June 13, 1950 C. GARLAND 2,511,154

ARTICULATED AQUATIC TOY

Filed Aug. 2, 1945 2 Sheets-Sheet 1

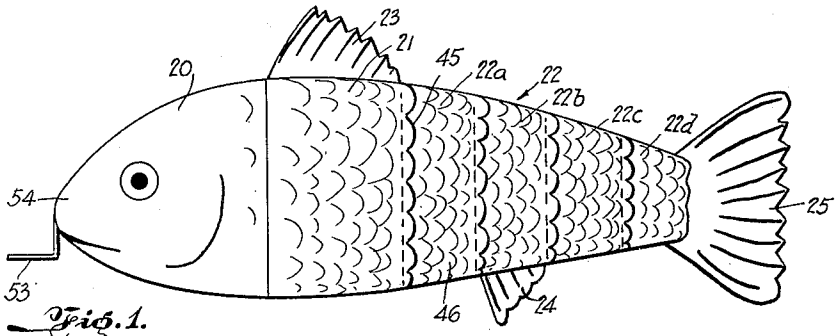


Fig. 1.

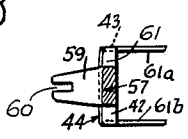


Fig. 3.

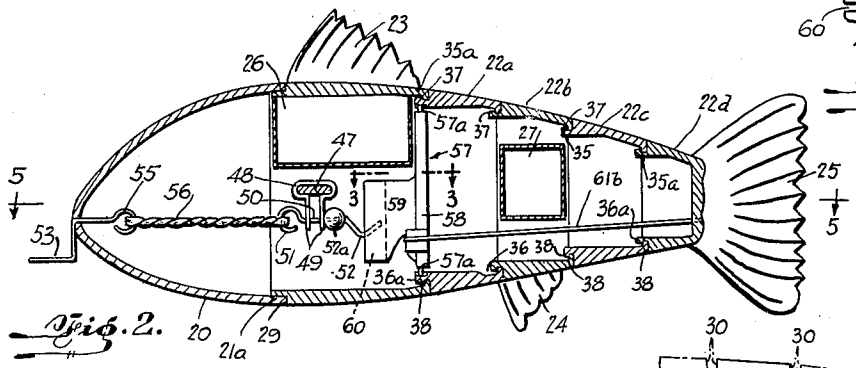


Fig. 2.

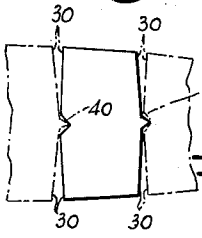


Fig. 6.

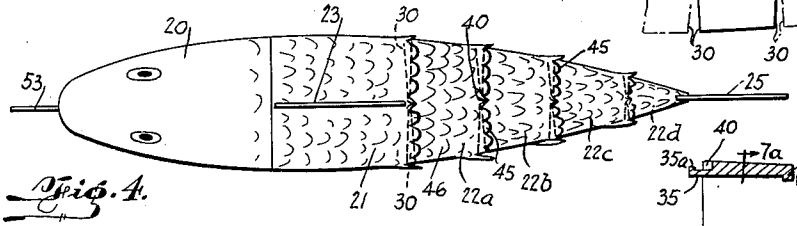


Fig. 4.

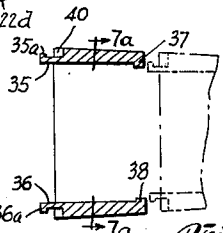


Fig. 7.

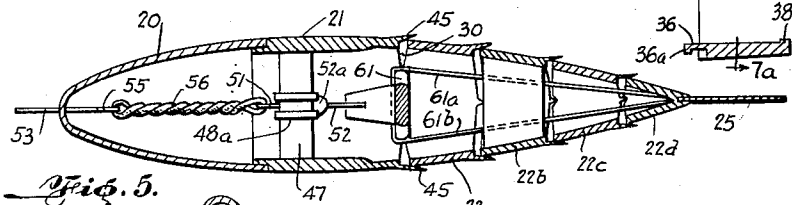


Fig. 5.



Fig. 7a.

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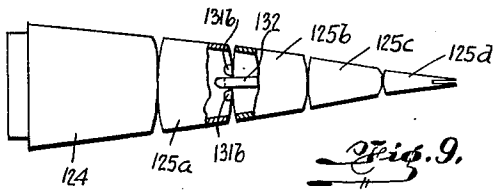


Fig. 9.

