United States Patent [19]

Asano

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[54] TOY SEAL AMUSEMENT DEVICE

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[52] **U.S. Cl.** **46/92**

[51] **Int. Cl.** **A63h 23/10**

[58] **Field of Search** 46/92

[56] **References Cited**

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Assistant Examiner—J. Q. Lever
Attorney—Staas, Halsey & Gable

[57] **ABSTRACT**

The present invention is a toy simulating a circus seal. A flipper is mounted for movement at one end of the casing which is configured as the seal while a moving wheel is positioned adjacent the seal's mouth. A conduit passes downwardly from the seal's mouth to a pump located within the bottom of the casing. A miniature electric motor powered by batteries is located within the bottom of the casing and is operatively connected to a gear train which sequentially drives the flipper propelling the seal and operates the pump propelling water through the seals's mouth to turn the wheel.

5 Claims, 8 Drawing Figures

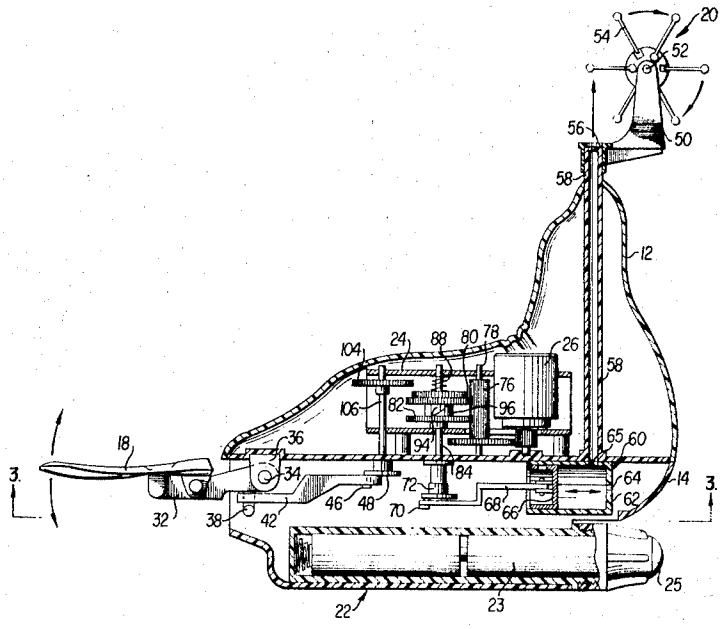


FIG. 1

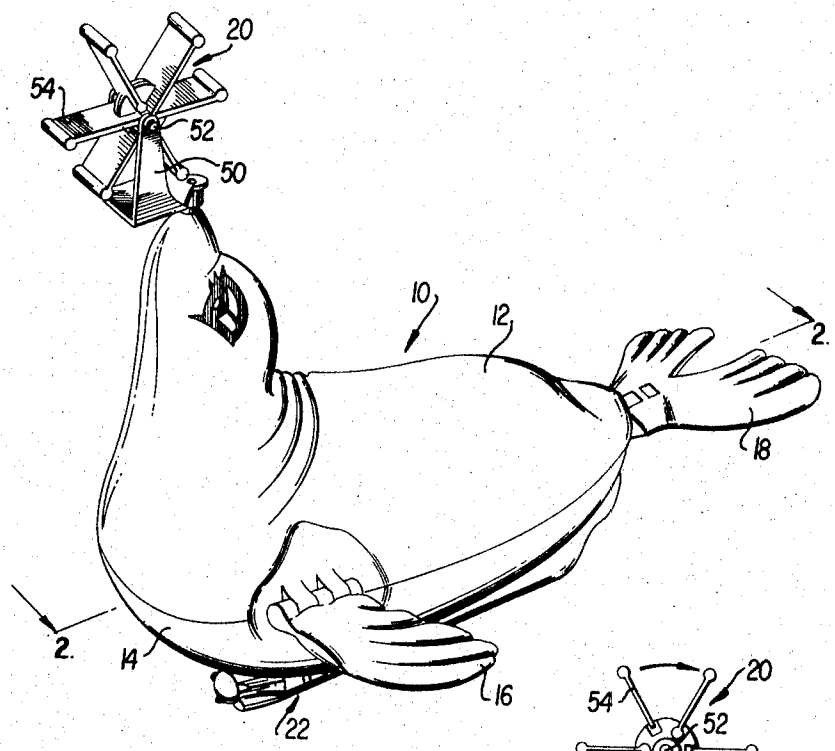
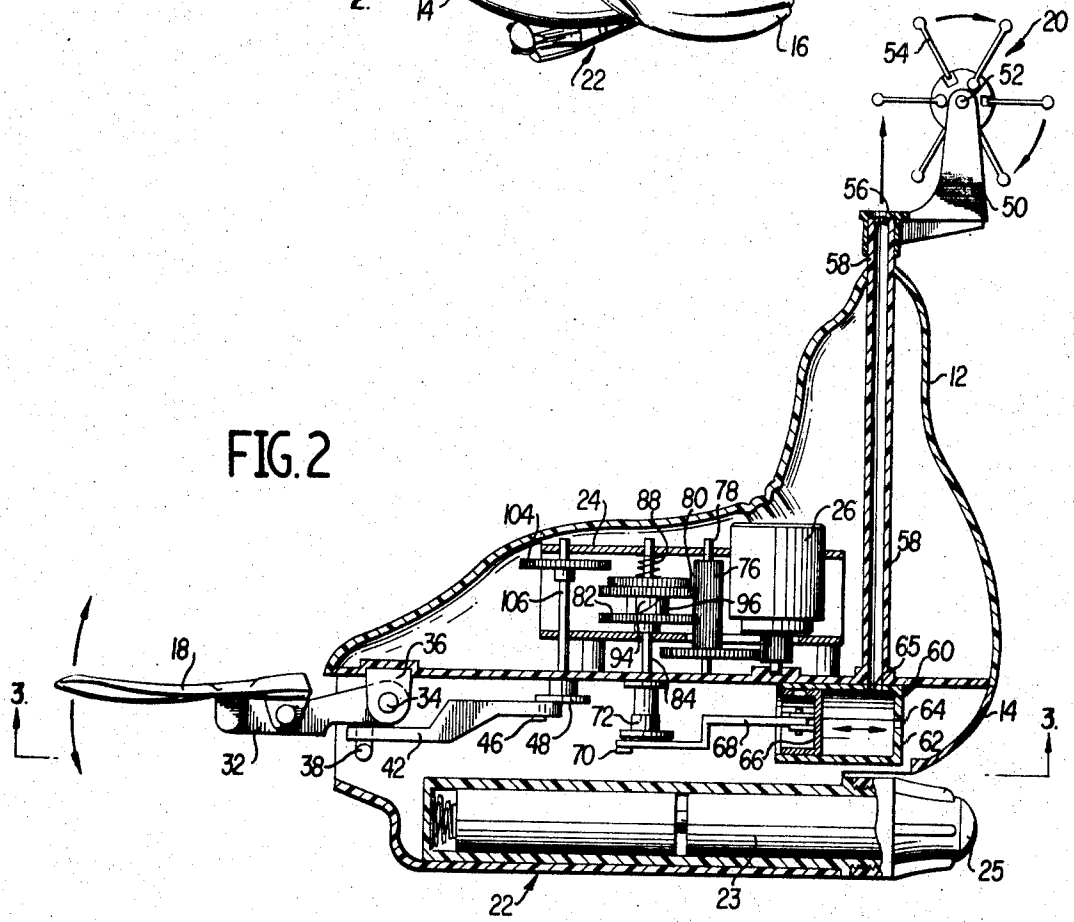

