

Feb. 26, 1963

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3,078,617

WATER TOY

Filed March 24, 1958

FIG. 1

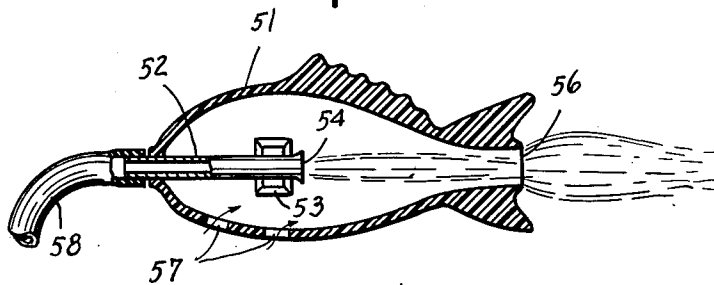
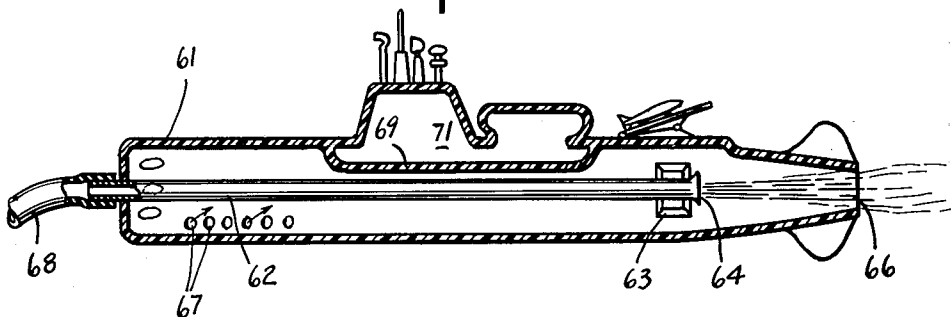


FIG. 2



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3,078,617

WATER TOY

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Filed Mar. 24, 1958, Ser. No. 723,173

4 Claims. (Cl. 46-92)

This invention relates generally to water toys and in particular to an object such as a toy boat which is propelled by a jet stream of water issuing therefrom.

The present invention provides a water toy which is adapted for use in a bathtub or wading pool. The toy is provided with a flexible tube or hose which is connected to a water faucet or a similar source of fluid under pressure. The tube is connected at the leading end of the toy object, such as a boat, and the water issuing from the flexible tube is directed, by means of a rigid tube, through a discharge aperture in the toy. The force of reaction generated by the stream of water issuing from the discharge aperture causes the toy to move through the water. The motion of the toy may be left uncontrolled, the toy thereby following the random direction of the flexible tube. In another form of the present invention the rigid tube is mounted so as to be angularly movable and is provided with a sidewardly directed terminal portion whereby rotation of the rigid tube controls the direction of the toy.

It is an object of the present invention to provide a water jet propelled toy whose direction of motion is controlled by angular movement of a sidewardly extending rigid tube, the toy thereby being characterized by rapid response to changes in direction of the tube.

A further object of the present invention is to provide a water toy in which a secondary stream of water is supplied to the primary jet stream to provide a reduced velocity, high-mass jet at the toy's discharge aperture.

These and other objects will become apparent as the description proceeds with reference to the accompanying drawings in which:

FIG. 1 is a side sectional view of a toy embodying the present invention.

FIG. 2 is a side sectional view of a modified form of the present invention.

Referring to FIG. 1, there is shown at 51 an elongated body or housing which may be formed of suitable plastic material and may have the configuration of a fish or a similar object. The leading end of the housing mounts a tube 52 which is also supported by bosses 43 which extend inwardly from opposite sides of the housing, only one of the bosses, however, being visible in FIG. 1. The outlet end 54 of the rigid tube is aligned with a discharge opening 56 in the trailing end of the housing. The housing is further provided with apertures which may be located as shown at 57 for permitting the entry of water into the housing. The front end of the tube 52 receives a flexible tube 58. The tube is adapted to be connected to a suitable source of water under pressure.

In operation, the toy fish may be placed in a receptacle containing water, such as a bathtub, with the tube connected to the adjacent water faucet. When water flows from the faucet through the flexible tube 58 and the rigid tube 52, the jet stream issuing from the trailing end of the tube will provide a propelling force driving the toy forwardly. Since the tube is somewhat flexible and will normally be disposed in a random curved configuration in the tub, the toy fish will follow the random direction of the flexible tube and will execute a series of random changes in direction.

