Nov. 28, 1961 N. H. SHAPIRO 3,010,247

BATHTUB TOY

Filed Oct. 14, 1959

FIG. 1.

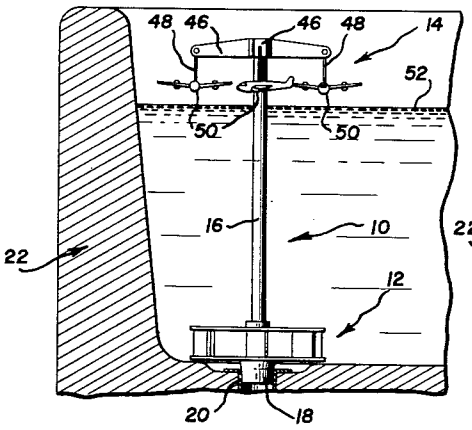


FIG. 2.

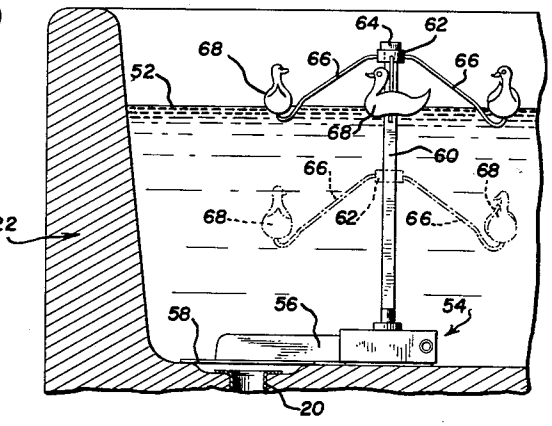


FIG. 3.

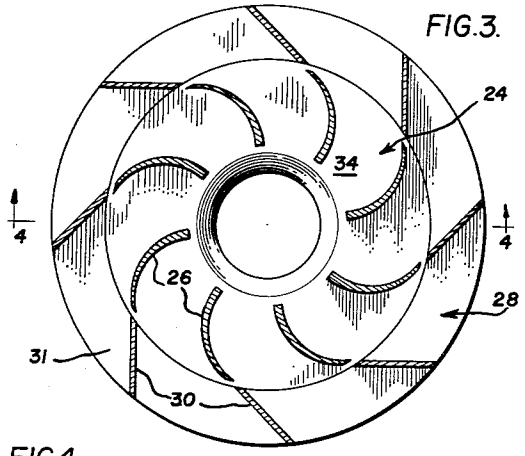


FIG. 6.

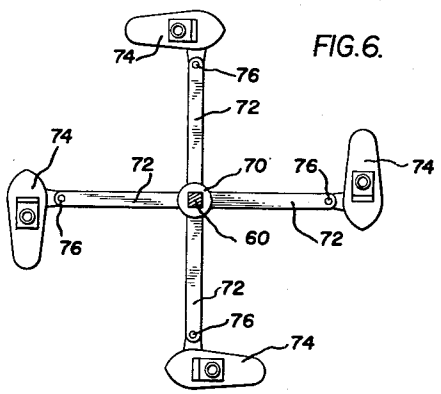


FIG. 4.

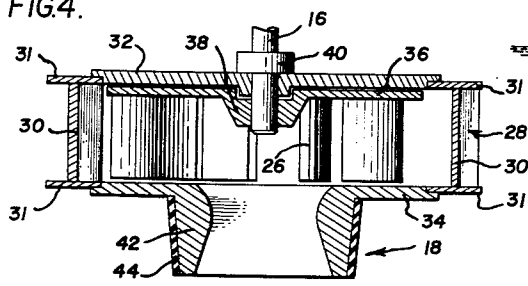


FIG. 7.

