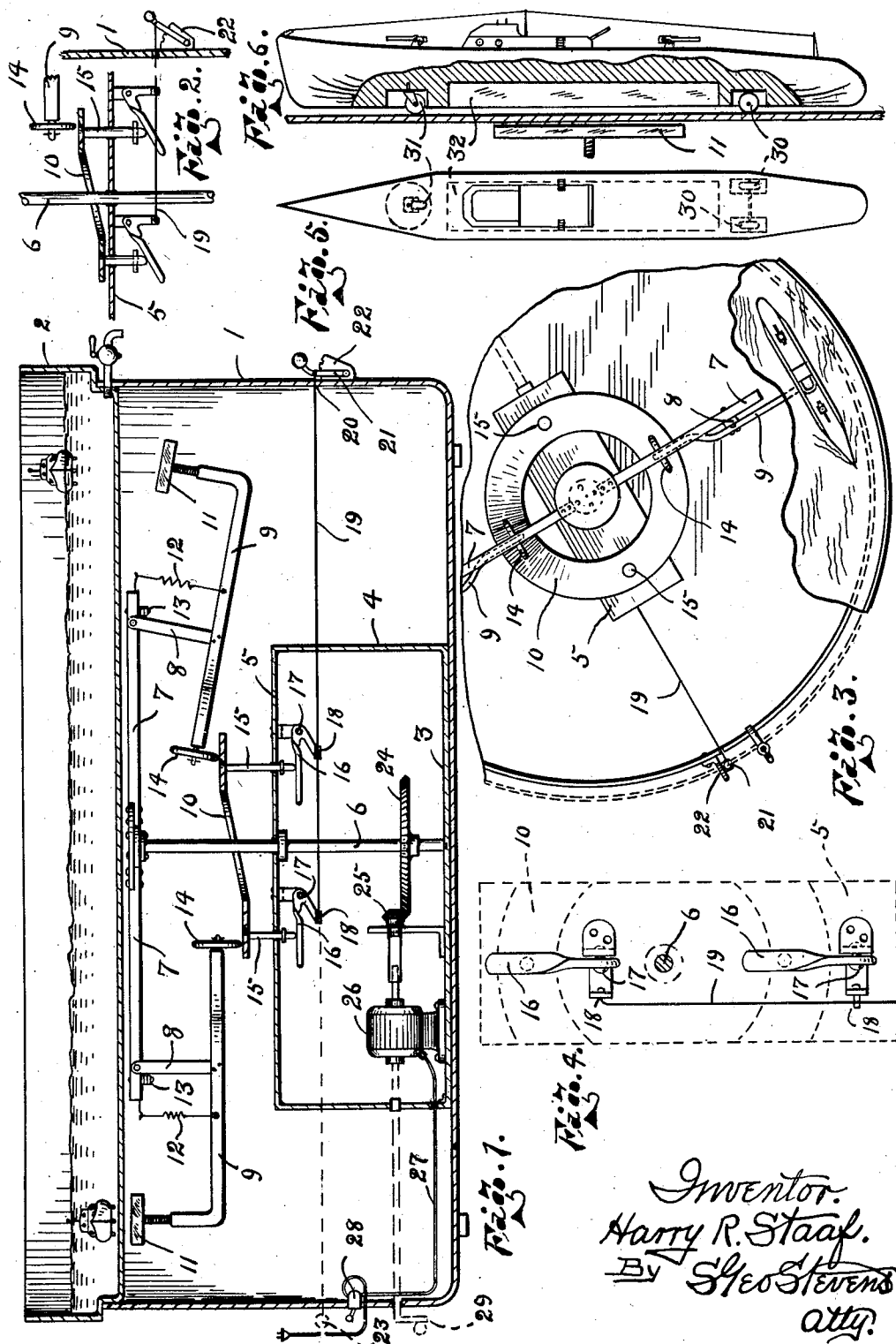


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MAGNETICALLY ACTUATED TOY

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MAGNETICALLY ACTUATED TOY

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This invention relates to a mechanical amusement device and especially to one in which the principal ultimate functioning thereof is accomplished by the influence of magnetic force.

While the device may be used solely for amusement as a child's toy, it is obvious that the same may be made to function as advertising means for exhibit within a store window or the like.

One of the principal objects of the embodiment here illustrated is to provide simple mechanical means workably combined within a main lower chamber or receptacle for magnetically operating one or more objects both horizontally and vertically within an upper chamber or receptacle resting upon or within the main lower receptacle, however, the vertical movement as shown and described being possible of accomplishment only when liquid is employed within the upper chamber for floating said objects.

Another object is to provide such a device that while in operation the relative vertical movement of the objects may be manually varied without attracting the attention of the spectators.

Still other objects and advantages of the peculiar arrangement of instrumentalities illustrated will appear as description of the invention proceeds.

In the drawings:

Fig. 1 is a central vertical sectional view through the two assembled receptacles forming the unit with its undulated disc in its uppermost position.

Fig. 2 is a vertical sectional view of the undulated disc per se illustrating same in its lowermost position.

Fig. 3 is a reduced fragmental top plan view of the undulative mechanism housed in the lower receptacle.

Fig. 4 is an enlarged plan view partly in section of the mechanism for selective vertical adjustment of the undulated disc.

Fig. 5 is a top plan view of one of the movable display objects in the form of a ship.

Fig. 6 is a part sectional and part elevational view of Fig. 5.

The container portions of the display unit comprise the under and upper circular receptacles 1 and 2 respectively, the latter preferably slightly telescoped within and on top of the former as clearly shown in Fig. 1.

