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Fabricani

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[54] **OBSTACLE TOY**

[75] Inventor: **Norman Fabricani**, Rego Park, N.Y.

[73] Assignee: **The Quaker Oats Company**, Chicago, Ill.

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[52] **U.S. Cl.** ..... **273/153 R**, 273/113

[51] **Int. Cl.** **A63f 7/04**

[58] **Field of Search** ..... 273/1 R, 108, 109, 273/110, 113, 115, 120 R, 153 R; 46/43

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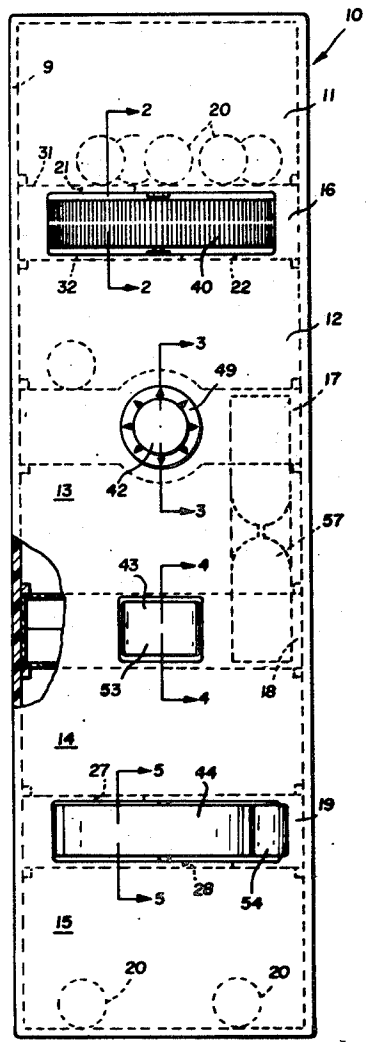
Primary Examiner—Anton O. Oechsle

Attorney—Cumpston, Shaw & Stephens

[57] **ABSTRACT**

An obstacle toy lets objects fall through a succession of barriers between a top compartment and a bottom compartment when movable shutters in each barrier are properly manipulated. The barriers have upper and lower portals that can receive and discharge an object, and the path between the portals is blocked by a shutter having a recess that is moved between registry with the portals so an object can fall from an upper portal into the recess and be moved to drop through the lower portal.

