United States Patent [19]

Suzuki

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[54] **TOY DOLPHIN**

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[73] Assignee: **Toytown Corporation,** Tokyo, Japan

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[52] **U.S. Cl.** **46/91,** 46/247

[51] **Int. Cl.** **A63h 23/00**

[58] **Field of Search** 9/1; 46/91, 92, 247

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Primary Examiner—Albert J. Makay

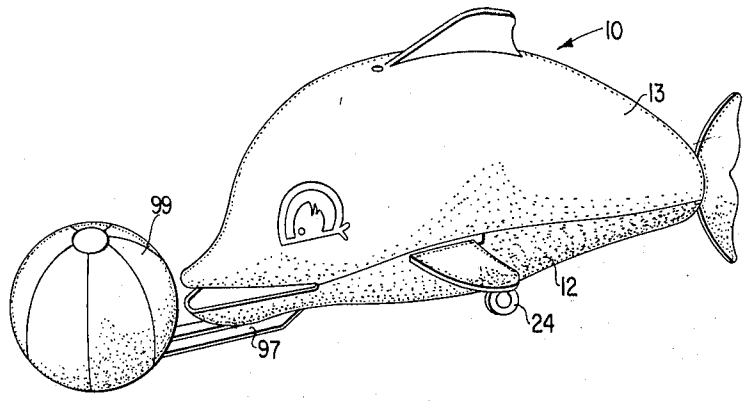
Assistant Examiner—Donald W. Underwood

Attorney, Agent, or Firm—Staas, Halsey & Gable

[57] **ABSTRACT**

A toy dolphin provided with a buoyant body for floating in water, a motor and a source of energy for same located within the body, a flipper operatively mounted for movement at the rearward end of the body, a buoyant member operatively mounted to the forward end of the body of the dolphin for rotation between a first position wherein the buoyant member is generally aligned with the buoyant body of the dolphin and a second position wherein the buoyant member is spaced downwardly from the dolphin body, a sound producing mechanism within the body, a gear train connecting the motor and the propelling means for running same continuously, a gear train operatively connecting the motor, the buoyant member and the sound producing mechanism for operating same intermittently during the continuous operation of the flipper such that as the buoyant member rotates to its second position, the forward end of the buoyant body of the dolphin is raised upwardly from the water while the rearward end thereof is further submerged at which time the sound producing mechanism operates.

