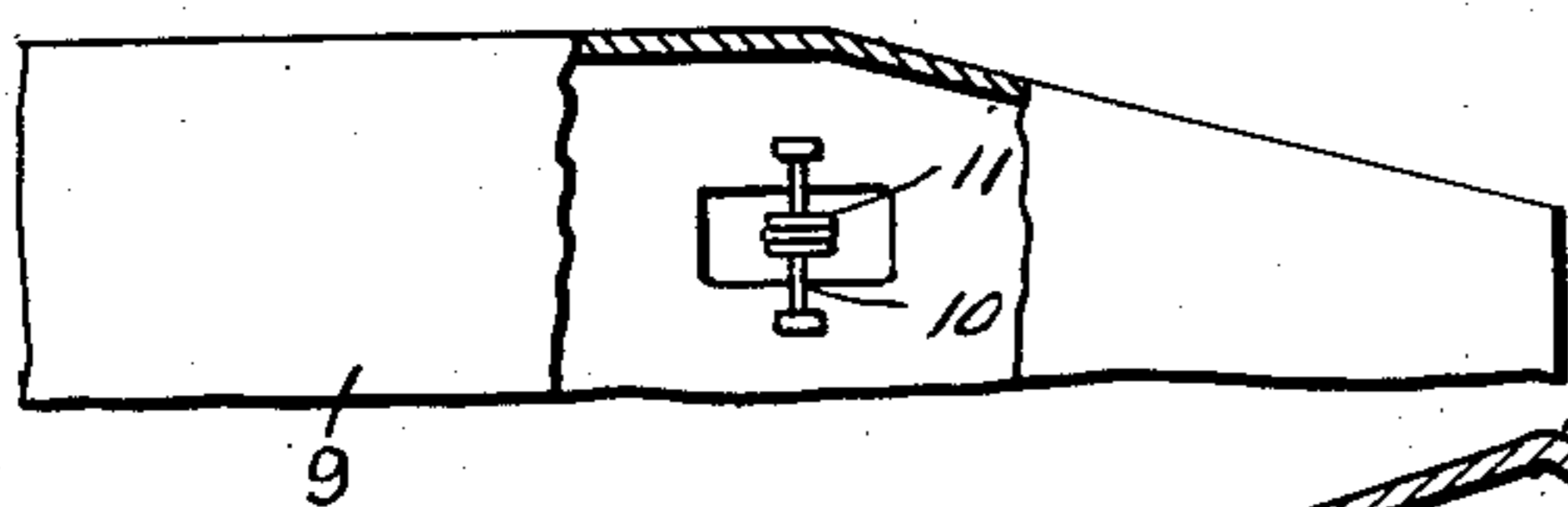


Fig. 5.