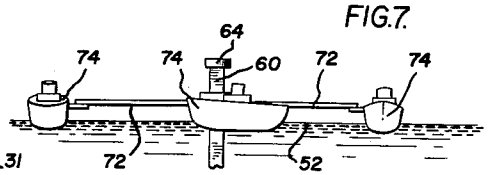
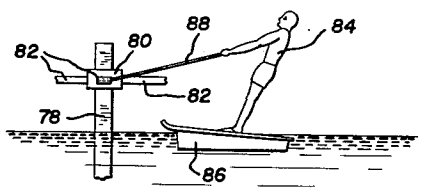


FIG. 8



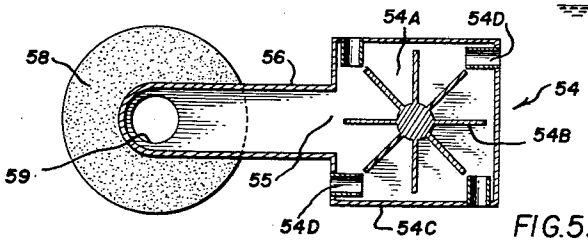


FIG. 5.

INVENTOR.
NELSON H. SHAPIRO

BY Shapiro and Shapiro

ATTORNEYS

United States Patent Office 3,010,247 Patented Nov. 28, 1961

3,010,247

BATHTUB TOY

Nelson H. Shapiro, 7003 22nd Place, Lewisdale, Hyattsville, Md.

Filed Oct. 14, 1959, Ser. No. 846,282
13 Claims. (Cl. 46—41)

This invention relates to a toy for use in a bathtub or the like, and more particularly to a bathtub toy driven by a water motor.

It is often difficult to induce a young child to take a bath, but frequently it is as difficult to induce the child to leave the bathtub after a bath. Once the bath water has drained, however, there is usually little problem in inducing the child to leave the tub. The present invention operates when the bath water is draining from the tub, and thus serves as an inducement to terminate the bath.

It is accordingly a principal object of the invention to provide a unique bathtub toy.

Another object of the invention is to provide a bathtub toy which is motivated by the bath water contained within the tub.

A further object of the invention is to provide an animated toy which is simple in construction, and which operates without batteries or other burdensome auxiliaries.

Yet another object of the invention is to provide a bathtub toy of the foregoing type that is readily adaptable to use with different types of bathtub drains.

Still another object of the invention is to provide a bathtub toy with aerial animating devices.

An additional object of the invention is to provide a bathtub toy with animating devices which float on the water in the tub.

Briefly stated, the present invention concerns a toy comprising a small water driven motor which is adapted to be coupled to the drain of the bathtub and which is motivated by water draining from the tub. The motor drives animating devices which move as the water drains.

The foregoing and other objects, advantages, and features of the invention and the manner in which the same are accomplished will become fore readily apparent upon consideration of the following detailed description of the invention taken in conjunction with the accompanying drawings, which illustrate preferred and exemplary embodiments of the invention, and wherein:

FIGURE 1 is a side elevation view of one form of the invention shown in its operative placement in a bathtub;

FIGURE 2 is a view similar to FIGURE 1 of a modified form of the invention;

FIGURE 3 is a horizontal sectional view of a water motor employed in the invention;

FIGURE 4 is a vertical sectional view taken along line 4—4 of FIGURE 3;

FIGURE 5 is a horizontal sectional view of a modified form of motor construction;

FIGURE 6 is a plan view of a modification of the animating devices of the invention;

FIGURE 7 is an elevation view of the construction of FIGURE 6; and

FIGURE 8 is an elevation view of still another form of animating device of the invention.