20
54
52
50
10
12
2.
18
2.
14
16
22

FIG. 2


20
54
52
56
50
58
12
104
24
88
80
78
26
58
76
106
82
96
18
36
94
65
60
3.
34
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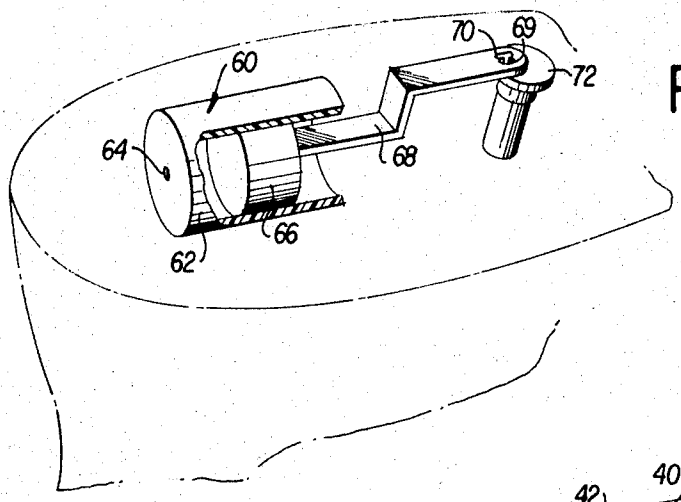


FIG. 4

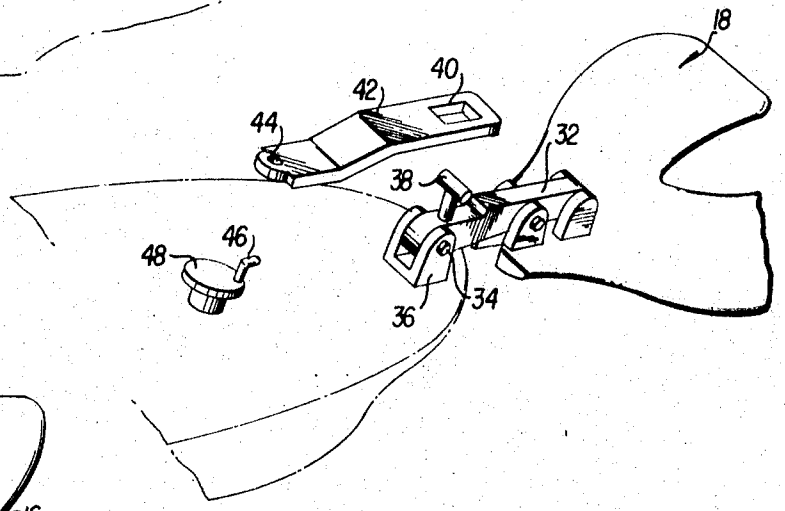


FIG. 5

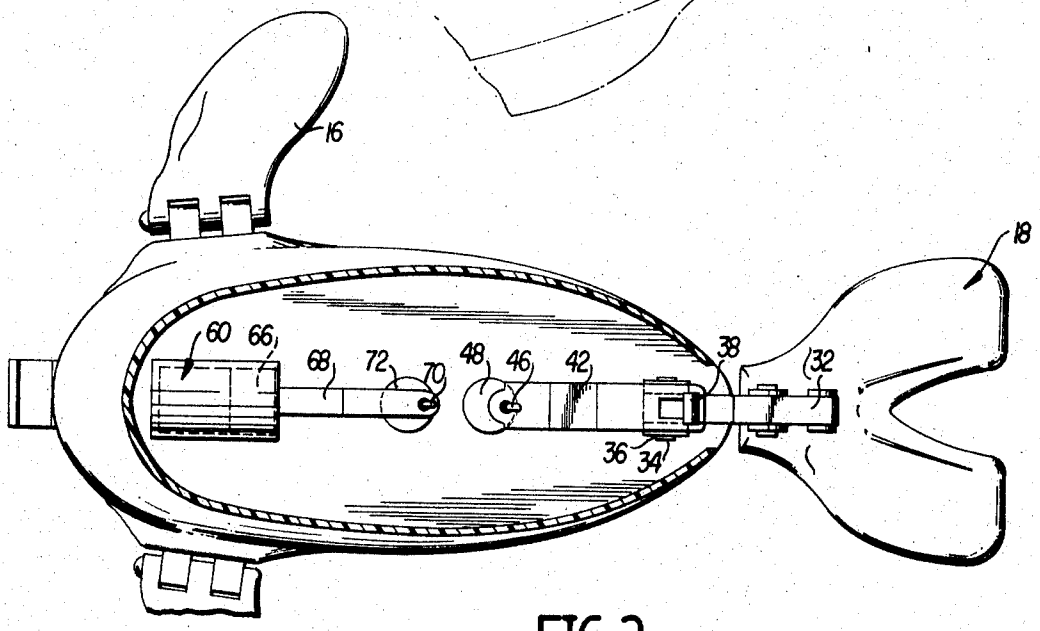
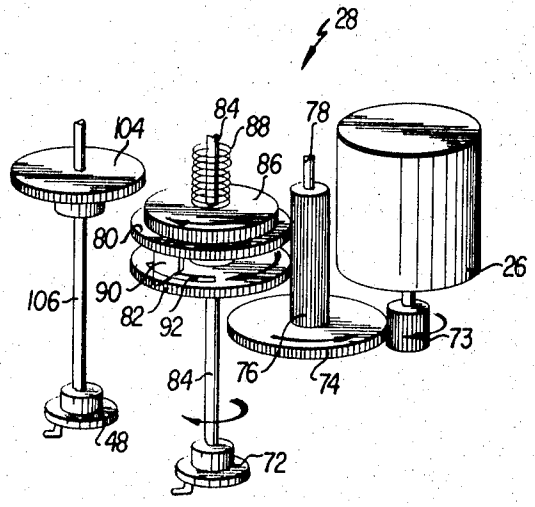