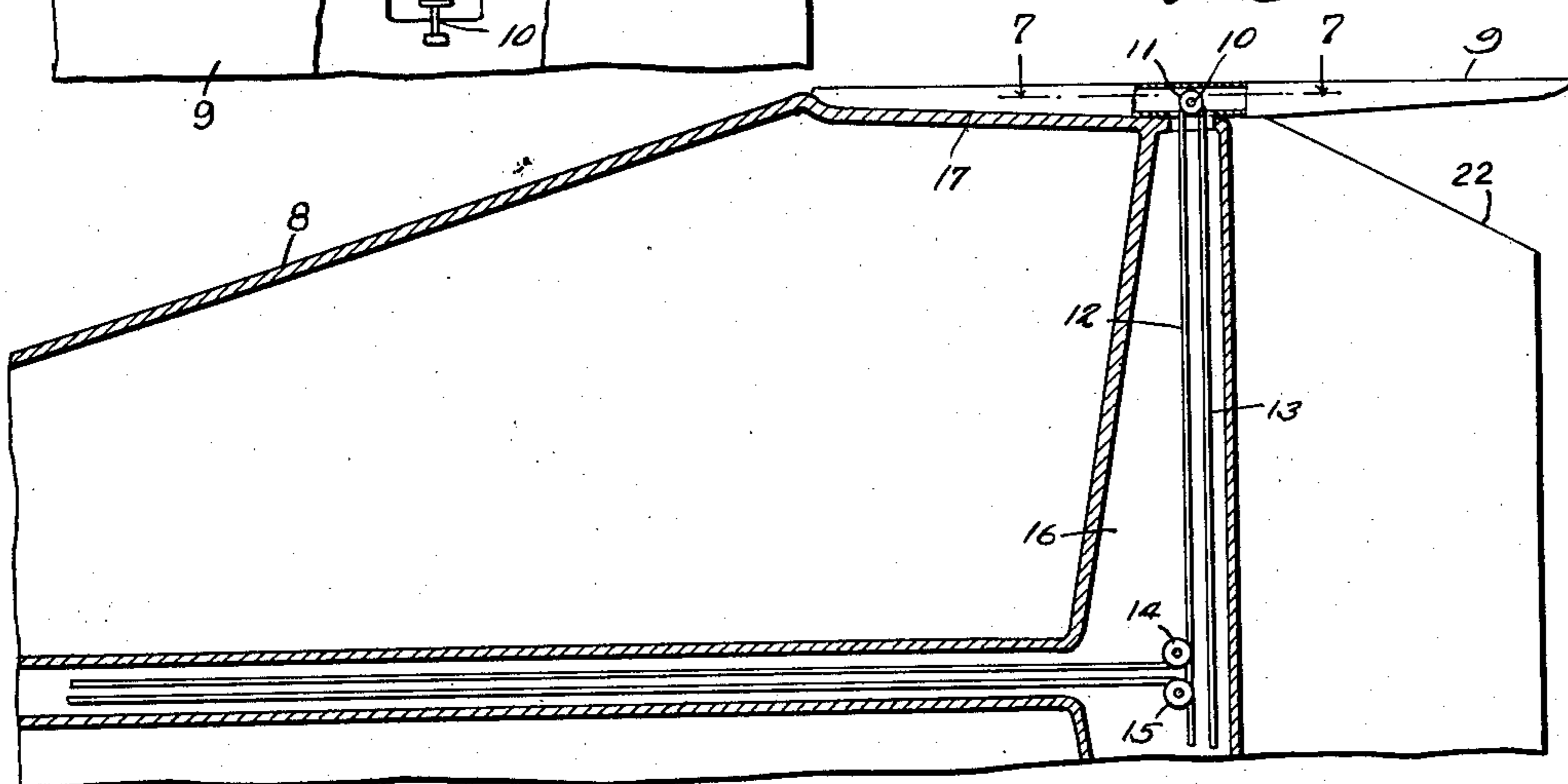


Fig. 6.