Referring to the drawings, and initially to FIGURE 1 thereof, the toy of the invention is generally designated by reference numeral **10** and comprises a water motor **12** and an animating device **14**. In the form shown in FIGURE 1 the water motor has a vertical output shaft **16** and a coupling **18** adapting the water motor for connection to the drain **20** of a bathtub **22** and serving to support the toy in an upright position. As shown in

FIGURES 3 and 4, the water motor comprises a small turbine having a rotor **24** with curved blades **26** and a stator **28** provided with fixed vanes **30** which complement the rotor blades. The stator vanes are mounted between annular rings **31** which are fixed to and surround a rotor housing having a top wall in the form of a disk **32** and a bottom wall in the form of a disk **34** (see FIG. 4). The blades **26** of the rotor depend from a disk **36** provided with a hub **38** fixed to one end of the output shaft **16**. The output shaft passes through a bearing and seal **40** which supports the shaft and prevents substantial axial movement thereof. The bottom wall **34** of the turbine housing is formed integrally with an internally contoured hollow plug **42** provided with an external resilient washer **44**. The plug and washer constitute the coupling **18**.

Referring again to FIGURE 1, the animating device **14** comprises crossed booms **46** fixed to the end of shaft **16** and pivotally suspending arms **48** attached to articles such as miniature aircraft **50**. The aircraft are suspended above the surface **52** of the water in the tub.

In the use of the invention, the drain plug is removed and the coupling device **18** is plugged into the drain **20** of the tub, which has previously been filled with water. The water passes through the inlet openings between the fixed vanes **30** and is directed by the vanes to strike the blades **26** of the rotor, causing the rotor to turn. The inclination of the rotor blades and fixed vanes is chosen so as to take advantage of the natural coriolis effect which occurs when water drains from the tub. After striking the blades **26** of the rotor, the water passes through the hollow plug **42** into the drain **20**. The movement of the water through the turbine causes the rotor **24** and the output shaft **16** to turn. This movement is imparted to the model aircraft **50**, which move in a circular path about the axis of the output shaft. The speed of the aircraft is a function of the head of water within the tub, and although the aircraft will move more slowly as the head drops, substantial movement is obtained until the water is almost completely drained from the tub. Maximum advantage of the water head is obtained by placing the inlet openings of the turbine as close as possible to the bottom of the tub.

FIGURE 2 illustrates a modified form of the invention. In this form the motor **54** is offset from the drain **20**, rather than concentric therewith as in FIGURE 1, to provide greater room for movement of the animating device of the invention, and comprises a rotor **54A** with blades **54B** mounted for rotation in a square housing **54C**. The housing has water inlet pipes **54D** located at the corners and oriented to direct streams of water against the blades and cause the rotor to rotate. The water outlet **55** is taken from the side of the turbine housing as shown in FIGURE 5, and a conduit **56** extends from the turbine to the drain opening. Moreover, in this modified form of the invention, the coupling device comprises a flexible seal **58**, rather than a hollow plug. The flexible seal has a central opening **59** communicating with conduit **56** and may be in the form of a rubber or plastic disk or cup. It will accommodate a wide variety of drain types. The plug **42** previously described may be made to accommodate different drain sizes by changing the washer **44**, but if the drain has a plunger type valve for closing the drain opening, the seal construction of FIGURE 2 is preferable. In the embodiment of FIGURE 1 the coupling **18** serves to support the toy as well as to couple the motor to the drain opening, but the toy of FIGURE 2 is supported by the bottom of the motor housing, the conduit **56**, and the seal **58**. Small suction cups may be added to assist in mounting the toy on the bottom of the tub.

The embodiment of FIGURE 2 also illustrates a modi-

fied form of animating device. In this form the upper part of the output shaft **60** is rectangular and receives a collar **62** having a complementary rectangular opening through which the shaft passes. The collar is adapted to reciprocate on shaft **60**, and the shaft may be provided with a stop **64** at its upper end to prevent removal of the collar. Arms **66** extend radially and downwardly from the collar and are attached to buoyant articles **68**, which take the form of hollow ducks as shown. Buoyancy of the ducks is made great enough to support the arms **66** as well as the collar **62**, and the entire assembly floats on the surface **52** of the water. It will be apparent that as the water drains from the tub, the shaft **60** turns and drives the assembly of ducks **68** in a circular path. As the water level falls, the ducks also drop, as indicated by the dash line showing of FIGURE 2.