5 Claims, 7 Drawing Figures



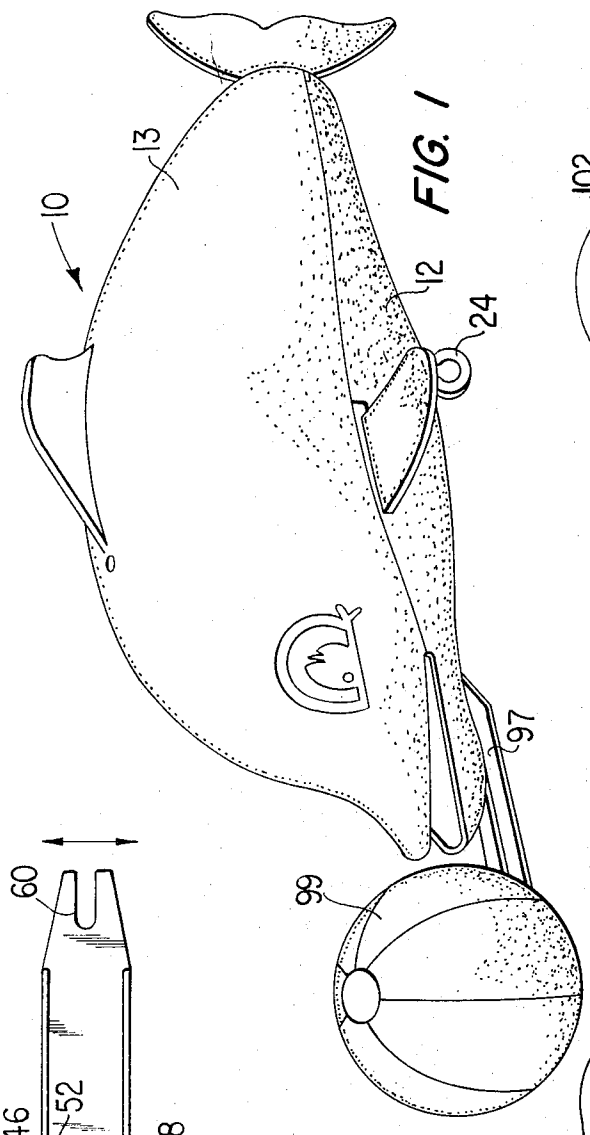


FIG. 1

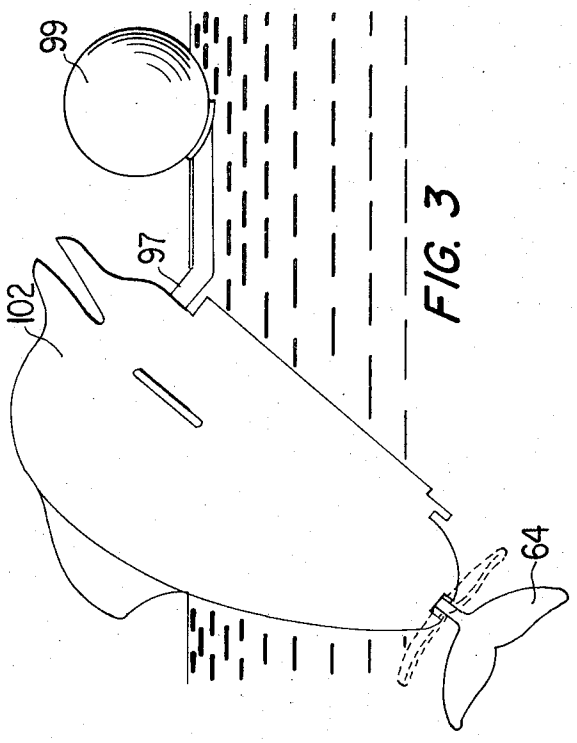


FIG. 3

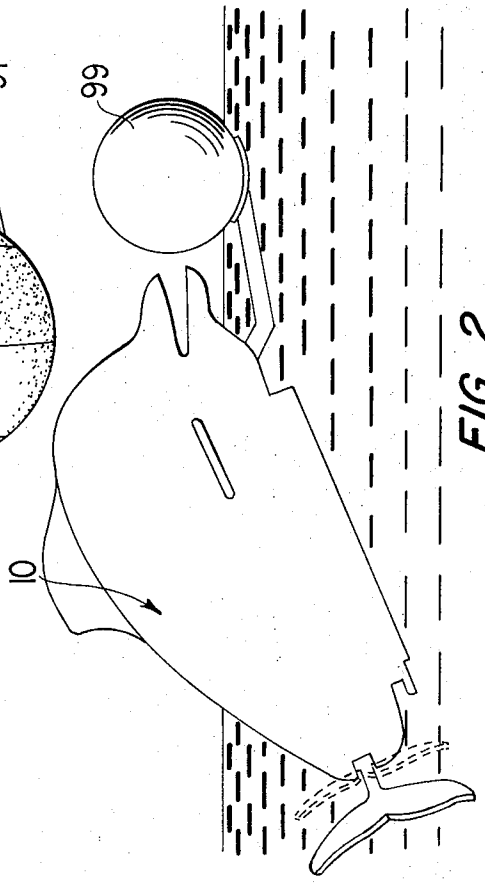


FIG. 2

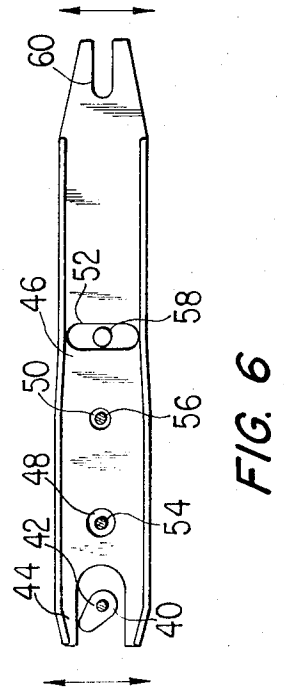


FIG. 6

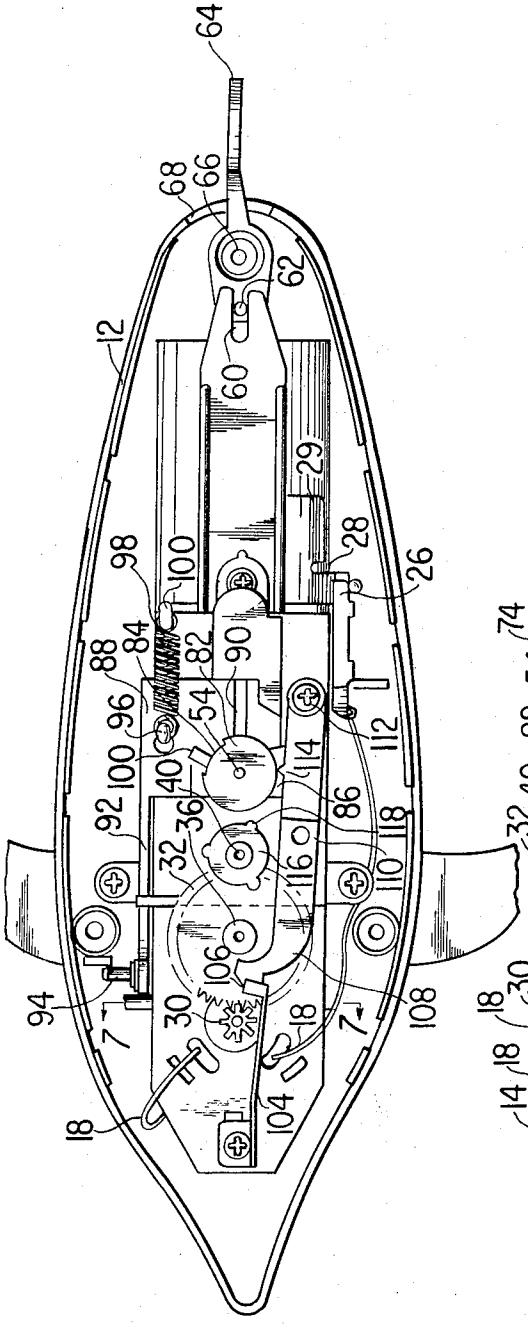


FIG. 4

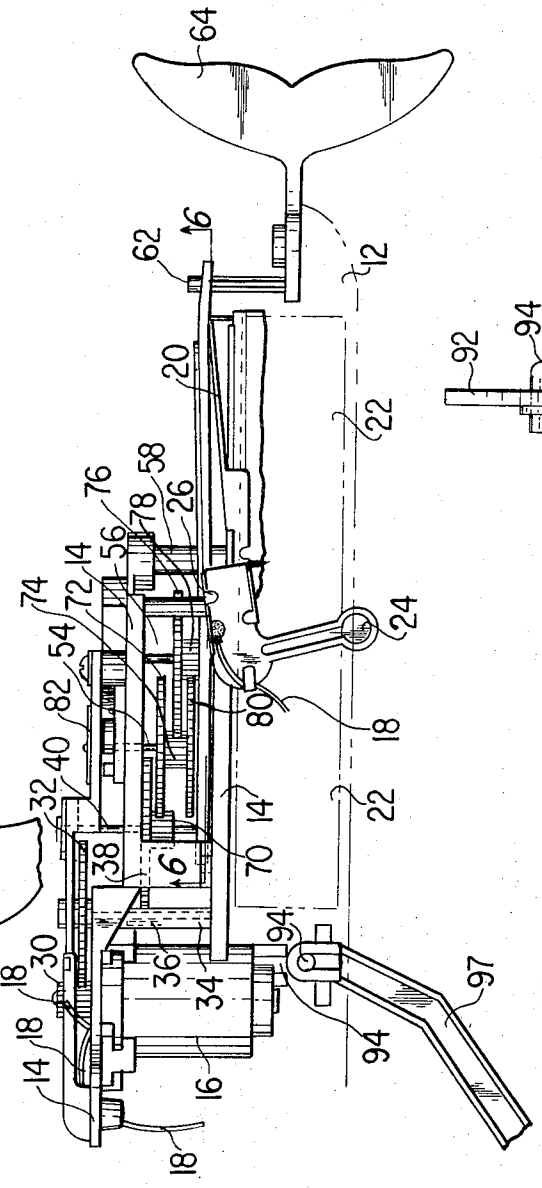


FIG. 5

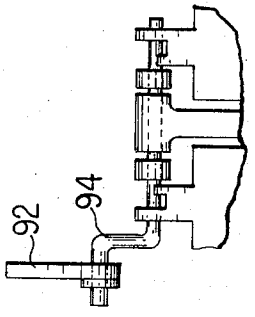


FIG. 7

TOY DOLPHIN

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates generally to the class of toys simulating the action of a sea-going animal and which are frequently played with by the child during bathing. More specifically, a toy dolphin is disclosed herein featuring a buoyant body within which is mounted a miniature electric motor and batteries for energizing same. At the rearward end of the buoyant body, a flipper is mounted for side to side movement so as to propel the toy dolphin through the water. A buoyant member configured as a ball is mounted to the forward end of the dolphin for rotation therewith. Means are provided within the dolphin for rotating the buoyant ball downwardly which has the effect of raising the forward end of the dolphin while lowering the rearward end thereof during which time an audible sound is produced. To the eyes and ears of the child, it thus appears that the dolphin periodically during swimming raises its head and utters a squealing noise. The foregoing interaction between the flipper, buoyant ball and noise producing mechanism is achieved with a gear train operatively connecting the aforementioned elements of the toy dolphin with the miniature electric motor.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the toy dolphin;

FIG. 2 is a side elevational view of the toy dolphin illustrating the continuous movement of the rear flipper for propelling the dolphin and the buoyant ball in its normal position of alignment with the body of the dolphin;