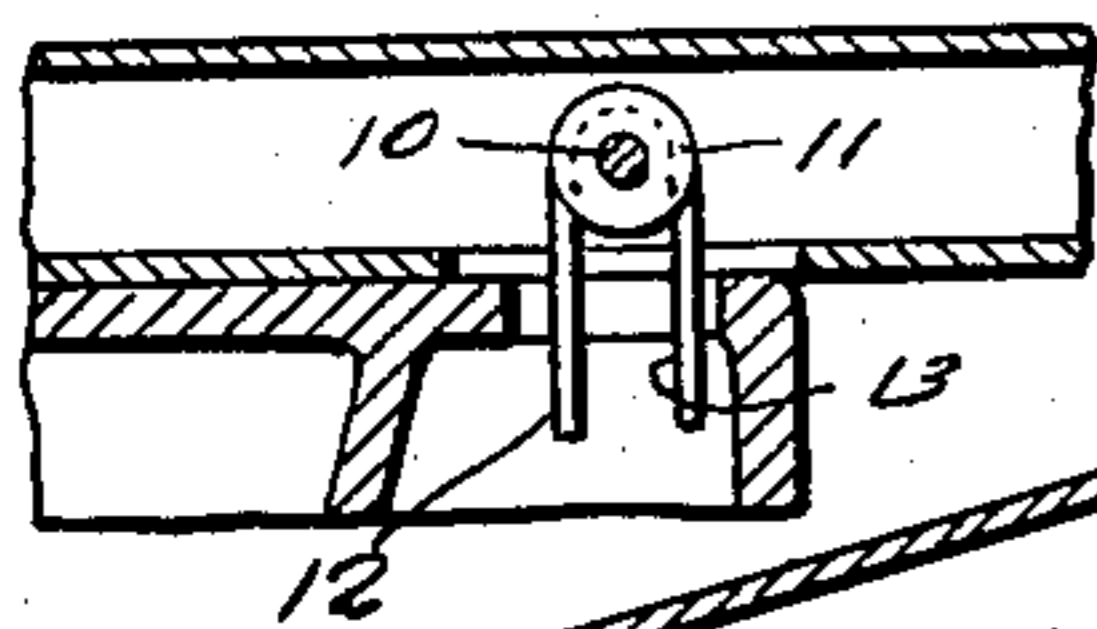


Fig. 8.

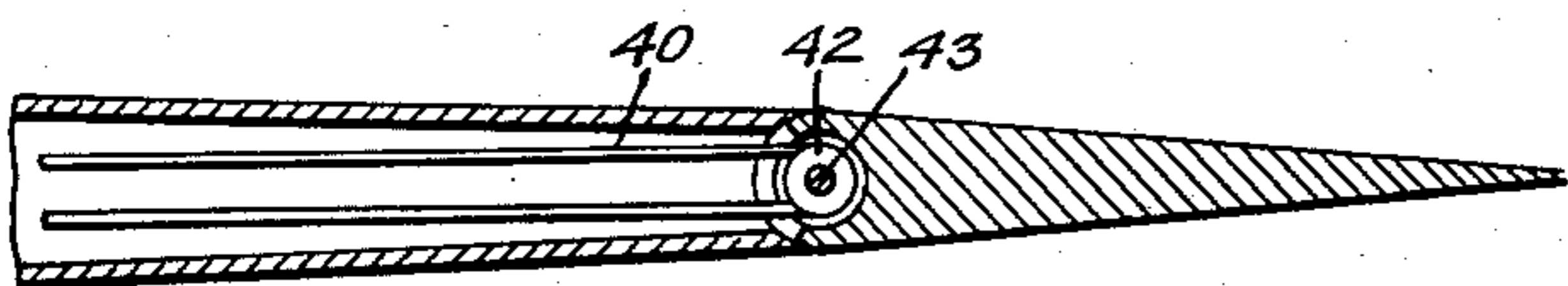
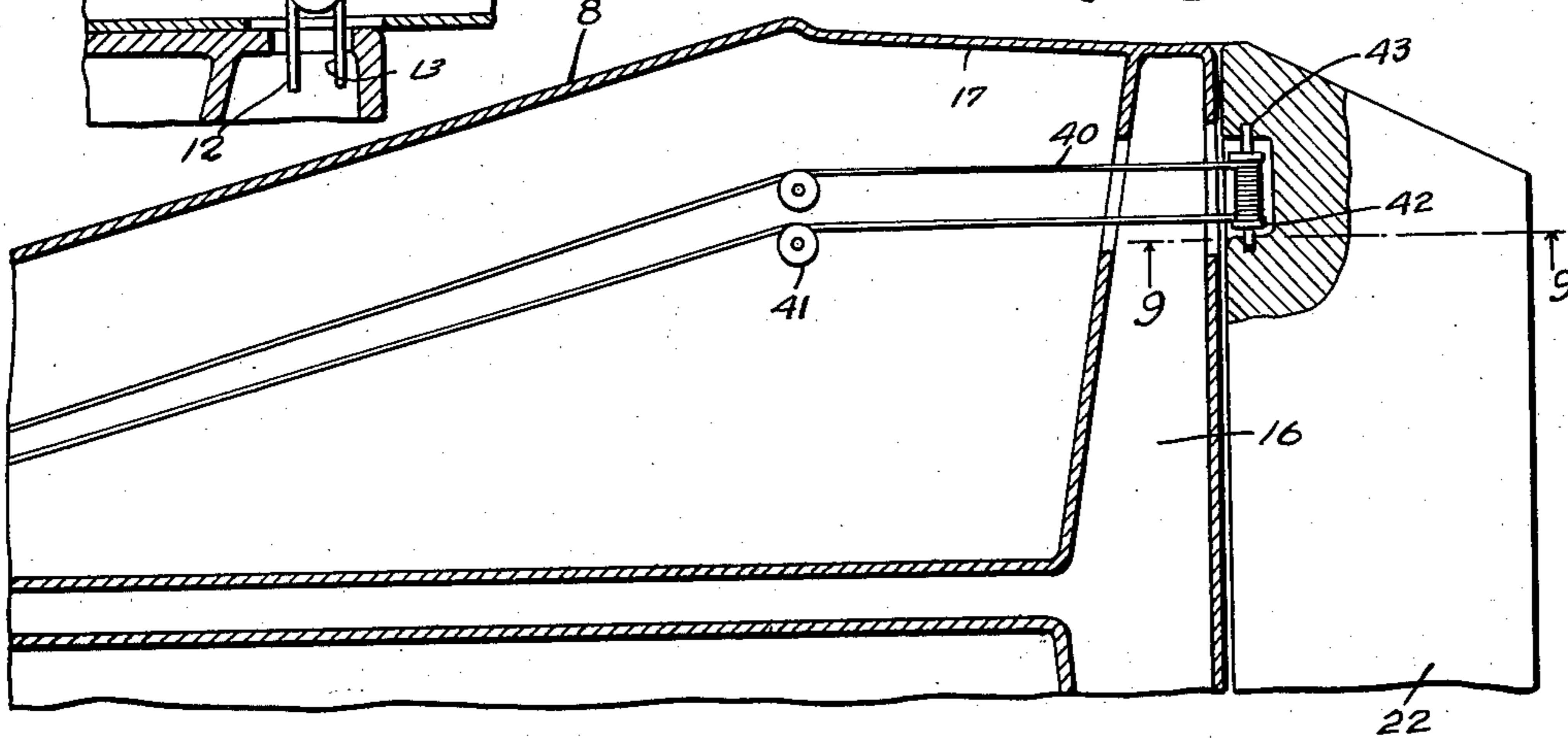