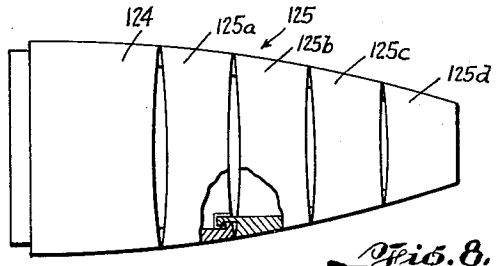


Fig. 8.

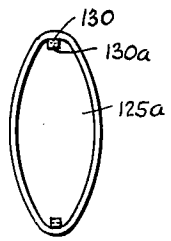


Fig. 11.

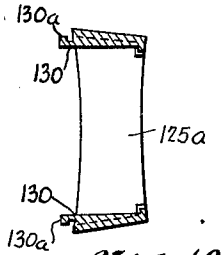


Fig. 10.

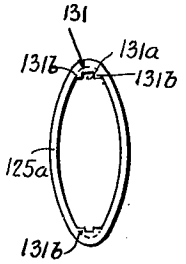


Fig. 12.

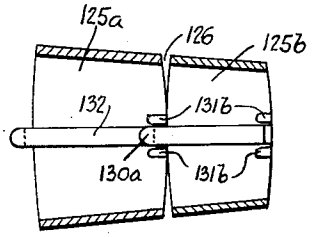


Fig. 13.

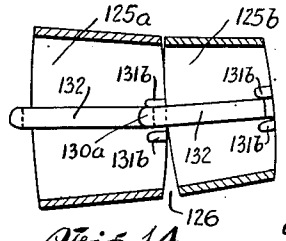


Fig. 14.

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2,511,154

ARTICULATED AQUATIC TOY

Charles Garland, Mount Vernon, N. Y., assignor of one-half to Ursula Garland, Mount Vernon, N. Y.

Application August 2, 1945, Serial No. 608,511

4 Claims. (Cl. 46—92)

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This invention relates to improvements in aquatic devices and more particularly to aquatic devices having articulated parts and operative means therefor to produce propulsion.

In the embodiments disclosed in the drawings, imitation fish are illustrated which are adapted to be propelled in liquid by lateral movement of parts thereof.

It is an object of the present invention to provide improved means for articulatedly joining together parts of a device, particularly formed of plastic composition.

It is a more specific object of the present invention to provide a toy fish with simple and efficient means to enable it to be automatically propelled in water by movements closely simulating the swimming movements of real fish.

A still further object of the present invention is to provide in an aquatic device a plurality of parts so combined and connected and operated as to insure efficient forward movement in water of the device by successive relative movements of articulated parts thereof, and to further provide in an aquatic device improvements over the disclosure made in my Patent Number 1,928,418, dated September 26, 1933.

It is yet another object of the present invention to make an aquatic device out of plastic parts which can be joined or connected together expeditiously and with a minimum of labor.

A still further object of the invention is to provide novel means for pivotally or jointedly connecting together plastic parts of a device, the said means forming integral portions of the said parts.

Further objects and advantages of the invention will appear from the following disclosure thereof together with the attached drawings which illustrate certain forms of embodiment thereof. These forms are shown for the purpose of illustrating the invention since the same have been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

In the drawings:

Fig. 1 is a side view of a toy fish embodying the invention;

Fig. 2 is a vertical sectional view of the fish of Fig. 1;

Fig. 3 is a sectional view taken through line 3—3 of Fig. 2;

Fig. 4 is a top view of the device seen in Figs. 1 and 2;

Fig. 5 is a horizontal sectional view taken along line 5—5 of Fig. 2;

Fig. 6 is a top view of one of the articulated tail sections shown in full lines with fragmental portions of tail sections adjacent thereto shown in dash lines;

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Fig. 7 is an exploded view showing a vertical sectional view of one of the tail sections and a fragmental portion of an adjacent tail section shown in dash lines;

Fig. 7a is a transverse sectional view taken through line 7a—7a of Fig. 7;

Fig. 8 is a side view (partly in section) of the tail section of a toy fish embodying the invention in a modified form;

Fig. 9 is a top view (partly in section) of Fig. 8;

Fig. 10 is a sectional side view of one of the tail sections seen in Figs. 8 and 9;

Fig. 11 is a view of Fig. 10, looking at one end and Fig. 12 is a view of Fig. 10, looking at the other end; and

Figs. 13 and 14 are longitudinal sectional views of two connected tail sections seen in Figs. 8 and 9, in two different relative positions thereof.