FIGURES 6 and 7 illustrate another form of animation in accordance with the invention. In this form a collar **70** like the collar **62** of FIGURE 2 reciprocates on the rectangular upper portion of the shaft **60**, and the collar has radial arms **72** to which miniature boats **74** are pivotally attached as at **76**. The boats float on the surface of the water as shown in FIGURE 7, and the action of the boats is much like that of the ducks in FIGURE 2.

FIGURE 8 illustrates still another form of animation. In this form the turbine output shaft **78** has a collar **80** which may be fixed thereto and which has radial arms **82** extending therefrom. An aquatic figure **84** on water skis **86** or the like may be tethered to each of the arms as by a wire **88**. When the shaft **78** turns, the wire becomes taut and the figures **84** move in a circular path about the shaft. The angle of the wire **88** with respect to the horizontal plane will of course change with the water level.

From the foregoing description, it is apparent that the invention provides unique bathtub toys. The invention is simple in construction and can be manufactured by well known plastic molding techniques. While preferred embodiments of the invention have been shown and described, it will be apparent to those skilled in the art that changes can be made without departing from the principles and spirit of the invention, the scope of which is defined in the appended claims. For example, the vertical output shaft of the water motor could be enclosed in a housing, or the rotation about a vertical axis could be converted to rotation about a horizontal axis (to drive a wind mill, for example) by gearing a horizontal shaft to the vertical shaft. Other types of water motors and animating devices may be employed, and the modified corresponding parts of the different embodiments may be interchanged. Accordingly, the foregoing embodiments are to be considered illustrative rather than restrictive of the invention, and those modifications which come within the meaning and range of equivalency of the claims are to be included therein.

The invention claimed is:

1. A portable toy for use in a bathtub or the like having a gravity drain adjacent its bottom, said toy being of a size to be readily accommodated in said tub and being readily separable therefrom, said toy comprising the unitary combination of a water motor and an animation device, said water motor having inlet means for receiving water contained in the tub and having outlet means for exhausting water to the drain of said tub, said outlet means being constructed and adapted for releasable sealing engagement with said drain, whereby the motor is driven by water draining from said tub, said animation device being connected to said motor and being driven thereby to form an animated display.

2. The toy of claim 1, said water motor comprising a turbine.

3. The toy of claim 1, said water motor being concentric with the drain of said tub.

4. The toy of claim 1, said water motor being offset from the drain in said tub and being connected thereto by a conduit.

5. The toy of claim 1, said outlet means comprising a hollow plug inserted in the drain opening.

6. The toy of claim 5, said plug having an external removable washer, whereby said plug may be accommodated to different size drain openings by changing said washer.

7. The toy of claim 1, said outlet means comprising a flexible seal surrounding the opening of said drain.

8. A toy for use in a bathtub or the like having a gravity drain adjacent its bottom comprising a water motor, said water motor having inlet means for receiving water contained in said tub and having outlet means for exhausting water to the drain of said tub, whereby the motor is driven by water draining from said tub, and an animation device driven by said water motor to form an animated display, said motor having a vertical output shaft, and said animation device being connected to said shaft.

9. The toy of claim 8, said animation device comprising a plurality of articles attached to arms extending from said shaft.

10. The toy of claim 8, said animation device comprising at least one model aircraft.

11. The toy of claim 8, said animation device comprising a buoyant article adapted to float on the water in said tub.

12. The toy of claim 8, said animation device comprising an article attached to a member arranged to reciprocate along said shaft.

13. A toy for use in a bathtub or the like, comprising a water motor having means for mounting it in said tub and having a vertical output shaft, and a buoyant animation device connected to said shaft and adapted to float on the water in said tub.

References Cited in the file of this patent

UNITED STATES PATENTS

534,623	Replogle	Feb. 19, 1895
2,544,594	Goldfarb	Mar. 6, 1951
2,750,189	Huth	June 12, 1956

FOREIGN PATENTS

545,039	Belgium	Feb. 29, 1956