Fig. 9.

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BOAT CONSTRUCTION FOR SUBMERGED OR SURFACE OPERATION

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Application April 10, 1956, Serial No. 577,268

2 Claims. (Cl. 114—16)

This invention relates to boat construction, and aims to provide a boat of such construction that it may operate under water as a submarine, or as an ordinary surfaced boat.

An important object of the invention is to provide a boat of this character equipped with torpedo tubes through which torpedos may be fired when the boat is submerged, means being provided for rapidly submerging the boat to conceal and protect the boat against enemy fire.

A further object of the invention is to provide a boat which will be exceptionally speedy and easily maneuverable when either submerged or surfaced, as the case may be, yet capable of being operated by a two man crew.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings:

Figure 1 is a side elevational view of a boat constructed in accordance with the invention.

Figure 2 is a plan view thereof.

Figure 3 is a longitudinal sectional view through the boat.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Figure 5 is an enlarged fragmental sectional view illustrating one of the fins of the boat with one of the pivoted depth-regulating blades shown as partly broken away.

Figure 6 is an enlarged sectional view illustrating a portion of the operating means for the depth-regulating blades.

Figure 7 is a sectional view taken on line 7—7 of Figure 5.

Figure 8 is an enlarged sectional view through one of the fins illustrating the means for operating the rudders.

Figure 9 is an enlarged sectional view taken on line 9—9 of Figure 8.

Referring to the drawings in detail, the hull of the boat is indicated generally by the reference character 5, the body or hull of the boat being preferably circular in formation and formed with an outwardly bulged deck 6 and bottom 7.

Disposed at opposite sides of the hull 5 and arranged in parallel spaced relation with respect to each other, are the fins 8 that extend above and below the hull 5, as better shown by Figure 3 of the drawings.