Referring to the form of the invention disclosed in Figs. 1–5, which is representative of a toy fish, there are provided the head portion 20, the intermediate portion 21 and rear portion 22, the latter being articulated and comprising the connected tail sections 22a, 22b, 22c and 22d. All these portions are hollow and are preferably made of plastic composition, such as, for example, any of the following: cellulose acetate, Celluloid, polystyrene, pyroxylin, methyl methacrylate, or other synthetic resinous, or phenol compounds.

Intermediate portion 21 has extending therefrom on one side of the fish, the fin 23; tail section 22b has extending therefrom on the other side of the fish the fin 24; and extending rearwardly from the tail section 22d is the caudal fin 25. These fins are also preferably made of plastic composition. Suitable floats are provided within the fish, such as, for example, the hollow member 26 within body portion 21 and the hollow member 27 within tail section 22b. Members 26, 27 are preferably made of plastic composition, although cork or light wood may be employed.

Making the head and intermediate part of the fish in two portions 20, 21, results in ease of exterior assembly and assembly of parts of the driving mechanism for imparting motion to the connected tail sections 22a, 22b, 22c and 22d. The head portion 20 is joined to the intermediate portion 21 by providing one of the portions, in this instance, the intermediate portion 21 with a reduced end 21a forming a shoulder 29 against which the rear end of head portion 20 abuts, the reduced end 21a projecting within the hollow of head portion 20.

The head portion 20, the intermediate portion 21 and the tail sections 22a, 22b, 22c and 22d, are hollow and the external and internal walls of

each are substantially elliptical in transverse section, Fig. 7a showing a transverse sectional view of one of the tail sections. Each of the tail sections is so shaped to permit limited angular movement relative to the next preceding section and the intermediate section 21 is likewise so shaped at its rear end to permit relative angular movement of the section 22a. The relative angular movement permitted between adjacent sections by the cut-away portions 30 (see Figs. 4 and 6) insures free lateral movement of the flexible pull members 61a, 61b referred to more in detail hereinbelow, and makes provision for taking up the slack in these pull members at successive positions of the tail sections.

Each of the sections 22a, 22b and 22c has at its front end upper and lower hook or nose projections 35, 36, the hook or catch portions 35a, 36a facing in opposite directions, that is, portion 35a facing upwardly and portion 36a facing downwardly; and each of said sections 22a, 22b and 22c has at its rear end upper and lower hook or catch portions 37, 38 facing toward each other and in interengagement respectively with the front catch portions 35a, 36a of an adjacent section as clearly seen in Fig. 2. Section 21 has upper and lower rear catches 37, 38 in interengagement respectively with the upper and lower front catches 35a, 36a of section 22a; the tail end section 22d has the upper and lower front catches 35a, 36a in interengagement with the upper and lower rear catches 37, 38 of section 22c, respectively. Since each of the sections of the fish has a substantially elliptical internal wall as seen in Fig. 7a, the sides of these walls act as stops preventing lateral movement of the catches when in respective interengagement. The rear portions of the catches somewhat form recesses for the reception of the respective interengaging catches. Thus, by interengagement of the catches or hooks, joints or pivots are provided making the tail or rear portion of the fish articulated and permitting the sections 22a, 22b, 22c and 22d to be successively or progressively swung laterally from side to side. The sections 22a, 22b, 22c and 22d are made flexible (preferably of plastic composition) so that the sections may be snapped into relative adjacent position with respective catches in interengagement by compressing the top and bottom of the sections.

As seen in Figs. 4 and 6, each of the sections 22a, 22b, 22c and 22d has a notch or recess 40 at its upper and lower front edges, these notches 40 being above the projections 35, 36 and at the rear of the catches 35a, 36a and being adapted to permit passage of catches 37, 38 for interengagement with the catches 35a, 36a respectively, the catches 37, 38 being received in said notches 40.

A plurality of serrations or projections 45 may be provided to conceal the cut-away portions 30 between adjacent sections, simulating scales and blending in with other scales 46 of the fish.

Connected to the sides of section 21 and disposed within the latter is a cross member 47 embraced by a bearing 48 having the perforated depending lugs 49 supporting rotatively a crank shaft 50 terminating at its front in an eye or hook 51 and being bent or offset at its rear end portion as indicated at 52.