An important feature of the present invention is the aspirating effect of the tube 52 which draws water through the apertures 57. The stream of water issuing from the opening 54 tends to draw water through the apertures 57,

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this additional volume of water joining the jet stream issuing from the discharge opening 56. As a result the jet stream issuing from the opening 56 has a high mass, low-velocity characteristic. This characteristic of the stream prevents squirting of water on the walls and fixtures adjacent the tub or other container should the trailing end of the toy be elevated above the surface of the water during its operation.

Although this feature is an important one, it should be noted that it is not essential to the physical operation of the toy. It would be possible to extend the tube 58 entirely through the body 51, thus eliminating the boss 53 and the oversize nozzle 56. The apertures 57 would be retained to permit the body 51 to fill with water, thereby allowing it to move below the surface of the water.

Also, although FIG. 1 discloses a rigid tube 52 which is carried by the leading end of the fish body and the bosses 53 and which is connected to the flexible tube 58, this arrangement is not required. The tube 52 can be eliminated by extending the flexible tube 58 through the front end of the body 51 with the tube's terminal end carried by the bosses 53.

Another important feature of the present invention is the arrangement of the fish body with respect to the flexible tube. By aligning the longitudinal axis of the body with the longitudinal axis of the flexible tube, with the flexible tube terminating at or entering through the forward end of the body, a thrust line is established which not only is in line with the intended direction of travel of the body, but which is also in line with the longitudinal axis of the terminal end of the flexible tube. Thus, the water jet is always pushing longitudinally against the flexible tube. This provides random changes in direction as the fish travels through the water and follows the changing curved configuration of the flexible tube. Also, since the water jet is always pushing longitudinally against the flexible tube, the fish will run endlessly without the flexible tube ever becoming knotted or otherwise fouled. This arrangement is in contrast with an arrangement whereby the flexible tube would trail behind the fish body, being attached at the rear of the body or under the body at its center, with or without a swivel member, and with a U-shaped tube reversing the flow of water and directing a rearwardly aimed jet. This latter arrangement would result in the flexible tube being pulled by the water jet. Under these conditions the feature of random and ever changing maneuvering of the fish would be lost. Also, the flexible tube would quickly become knotted or tangled.

Referring now to FIG. 2, there is shown a modified form of the present invention which includes a housing 61 which may take the form of a scale model of a submarine. The housing supports a rigid tube 62 which extends axially therethrough. The bosses 63 extending from opposite sides of the housing rotatably support the tube adjacent its trailing end. The rigid tube 62 is thus rotatably carried by the housing 61 and the bosses 63. The opening 64 at the end of the tube is aligned with a discharge opening 66. The housing is further provided with apertures 67 communicating with the interior thereof and located adjacent its forward end. The leading end of the rigid tube receives a flexible tube 68 which is similar to the tube 58 described with reference to FIG. 1.

Since the toy submarine is intended to remain upright as it proceeds through the water, the housing is provided with a suitable internal wall 69 which provides an air chamber 71. The air chamber is sealed so that water does not enter therein, and is of sufficient volume so that the buoyant force exerted thereon tends to compensate for the weight of the toy, permitting it to float at the desired level when placed in the water, preferably with only the conning tower extending above the surface of the water.

In operation, the flexible tube is connected to a suitable source of water under pressure and the toy will thereupon move forward in a randomly directed motion, as described with reference to FIG. 1. The apertures 67 permit water to be drawn into the housing, this volume of water joining the jet issuing from the opening 64 to provide the high-mass, low velocity stream issuing from the discharge opening 66, as previously described with reference to FIG. 1. As the submarine submerges, turns back and forth, and surfaces again as it travels through the water, the air chamber will provide a buoyant force which will permit the submarine hull to rotate about the rigid tube 62, and thus remain upright during its travel through the water.