Connected with the fins at opposite sides of the hull 5, are pivoted depth-regulating blades 9 which are formed with pivot shafts 10 to which the pulleys 11 are secured, over which pulleys the cables 12 and 13 operate. The cables 12 and 13 also operate over the pulleys 14 and 15 mounted in the hollow portions 16 of the fins. The upper portions of the fins are slightly offset as at 17 so that

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the depth-regulating blades may lie flush with the upper surfaces of the fins when in their horizontal positions, as shown by Figure 5 of the drawings.

The cables 12 and 13 extend forwardly and connect with the pulleys 18 that are controlled by the wheel 19 and post 20 to which the wheel 19 is connected. Thus it will be seen that due to this construction, the operator of the boat may, by manipulating the wheel 19, control the pitch of the depth-regulating blades 9 to submerge the boat, or surface the same, according to the direction of movement of the depth-regulating blades 9.

The boat is provided with vertical rudders 21 and 22 that are supported at the rear ends of the fins 8, the rudders being also controlled by the operator of the boat seated adjacent to the steering wheel 19. Cables 40 are passed around pulleys 41 and drums 42 mounted on axles 43 interiorly of the rudders, and operate the rudders at both sides of the hull of the boat, simultaneously for quickly maneuvering the boat.

The reference character 22' designates an internal combustion engine which is fed with gas from gas tank 23 through the intake pipe 24. The reference character 25 indicates a propeller shaft on which the propeller 26 is secured, the propeller 26 operating to drive the boat through the water.

Supported within the forward end, or bow, of the boat, is a water pump 27 that is operated by power derived from the motor 22', for filling the water chambers 28 with water to cause the boat to submerge under the additional weight when water is pumped into said water chambers 28. A horizontal partition 29 divides the hull of the boat into an upper cabin 30 and a lower engine compartment 31, the cabin and engine compartment being in communication through the opening 32 normally closed by the cover 33. An oxygen tank 34 is disposed within the cabin to supply oxygen to the occupants of the cabin when the boat is submerged.

A dome 35 constructed preferably of transparent material forms a part of the deck 6 and provides an observation dome for the occupants of the boat so that the boat can be properly maneuvered.

The reference character 36 indicates torpedo tubes that extend forwardly from the boat and have their forward open ends disposed at the marginal edge of the boat, the tubes being arranged as a pair in spaced relation with respect to each other.

A vertical wall 37 divides the cabin into a forward and stern compartment so that the portion of the cabin occupied by the crew of the boat will be separate from the remaining portion thereof so that the occupants will not be exposed to engine and gas fumes.

From the foregoing it will be seen that I have provided a novel form of boat including a body or hull which is substantially circular in formation, with its upper and lower walls bulged outwardly providing a hull which will glide over the surface of the water, or move downwardly or upwardly through the body of water in a submerged manner to deliver torpedos through the torpedo tubes 36.

When the boat has been surfaced, it is obvious that the boat will skim along the surface of the water at high speed, providing a boat which is exceptionally easily maneuvered.

Having thus described the invention, what is claimed is:

1. A boat of the type described, comprising a circular hull bulged outwardly above and below the horizontal axis of the hull, pairs of vertical fins secured to the upper and lower surfaces of said hull extending rearwardly therefrom, the fins of each pair being disposed in parallel relation with respect to each other, said fins terminating at the stern of the hull, rudders pivotally mounted between said vertical fins, at each side of said hull, and horizontal depth blades mounted at the rear ends

of said fins at the upper and lower ends of said rudders, and mechanism for swinging said depth blades vertically, controlling the surfacing and submerging of the boat.

2. A boat of the type described, comprising a hull
5 embodying upper and lower circular plates connected at their peripheries and bulged outwardly in opposite directions beyond the horizontal axis of the hull, pairs of spaced fins extending above and below the circular hull, the fins of each pair being arranged in parallel relation
10 with respect to each other, rudders pivotally mounted at the rear ends of said fins, mechanism for operating said rudders simultaneously, means for propelling the boat, depth regulating blades mounted at the stern of

the boat in horizontal relation with respect to the upper and lower surfaces of said boat and means for operating said blades simultaneously.

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