A sphere or bead 52a is supported on the irregularly-shaped crank shaft 50, immediately behind the bearing 48. A crank handle 53 projects through an opening at the nose 54 of the fish, the rear end of handle 53 terminating in an eye or hook 55 engaging one end of a rubber band 56, the other end of the band being connected to the eye 51 of shaft 50.

The depending lugs 49 are formed by striking the same out of the material from which the bearing is made, and bending the same, leaving the straps 48a embracing the cross member 47.

Pivoted at the front of section 22a as indicated at 57a is an oscillator 57 having a shaft portion 58, a front extension 59 provided with a vertical slot 60, and a transverse enlargement 42 provided with a transverse groove 43. Shaft 58 is preferably made of plastic composition. In the instant case shown in the drawing, floats 26 and 27 act as stops for the oscillator 57, it being understood that any other instrumentality may be employed as stops to prevent the oscillator falling during or after assembly of the parts or sections of the article.

The offset or bent end 52 of shaft 50 projects into slot 60 of oscillator 57. It is evident that rotation of shaft 50 will cause lateral oscillation of oscillator 57. A flexible member 61 has a portion 44 secured in groove 43 of the transverse enlargement 42 of the oscillator 57, its two branches 61a, 61b converging in and being secured at the end section 22d. Member 61 may be made of any suitable string-like material, preferably dental floss. Cement may be employed for securing portion 44 of member 61 in groove 43.

It is evident that as oscillator 57 oscillates sidewisely, one of the two branches 61a, 61b is pulled and tension on the other released.

Now, if the sections 22a, 22b, 22c and 22d are held to prevent lateral movement thereof, as with the hand of the operator, and the crank handle 53 turned so as to wind or twist the rubber band 56, then, if the grip with the hand is released, crank 50 will rotate causing lateral oscillation of oscillator 57 and the sections 22a, 22b, 22c and 22d by the action of string branches 61a, 61b successively or progressively swing sidewisely simulating the movement of a fish and when the article is placed in water this movement will cause propulsion of the article like a fish, the movement slowing up somewhat on account of the resistance of the water. The succession of motions of the plurality of sections insures efficient forward movement simulating the actual swimming motions of a fish.

It is understood that, as regards the construction of the joints of the sections 21, 22a, 22b, 22c and 22d, the same may have many other uses besides the one herein described.

Referring now to the embodiment disclosed in Figs. 8 to 14, inclusive, there is seen the intermediate portion 124 and the rear portion 125 the latter being articulated and comprising the connected tail sections 125a, 125b, 125c and 125d. All these portions are hollow and are preferably made of plastic composition. As seen in preceding figures, the external and internal walls of each are substantially elliptical in transverse section. The relative angular movement permitted between adjacent sections by the cut-away portions insures free, though limited, lateral movement of the flexible pull members referred to hereinbefore, and makes provision for taking up the slack in these pull members at successive positions of the tail sections. Each of the sections 125a, 125b, 125c and 125d has at its front end, upper and lower hook or nose projections 130; the hook or catch portions 130a facing in opposite directions; and each of the sections 124, 125a, 125b and 125c, has at its rear end, upper and lower flange portions 131 facing

toward each other and having central or intermediate hook sections 131*a* in engagement respectively with the front catch portions 130*a* of an adjacent section as clearly seen in Fig. 8. The flange or wall sections 131*b* on either side of central hook section 131*a* act as stops or guides to limit the side play movement of and to retain the catches or hooks 130*a*, as seen in Figs. 13 and 14, the side guides 131*b* holding the projecting tabs or hooks 130*a* on center. The central flange section 131*a* is shorter than the lateral flange sections 131*b*, whereby the latter also act as guides for insertion of the catch, or hook members 130*a*. Since the tail sections 125*a*—125*d* and the intermediate portion 124 are made of flexible, preferably plastic material, the respective sections may be flexed in order to hook members 130 onto flange portions 131.

The numeral 132 indicates the rib which terminates in the hook projection 130 and flange portion 131.

In order to prevent the escapement of the energy stored in the elastic 56, the extreme tail section having the caudal fin is held to one side by the operator until the device is placed upon the water. This will keep a section of the string taut and prevent lateral movement of the tail sections.