Somewhat similar amusement devices have been patented, in fact, such a one disclosing the use of receptacles one upon the other and the display objects operable within water in the upper

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receptacle by controlled movable magnets housed within the lower receptacle.

However, so far as is known, none of such has ever been equipped with means for varying the depth or draft of the floating objects in the upper receptacle, or causing any of them to completely submerge and/or operate successfully upon the bottom of the upper tank when dry as herein-after explained.

The receptacle 1 is the housing for all of the operating mechanism as is broadly common but differentiating materially therefrom in the following respects:

A rectangularly shaped frame-like structure comprising the bottom 3, ends 4—4, and deck 5 is fixedly installed approximately centrally of the receptacle 1.

Within this frame-like support and upwardly through the deck 5 thereof is installed the rotatable shaft 6 upon the upper end of which are fixed the opposed radial arms 7—7, they in turn carrying the pivotally suspended arms 8—8 each having fixed to their lower ends a further radially extending L-shaped magnet carrying arm 9. The inner end of each L-shaped arm is equipped with a wheel 14 as an anti-friction bearing therefor in respect to the undulated disc ring 10 which will be described later. Upon the outer end of the arms 9—9 are shown the vertically adjustable magnets 11—11.

It here will be noted that the radial arms 7—7 are in rather close relationship to the bottom of the object carrying receptacle 2 and that the magnets must be so adjusted vertically as not to engage said bottom when in motion, however they must be biased at all times towards said bottom. To this end, each arm 9 is equipped with a contractile spring 12 extending from the free end of each arm 7 to its respective arm 9 and intermediate of this spring connection and the pivotal connection of each arm is installed any suitable form of permanent stop 13 to establish an uppermost limit of movement to the magnets 11—11 thus preventing any possibility of their engaging the bottom of the uppermost receptacle 2 when in place for exhibition purposes.

Pivotally mounted upon the innermost end of each magnet carrying arm 9 is an altitude transmission wheel 14 which at all times engages the upper surface of the non-rotatable undulated disc 10. The surface of this disc obviously may differ materially from that shown if desired to vary the action of the display objects.

The elevation of the disc 10 is readily controlled by the two manually reciprocative pitmans

15—15, one being considerably shorter than the other to accommodate the different heights of the opposed marginal flat runways of the disc as clearly seen in Fig. 1 of the drawing.

The manual control of the pitmans 15 is accomplished as by an acute type of bell-crank lever 16 for each pitman pivoted as at 17 from the under side of the deck 5 with the longer arm of each forming a slide-like support for its respective pitman 15 and the shorter arm of each is attached as at 18 to the operating rod 19 which extends to and through either or both sides of the receptacle 1 as at 20 where a protruding end may be attached to a thumb and finger quadrant lever 21, a suitable small quadrant for same being shown at 22.

It is apparent that this quadrant and lever may be dispensed with and the protruding ends of the rod 19 be provided simply with a suitable knob 23 for selective hand manipulation. With such type of vertical adjustment it is obvious that the effect of the magnets upon the display objects, also carrying similar magnets or armatures 32, may cause material and interesting changes in draft within their sustaining liquid within the tank or receptacle 2. This change of draft may readily be effected to such an extent as to suggest very interesting maneuvers of a submarine, and should this display be carried to such an extent that the display objects might engage the bottom of the tank 2, they are provided with suitable non-friction casters 30, 30, and 31 to facilitate the normal movement of the object on the bottom service of the receptacle 2.

Again, the display objects may vary materially from boats, such as animals and the like, operable directly upon the bottom of a perfectly dry or empty receptacle 2, each of course carrying its individual armature and non-friction means.

For operation of the device it is apparent that the shaft 6 must have rotative action applied thereto and to which end there is shown in Fig. 1 the miter gears 24 and 25, the latter being fixed directly to the armature of the electric motor 26 controlled as by the circuit 27 and switch 28. As provision against possible failure or absence of electric energy, the armature of the motor may be extended to and through the wall of the lower receptacle and there provided with a hand crank as illustrated at 29.

It is apparent from the above that the control of the depth of the display objects in the water of the uppermost receptacle being under control of the operator, that very interesting and unexpected appearances, at least to the spectators, may readily be accomplished as these objects may

navigate at any depth within the limits of such control.

Having thus described my invention, what I claim is:

1. A magnetically operated amusement device comprising a liquid containing receptacle, movable bouyant objects within said receptacle, a magnetically susceptible metallic member carried by said objects whereby same may be affected by a magnetic force and means for modifying the depth of said objects within said liquid comprising a shaft beneath said receptacle in vertical relationship thereto, arms carried by said shaft, means to rotate said arms, magnets carried on the outer ends of said arms to affect said objects, an undulated disc concentrically mounted with respect to said shaft, means biasing said arms into engagement with said disc to move said arms vertically by the undulations of said disc as they are rotated whereby the vertical relationship of said magnets to said objects is varied and said magnets exert enough force on said objects to submerge same.

2. A magnetically operated amusement device comprising a liquid containing receptacle, movable bouyant objects within said receptacle, a magnetically susceptible metallic member carried by said objects whereby same may be affected by a magnetic force, and means for modifying the depth of said objects within said liquid comprising, a vertical shaft beneath said receptacle, arms carried by said shaft, means to rotate said arms, magnets carried on the outer ends of said arms to affect said objects, an undulated disc concentrically mounted with respect to said shaft, said arms being pivotally carried intermediate of their ends and having a portion thereof engaging said disc at all times to automatically vary the altitude of said magnets in accordance with the undulations of said disc whereby said magnets will cause said objects to submerge.

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