FIG. 3 is a side elevational view of the toy dolphin illustrating rotation of the buoyant ball at which time the head of the dolphin moves upwardly while the rearward end thereof moves downwardly, this action accompanied by the production of a sound simulating the squeal of the dolphin;

FIG. 4 is a top plan view of the toy dolphin with its upper casing thereof removed so as to expose the operating mechanism;

FIG. 5 is a partial side elevational view of the toy dolphin with the top casing thereof removed and portions of the bottom casing removed so as to expose the working mechanism;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 5 illustrating the oscillating plate for operating the rear flipper of the dolphin for propelling same; and

FIG. 7 is a sectional view taken along line 7—7 of FIG. 4 illustrating the rod for transmitting the rectilinear movement of the ram of the operating mechanism to the rotating movement of the arm to which the buoyant ball is mounted.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The toy dolphin designated generally by the reference numeral **10** in FIG. **1** consists of a lower section **12** to which the operating mechanism is mounted and an upper section **13** suitably mounted to the lower section **12**, for example, by screws. It is significant to note that the upper section **13** is provided with a piece of styrofoam conforming to the contour of the working mechanism for stabilizing same as well as adding buoyancy to the dolphin.

As illustrated in FIGS. **4** and **5**, the lower section **12** is provided with an appropriate chassis designated generally by the reference numeral **14** to which the components of the operating mechanism are attached. A miniature electric motor **16** of conventional design is mounted to the chassis **14** and suitably connected by wires **18** and conductors **20** to batteries **22** located within the bottom of the section **12.** Suitable openings may be provided within the bottom of the section **12** providing entrance to the compartment within which the batteries **22** are located. Finally, an electrical switch **24** of conventional design is suitably mounted for rotation such that as its electrical conductor **26** engages the prong **28** of the electrical conductor **20** the circuit is completed permitting the batteries **22** to energize the motor **16.**

As the miniature electric motor **16** is energized, the pinion wheel **30** formed at the end of the shaft thereof rotates. As illustrated in FIGS. **4** and **5**, the pinion wheel **30** engages the drives the gear wheel **32** which is mounted on the shaft **34** which is appropriately journalled within the chassis **14.** The gear wheel **36** mounted in the middle of the shaft **34** thus rotates meshing with the teeth of the gear wheel **38** which is mounted for rotation with the shaft **40** which is also journalled within the chassis **14.** Also mounted to the shaft **40** at the bottom thereof is an offset cam **42,** as illustrated in FIG. **6.**

The offset cam **42** is positioned between the jaws **44** of the forward end of a plate **46,** as illustrated in FIG. **6.** The plate **46** is provided with openings **48, 50** and **52** through which shafts **54, 56** and the leg **58** forming a part of the chassis **14** pass. It is apparent that the plate **46** is free to rotate about the shaft **56** such that as the offset portion of the cam **42** sequentially strikes the opposing jaws **44** the rear end of the plate **46** is caused to move from side to side.