FIG. 3

FIG. 6



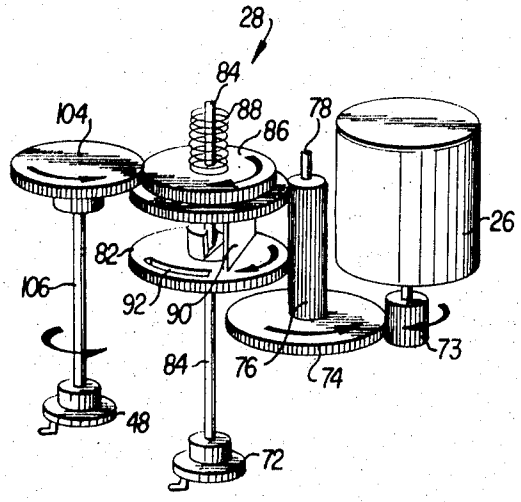


FIG. 7

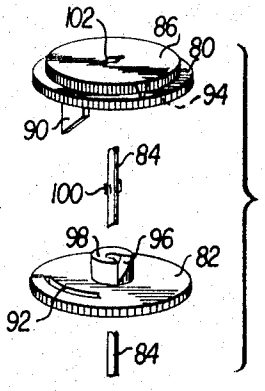


FIG. 8

TOY SEAL AMUSEMENT DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to the general class of toys simulating the action of live animals, particularly a circus seal.

SUMMARY OF THE INVENTION

The hollow floating casing configured as a circus seal is provided with a flipper mounted for up and down movement and a rotating wheel adjacent the seal's mouth. A miniature electric motor is operatively connected via a gear train to the flipper and a water pump which is positioned within the lower part of the casing and exposed to the water. The flipper is operated by the rotation of a first shaft to which is rigidly secured a first gear wheel. The pump is operated by the rotation of a second shaft to which are loosely mounted a second and a third gear wheel. The second and third gear wheels are simultaneously driven by a fourth gear wheel driven by the motor. The number of teeth on the second and third gears is different producing different rotational speeds. In a first position the third gear meshes with the first wheel completing the train so as to drive the flipper at which time the second shaft and pump are inoperative. A cam arrangement formed as a part of the second and third gears operates in conjunction with the relative rotational speed to sequentially move the third gear from its first position to a second position in which the second shaft is rotated to operate the pump at which time the first shaft is stationary and the flipper inoperative. Operation of the pump forces water out of the seal's mouth to rotate the wheel.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view illustrating the toy seal;

FIG. 2 is a cross-sectional view taken along line 2—2 of FIG. 1 illustrating the internal working mechanism of the toy seal;

FIG. 3 is a cross-sectional view taken along line 3—3 of FIG. 2 illustrating the linkage systems connecting the gear train to the movable flipper and water pump;