The path traveled by the toy submarine described above can also be controlled remotely by a method similar to the method described previously with reference to FIG. 1, and further elaborated on as follows. By grasping the tube 68 at a point remote from the submarine holding a major portion of the tube out of the water, the submarine will turn in the direction of curvature of that portion of the tube immediately in front of the submarine. For example, if the tube curves to the right, the submarine will turn to the right. Then, by rotating the tube counter-clockwise with the fingers at the point the operator is holding the tube, a loop, or coil will be formed in the tube which will immediately travel down the tube and cause the tube to rotate 180°, to a position that curves to the left immediately in front of the submarine. This will cause the submarine to turn to the left, thus reversing its direction of travel. By this method, wherein the flexible tube itself is the mechanism by which remote control is accomplished, it is quite easy to steer the submarine in a figure 8 path, a left-hand circle path or a right-hand circle path. The direction of travel can be changed at any desired moment. As the submarine travels through the water, it will randomly submerge, traveling its desired path under the water, then surface again for a short time, and then dive under the surface again, thus creating a realistic and entertaining simulation of a real submarine traveling through the water. An experienced operator can even control the dive and surface characteristics of the toy by slightly pulling up on the tube or pushing down on the tube.

As mentioned with reference to FIG. 1, the rigid tube 62 might be replaced by extending the tube 68 through the body so that it is rotatably held at the forward end of the body and the bosses 63.

Although various modifications may occur to others skilled in the art, the scope of the present invention is to be limited only by the appending claims.

What is claimed is:

1. A water toy adapted to be propelled through water by a jet stream directed rearwardly therefrom, said toy comprising an elongated body, a rigid tube in said body extending in the direction of motion thereof, a flexible tube communicating with the leading end of said rigid tube and adapted to be supplied with water under pressure, said rigid tube terminating within said body, a discharge aperture in said body aligned with the trailing end of said rigid tube, and additional apertures in said body for admitting water drawn into said body by the aspirating effect

of the water discharged from said rigid tube, whereby the fluid leaving said body discharge aperture takes the form of a reduced velocity-high mass jet.

2. A water toy adapted to be propelled through water by a jet stream directed rearwardly therefrom, said toy comprising an elongated body, a tube in said body extending in the direction of motion thereof, means for introducing water under pressure into the leading end of said tube, said tube terminating within said body, a discharge aperture in said body aligned with the trailing end of said tube, and additional apertures in said body for admitting water drawn therein by the aspirating effect of the water discharge from said tube, whereby the fluid leaving said body discharge aperture takes the form of a reduced velocity-high mass jet.

3. A water toy adapted to be propelled through water in a container by a jet stream directed rearwardly therefrom, said toy comprising an elongated body having an air chamber therein, a rigid tube rotatably carried in said body, and extending in the direction of motion thereof, a flexible tube communicating with the leading end of said rigid tube and adapted to be supplied with water under pressure said rigid tube terminating within said body, a discharge aperture in said body aligned with the trailing end of said rigid tube, and additional apertures in said body for admitting water drawn into said body by the aspirating effect of the water discharged from said rigid tube, whereby the fluid leaving said body discharge aperture takes the form of a reduced velocity-high mass jet, the buoyant force on said air chamber substantially providing a self-righting force moment to permit said toy to travel through the water in an upright position.

4. A remote controlled water toy adapted to be propelled through the water by a fluid jet stream directed rearwardly therefrom, said toy comprising an elongated body having an air chamber therein, a rigid tube rotatably carried in said body and extending in the direction of motion thereof, a flexible tube communicating with the leading end of said rigid tube and adapted to be supplied with water under pressure, said flexible tube providing means for remotely steering said toy, said rigid tube terminating within said body, a discharge aperture in said body aligned with the trailing end of said rigid tube, and additional apertures in said body for admitting water drawn into said body by the aspirating effect of the water discharged from said rigid tube, whereby the fluid leaving said body discharge aperture takes the form of a reduced velocity-high mass jet, the buoyant force on said air chamber substantially providing a self-righting force moment to permit said toy to travel through the water in an upright position.

References Cited in the file of this patent

UNITED STATES PATENTS

1,596,852	Foster	Aug. 17, 1926
1,776,791	Herbst	Sept. 30, 1930
1,876,988	Lormor	Sept. 13, 1932
1,918,874	Shannahan	July 18, 1933
1,994,098	Fulton	Mar. 12, 1935
2,331,187	Harris	Oct. 5, 1943
2,668,390	Fredericks	Feb. 9, 1954
2,824,408	Cauley	Feb. 25, 1958