As illustrated in FIGS. **4** and **5,** the rear end of the plate **46** is provided with a slot **60** within which an upstanding rod **62** forming a part of the propelling means or tail **64** is held. As is apparent from FIG. **4,** the tail **64** is mounted for rotation about a shaft **66** extending upwardly from the bottom of the lower section **12** of the dolphin. Thus, as the motor **16** is energized and the forward end of the plate **46** caused to move from side to side by the rotating offset cam **42,** the rearward end of the plate **46** similarly moves from side to side thus causing the tail **64** to rapidly move from side to side propelling the toy dolphin **10.** The rear end of the lower section **12** is provided with a slot **68** which confines the motion of the tail **64** slightly to the right side of the section **12** such that the toy dolphin **10** is propelled in a clockwise circle.

Immediately below the gear wheel **38,** and attached thereto is a smaller gear wheel **70,** as illustrated in FIG. **5,** having teeth which mesh with a larger gear wheel **72** mounted for rotation about the shaft **54.** Below the gear wheel **72** and connected thereto is a smaller gear wheel **74** having teeth which mesh with a larger gear wheel **76** fixedly secured to the shaft **56.** Below the gear wheel **76** and attached thereto is a smaller gear wheel **78** having teeth which mesh with a larger gear wheel **80** which is fixedly secured to the shaft **54** causing same to turn. It is again noted that the gear wheels **72** and **74** are mounted loosely about the shaft **54** while the gear

wheel **80** is rigidly secured to the shaft **54** causing same to turn.

Mounted to the top of the shaft **54** is a wheel **82** having a cut out segment **84,** illustrated in FIG. **4,** and also provided with an outstanding arm **86,** the purpose of which will be described in detail hereinafter.

As illustrated in FIG. **4,** the reference numeral **88** designates a frame appropriately mounted for sliding movement with respect to the chassis **14.** The frame **88** includes a slot **90** within which the shaft **54** passes. The frame **88** is further provided with a ram **92** extending forwardly along the side of the chassis **14** and terminating forwardly in an opening through which a bar **94** passes, as illustrated in FIG. **7.** As further seen in FIG. **4,** the frame **88** is provided with an abutment **96** to which one end of the coil spring **98** is attached. The other end of the coil spring **98** is attached to a similar abutment **100** formed as an integral part of the chassis **14.** The purpose of the spring **98** is to normally urge the frame **88** to its rearwardmost position, as illustrated in FIG. **4.**

Fixedly secured to the rod **94** is an arm **97** to which a buoyant ball **99** is mounted forwardly of the nose of the dolphin **10,** as illustrated in FIG. **1,** for example.

As will now be apparent, as the motor **16** is energized and the tail **64** continues to move from side to side so as to propel the toy dolphin, the gear wheel **80,** shaft **54** and wheel **82** rotate slowly in a counterclockwise direction until the leg **86** thereof engages the abutment **100** which extends upwardly from the frame **88,** as illustrated in FIG. **4.** The continued counterclockwise rotation of the plate **82** causes the abutment **86** of the rotating wheel **82** to push against the abutment **100** of the frame **88** gradually forcing the frame **88** forwardly against the force of the spring **98.** The forward movement of the frame **88** is accompanied by the forward movement of its ram **92** eventually causing the arm **94** to be rotated counterclockwise, as illustrated in FIG. **5,** in turn rotating the arm **97** counterclockwise which results in the buoyant ball **99** being lowered relative to the lower section **12** of the dolphin, as illustrated in FIG. **3.** Since the ball **99** is buoyant, and therefore cannot be immersed below the level of the water, the result of the ball **99** tending to move downwardly is that the forward end or nose **102** of the dolphin is raised from the water while the rear end thereof including the tail **64** is forced downwardly. To the child, it appears as if the dolphin is raising its head out of water. It will be immediately apparent that as soon as the abutment **86** of the wheel **82** disengages from the abutment **100** of the frame **88** upon continued counterclockwise rotation, the frame **88** moves backwardly into the position illustrated in FIG. **4** under the influence of the spring **98,** at which time the buoyant ball **99** is returned to its upward position, as illustrated in FIG. **2.**