FIG. 4 is a perspective view partially in section illustrating the water pump and the linkage connecting same to a shaft sequentially rotated by the gear train;

FIG. 5 is a partially exploded perspective view illustrating the movable flipper and the linkage connecting same to a shaft sequentially rotated by the gear train;

FIG. 6 is a perspective view illustrating the gear train driving the shaft operatively connected to the water pump at which time the other shaft to which the movable flipper is attached is inoperative;

FIG. 7 is a perspective view illustrating the gear train driving the shaft operatively connected to the movable flipper at which time the shaft to which the water pump is attached is inoperative; and

FIG. 8 is an exploded perspective view illustrating that portion of the gear train responsible for sequentially operating the movable flipper and water pump.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The casing of the toy seal is designated generally by reference numeral **10** in FIG. **1** and comprises top and bottom shells **12** and **14**, respectively, suitably secured together, for example, by screws. Side flippers **16** are rotatably mounted to the top shell **12** while the bottom shell **14** is provided at its rear portion with an opening through which the movable flipper **18** protrudes. A rotatable water wheel **20** described in detail hereinafter is mounted at the top of the shell **12** adjacent the seal's nose. Finally, the bottom shell **14** is provided with a compartment **22** within which the batteries **23** are located. A watertight cap **25** seals the compartment **22**.

Within the top shell **12** is positioned a chassis **24**, as seen in FIG. **2**, for supporting a miniature electric motor **26**, which construction is well known in the prior art. The components of the gear train generally designated by reference numeral **28** are secured within the chassis **24** as described in detail hereinafter. The wiring between the batteries and motor is conventional, as illustrated.

The movable flipper **18** for propelling the seal **10** includes a strut **32** mounted for movement about a pin **34** which passes through the end of strut **32** and corresponding holes within the U-shaped support **36**. The strut **32** further includes an arm **38** which, as seen in FIG. **5**, passes through an opening **40** within the linkage **42**. The linkage **42** terminates at its other end in an opening **44** secured to the off-set pin **46** of wheel **48**. As will be apparent from FIGS. **2** and **5**, as wheel **48** rotates flipper **18** is moved up and down propelling the seal **10**.

The water wheel **20**, as seen in FIGS. **1** and **2**, comprises a support having parallel arms **50** through which rod **52** passes. Mounted for rotation about rod **52** is the wheel **54** which is provided with a plurality of arms. The support **50** is provided at its bottom with an opening **56** fixedly secured about a tube **58** which is mounted within the top shell **12**. As will be apparent, as water is forced upwardly within the tube **58** it strikes the arms of the wheel **54** causing same to rotate rapidly to the amusement of the child.

The water pump **60** is positioned within the bottom shell **14** and comprises an outer cylinder **62** provided with water inlet and outlet openings **64** and **65**, respectively, and a piston **66** mounted for sliding movement within the cylinder **62**. The piston rod **68** is appropriately secured to the piston **66** at one end and terminates at the other end thereof in an opening **69** through which the pin **70** of the rotating wheel **72** fits. As will be apparent from FIGS. **2** and **4**, rotation of the wheel **72** causes the piston **66** to reciprocate within the cylinder **62** forcing water upwardly through the pipe **58**.

The gear train **28** will now be described in detail. The miniature electric motor **26** terminates in pinion wheel **73** which meshes with a gear **74** formed at the bottom of the gear **76**. Gears **74** and **76** are mounted upon a shaft **78** appropriately journaled within the chassis **24**.

Gear wheels **80** and **82**, as seen in FIG. **8**, are mounted for rotation about the shaft **84** suitably journaled within the chassis **24**. A second gear **86** is positioned above gear wheel **80** and is formed as an integral part thereof. A spring **88** is positioned between the chassis **24** and the gear wheel **86** urging same downwardly. The bottom of the gear wheel **80** is provided with a first depending arm **90** so configured to fit within the slot **92** of gear wheel **82** and a second depending arm **94**, as seen in FIG. **2**, having a cam surface

complementary in configuration with respect to the cut-out portion **96** of the hub **98** extending upwardly from gear wheel **82**, as seen in FIGS. **2** and **8**. The shaft **84** is provided with a key **100** corresponding to the slot **102** within the gear wheels **80** and **86**. Although gear wheels **80**, **82** and **86** are normally mounted to rotate freely about shaft **84**, as seen in FIG. **7**, it will be apparent that when the gear wheels **80** and **86** move downwardly and the key **100** fits within slot **102**, the shaft **84** is caused to rotate, as seen in FIG. **6**. The rotation of shaft **84** rotates the wheel **72** operating the pump **60** as previously explained.