Although the drawing and the above specification disclose the best modes in which I have contemplated embodying my invention, I desire in no way to be limited to the details of such disclosure, for in the further practical application of my invention many changes in the forms and proportions may be made as circumstances require or experience suggests without departing from the spirit of the invention within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. An aquatic device comprising in combination a rigid substantially hollow body portion and an articulated portion joined to said body portion and laterally movable relatively thereto, said articulated portion comprising a plurality of sections made of plastic material and laterally movable relatively to each other, said sections being hollow and being provided with complementary interlocking means integral therewith permitting said lateral relative movement, said interlocking means comprising respective inter-engaging hook projections and hook portions at connecting ends of said sections and means on said hook portions for limiting side play of said hook projections, said latter means comprising side walls for said hook portions, and means for causing successive lateral movement of said sections; said means for causing lateral movement of said sections comprising a cross member on said body portion, a crank shaft rotatively supported by said cross member, said crank shaft having an offset portion, a crank handle projecting from the free end of said body portion, flexible connecting means between said crank handle and said shaft, an oscillator pivoted at the forward section of said sections of said articulated portion, said oscillator having a shaft portion and a front extension provided with a vertical slot and a transverse enlargement, said offset portion of said shaft projecting in said slot, and a flexible member secured to said transverse enlargement, said member having two branches converging in and being secured to the rearward section of said sections.

2. An aquatic device comprising in combination

a rigid substantially hollow body portion and an articulated portion joined to said body portion and laterally movable relatively thereto, said articulated portion comprising a plurality of sections made of plastic material and laterally movable relatively to each other, said sections being hollow and being provided with complementary interlocking means integral therewith permitting said lateral relative movement, said interlocking means comprising respective interengaging hook projections and hook portions at connecting ends of said sections, and means on said hook portions for limiting side play of said hook projections, said latter means comprising side walls for said hook portions, and means for causing successive lateral movement of said sections; said means for causing lateral movement of said sections comprising a cross member on said body portion provided with a bearing having perforated depending lugs, a crank shaft rotatively supported by said lugs, said crank shaft having an offset portion, a crank handle projecting from the free end of said body portion, flexible connecting means between said crank handle and said shaft, an oscillator pivoted at the forward section of said sections of said articulated portion, said oscillator having a shaft portion and a front extension provided with a vertical slot and a transverse enlargement provided with a transverse groove, said offset portion of said shaft projecting in said slot, and a flexible member secured in said groove, said member having two branches converging in and being secured to the rearward section of said sections.

3. An aquatic device comprising in combination a rigid substantially hollow body portion and an articulated portion joined to said body portion and laterally movable relatively thereto, said articulated portion comprising a plurality of sections made of plastic material and laterally movable relatively to each other, said sections being hollow and being provided with complementary interlocking means integral therewith permitting said lateral relative movement, said interlocking means comprising respective interengaging hook projections and hook portions at connecting ends of said sections and means on said hook portions for limiting side play of said hook projections, said latter means comprising side walls for said hook portions, and means for causing successive lateral movement of said sections; said means for causing lateral movement of said sections comprising a cross member on said body portion, a crank shaft rotatively supported by said cross member, said crank shaft having an offset portion, a crank handle projecting from the free end of said body portion, flexible connecting means between said crank handle and said shaft, an oscillator pivoted at the forward section of said sections of said articulated portion, said offset portion of said shaft projecting in said oscillator, and a flexible member connected to said oscillator and having two branches converging in and being secured to the rearward section of said sections.

4. An aquatic device comprising in combination a rigid substantially hollow body portion and an articulated portion joined to said body portion and laterally movable relatively thereto, said articulated portion comprising a plurality of sections made of plastic material and laterally movable relatively to each other, said sections being hollow and being provided with complementary interlocking means integral therewith permitting said lateral relative movement, said interlocking means comprising respective interengaging hook

projections and hook portions at connecting ends of said sections and means on said hook portions for limiting side play of said hook projections; said latter means comprising side walls for said hook portions, and means for causing successive lateral movement of said sections; said means for causing lateral movement of said sections comprising a cross member on said body portion provided with a bearing having perforated depending lugs, a crank shaft rotatively supported by said lugs, said crank shaft having an offset portion, a crank handle projecting from the free end of said body portion, flexible connecting means between said crank handle and said shaft, an oscillator pivoted at the forward section of said sections of said articulated portion, said offset portion of said shaft projecting in said oscillator, and a flexible member connected to said oscillator and having two branches converging in and being secured to the rearward section of said sections.

CHARLES GARLAND.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,928,418	Garland	Sept. 26, 1933

FOREIGN PATENTS

Number	Country	Date
774,372	France	Sept. 17, 1934