As further illustrated in FIG. **4,** the reference numeral **104** designates a resilient leaf spring fixedly secured at one end to the chassis **14** and terminating at its opposite end in a prong **106** normally held by the forward end **108** of the lever **110** which is mounted for rotation about a rod **112** secured to the chassis **14.** The reference numeral **114** designates an abutment extending outwardly from the lever **110** and which normally rests in engagement against the outer surface of the wheel **82.** In the position illustrated in FIG. **4,** the leaf spring **104** is held out of engagement with the rotating pinion wheel **30** of the shaft of the motor **16.** However, as the wheel **82** slowly rotates in a counterclockwise direction, the abutment **114** eventually passes into the cut out segment **84** contained in the outer periphery of the wheel **82** at which time the leaf spring **104** is permitted to move into engagement with the teeth of the rotating pinion wheel **30.**

As is further apparent from FIG. **4,** the shaft **40** terminates upwardly in a wheel **116** provided with outwardly extending projections **118.** Thus, as the leaf spring **104** moves into engagement against the teeth of the rotating pinion wheel **30** the projections **118** of the rapidly turning wheel **116** sequentially hit the arm **110** forcing same outwardly at which time for a split second the leaf spring **104** is moved out of engagement with the teeth of the rotating pinion wheel **30.** The result is that during those split seconds when the leaf spring **104** engages the teeth of the pinion wheel **30,** the metal-to-metal contact causes a squealing sound interrupted each time the projections **118** push the lever **110** outwardly so as to remove the metal-to-metal contact. As will now be apparent, when the nose or forward end **102** of the toy dolphin moves upwardly out of the water the metal-to-metal contact, previously described, causes a squealing sound simulating the call of a dolphin to the amusement of the child.

Thus, the toy dolphin of the present invention is designed to continuously move through the water in a circle during which time the buoyant ball **98** is positioned directly in front of the nose of the dolphin, as illustrated in FIGS. **1** and **2.** To the amusement of the child, the dolphin's head then rears upwardly from the water by the previously described action of the buoyant ball **98** rotating downwardly at which time the metal-to-metal contact between the leaf spring **104** and the teeth of the pinion wheel **30** cause a squealing noise simulating the call of a dolphin.

I claim:

1. A toy, comprising:

a buoyant body for floating in water;

a motor and source of energy for running same within said body,

propelling means operatively mounted for rotation at the rearward end of said body for moving said toy through the water;

a buoyant member operatively mounted to the forward end of said body for rotation between a first position wherein said member is generally aligned with said body and a second position spaced downwardly from said body;

means within said body producing an audible sound;

means operatively connecting said motor and said propelling means for running said propelling means continuously, and

means operatively connecting said motor and said buoyant member and said means for producing said sound for operating said buoyant member and said means for producing said sound intermittently during the continuous operation of said propelling means for rotating said buoyant member to said second position thus causing the forward end of said buoyant body to be raised out of the water while actuating said means for producing said sound.

2. A toy as in claim **1,** wherein said propelling means includes a rigid flipper, a plate operatively connected to said flipper, said plate mounted within said body for

oscillation and said means operatively connecting said motor and said propelling means includes a gear train provided with an offset cam, said cam arranged to sequentially contact and oscillate said plate.

3. A toy as in claim **1**, wherein said means connecting said motor and said buoyant member includes a gear train provided with a gear having an abutment, a frame mounted for rectilinear motion within said body, said frame being provided with an abutment against which said abutment of said wheel engages, and means operatively connecting said frame and said buoyant member translating the rectilinear motion of said frame to rotation of said buoyant member.

4. A toy as in claim **1**, wherein said means within said body producing an audible sound comprises a leaf spring and said means operatively connecting said motor and said means for producing said sound comprises a gear train provided with a wheel and means sequentially urging said leaf spring into engagement against the teeth of said wheel for producing a screeching noise.

5. A toy as in claim **1**, wherein said buoyant body is configured as a dolphin, said forward end of said body including the head of said dolphin, and wherein said buoyant member is configured as a ball.

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