The gear wheel **104** is mounted for rotation with the shaft **106** which is journaled within the chassis **24**. As will be apparent, rotation of shaft **106** turns wheel **48** operating the flipper **18** as previously explained.

The sequence of operating the pump **60** and flipper **18** will now be described. When the gear wheel **80** is in its raised position against the force of spring **88**, as seen in FIG. **7**, the gear **86** meshes with gear **104** rotating the shaft **106** and wheel **48** operating the flipper **18**. At this time gears **80** and **82** are freely rotating about shaft **84**. Thus, the pump **60** is inoperative.

The number of teeth within gear **80** exceeds the number of teeth within gear **82**. Accordingly, the speed of rotation of gear **82** exceeds that of gear **80**. Eventually, the depending arms **90** and **94** of gear **80** drop into place within the slot **92** and the cut-out portion **96** of the hub **98** of the gear **82**, the gear **80** being under pressure of spring **88**. The slot **102** of the gears **80** and **86** is thus forced over the key **100** of the shaft **84** causing same to rotate. As previously explained, the rotation of shaft **84** causes the wheel **72** to turn operating the pump **60**. At this point, the gear **86** no longer engages gear wheel **104** in turn stopping the rotation of the shaft **106** and the flipper **18**.

As the rotational speed of the gear **82** continues to exceed that of gear **80** the cam surface of the depending arm **94** is caused to rise upwardly along the cam surface of the cut-out portion **96** gradually lifting the gear **80**. In this manner the key **100** is freed from the slot **102** stopping the rotation of the shaft **84** and operation of the pump **60**. As the gear **80** rises the gear **86** again meshes with gear **104** rotating the shaft **106** operating the flipper **18**.

I claim:

1. A toy, comprising:

a casing;

first and second bodies, means connecting said bodies to said casing permitting movement of said bodies relative to said casing;

a motor, means operatively mounting said motor within said casing; and

a gear train mounted within said casing, means operatively connecting said gear train to said motor, said gear train further comprising first and second shafts operably connected to said first and second bodies, respectively, and means sequentially turning said first and second shafts so as to sequentially operate said first and second bodies comprising a first gear fixedly mounted to said first shaft, a second gear mounted for rotation about said second shaft, a third gear mounted for rotation about said second shaft, said second shaft being provided with a key formed therein between said second and third gears, said third gear including a cut-out portion corresponding to said key and a cam surface extending therefrom, said second gear including a cam surface complementary with said cam surface of said third gear, said third gear mounted to move on said shaft between a first position wherein said third gear meshes with said first gear and a second position wherein said cam surfaces of said second and third gears mesh and said cut-out portion is fitted over said key causing said second shaft to rotate and a fourth gear, means driving said fourth gear by said motor, said fourth gear meshing with and driving said second and third gears simultaneously, and means rotating one of said second and third gears faster than the other to cause said cam surfaces to move said third gear between said first and second positions.

2. A toy as in claim **1**, said means rotating one of said second and third gears faster than the other comprising one of said second and third gears being provided with a smaller number of teeth than the other.

3. A toy as in claim **2**, said second body being a piston, a cylinder provided with an inlet port through which water may enter and an outlet port through which water may leave and means operatively mounting said piston for movement in and out of said cylinder.

4. A toy as in claim **3**, including a conduit leading from said outlet port to and through the top of said casing, together with a wheel mounted for rotation on said casing in the path of water emitted from said conduit such that said wheel is turned by the water.

5. A toy as in claim **3**, said first body being a flipper mounted at one end of said casing to move up and down to propell said toy through water.

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