10 Claims, 5 Drawing Figures



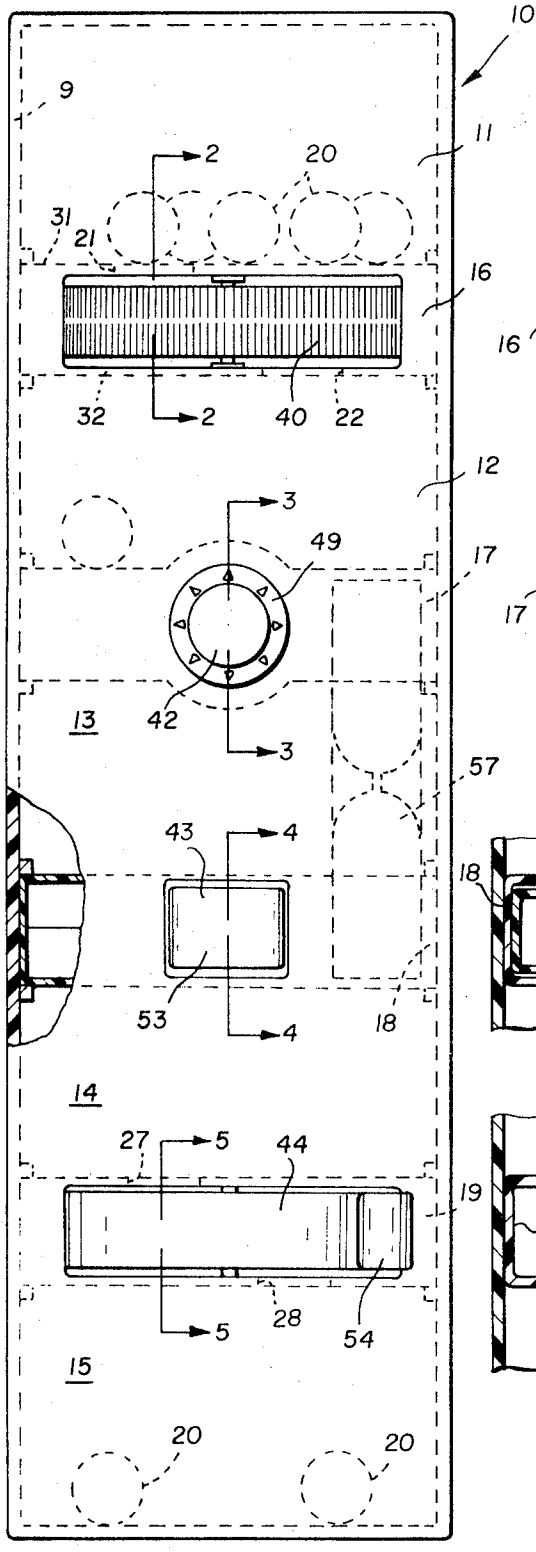


FIG. 1

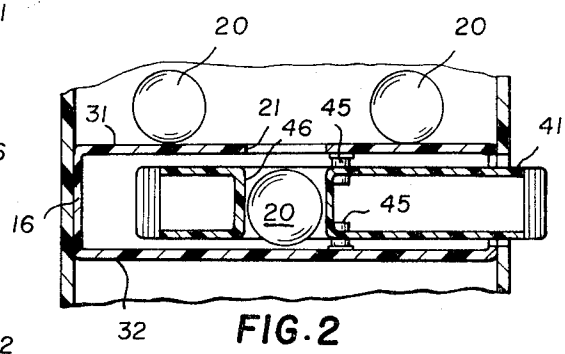


FIG. 2

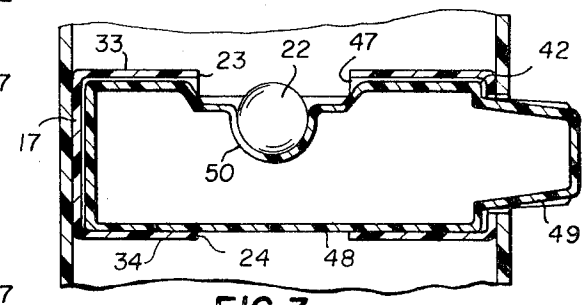


FIG. 3

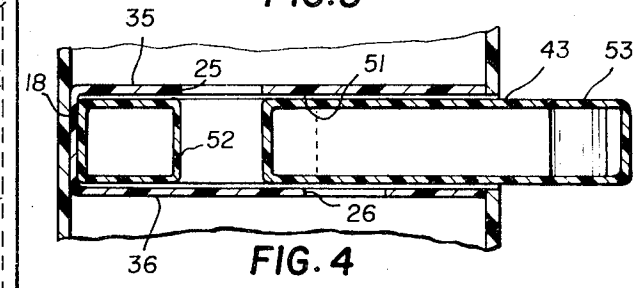


FIG. 4

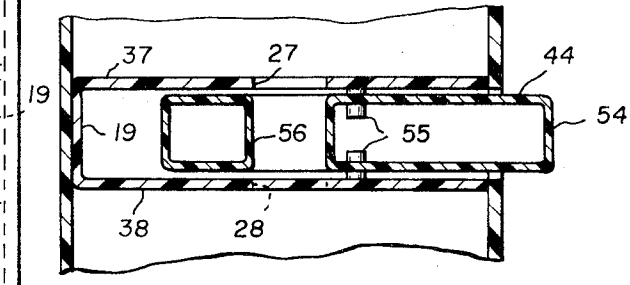


FIG. 5

OBSTACLE TOY

THE INVENTIVE IMPROVEMENT

Obstacle toys are generally known for moving a set of marbles downward through barriers in various ways requiring various manipulations. The invention involves recognition of the basic appeal of such a toy and proposes more interesting and variable manipulations to move objects down through a succession of barriers. The invention also aims at simplicity, ruggedness, economy of manufacture, and interesting and educational play possibilities.

SUMMARY OF THE INVENTION

The inventive obstacle toy has a plurality of superposed compartments separated by barriers with at least one object to be moved successively down through the compartments. Each of the barriers has an upper portal for receiving the objects from above and a lower portal for discharging the objects downward, and the barriers include a manually movable shutter positioned to block the path between the upper and lower portals. The shutters have a recess to receive the object, and are manipulatable to move the recess between registry with the portals so that an object received through an upper portal can fall into the recess and be moved to drop through the lower portal. Preferably, the toy is invertable to operate in either upright orientation.

DRAWINGS

FIG. 1 is a partially cut-away, front elevational view of a preferred embodiment of the inventive toy; and

FIGS. 2 – 5 are respective, fragmentary cross-sectional views of the toy of FIG. 1 taken along respectively numbered lines of FIG. 1.

DETAILED DESCRIPTION

Toy **10** is a generally vertical tower enclosed in a housing wall **9** and divided into superposed compartments **11** – **15** separated by barriers **16** – **19** and containing objects **20**, preferably in the form of balls or marbles to be moved from top to bottom of toy **10**. Each of the barriers **16** – **19** has upper and lower portals through which objects **20** can pass. For example, barrier **16** has an upper portal **21** in its upper wall **31** and a lower portal **22** in its lower wall **32**. Similarly, barriers **17** – **19** have respective upper walls **33**, **35** and **37** with upper portals **23**, **25** and **27**, and lower walls **34**, **36** and **38** with lower portals **24**, **26** and **28**.

Shutters **41** – **44** are respectively mounted in barriers **16** – **19** to block the path between upper and lower portals and to be manually movable to allow objects **20** to pass through each barrier. Shutters **41** – **44** preferably differ from each other to require different manual movements to add to the interest of moving objects **20** downward in toy **10**.

Shutter **41** is rotatably mounted in barrier **16** between chambers **11** and **12**. Journals **45** support shutter **41** for rotation on a vertical axis between upper wall **31** and lower wall **32**, and knurling **40** extends outward from toy **10** to facilitate rotation of shutter **41**. Shutter **41** has a through recess **46** formed as an opening or hole extending through shutter **41**, and recess **46** is shaped to receive one object **20**. Recess **46** is eccentric to journals **45** to move in a circle as shutter **41** rotates. Upper portal **21** and lower portal **22** are spaced apart or offset along the arcuate path of recess **46**. When

shutter **41** is moved to position recess **46** under upper portal **21**, an object **20** can be dropped through portal **21** and into recess **46** to rest against lower barrier wall **32**. Then if shutter **41** is rotated to register recess **46** with lower portal **22**, the object **20** in recess **46** will be carried along until it drops through lower portal **22** into chamber **12**. This is repeated as desired to move all of the objects **20** through barrier **16**.

Upper and lower walls **33** and **34** of barrier **17** are shaped to form a tubular chamber **47**, and shutter **42** has a generally cylindrical body **48** that is freely rotatable on a horizontal axis in tube **47**. A knob **49** extends outward from body **48** for manually rotating shutter **42**, and body **48** has a recess **50** in the form of a walled pocket shaped to hold one object **20**. Upper portal **23** in wall **33** and lower portal **24** in wall **34** are vertically aligned so that rotation of shutter **42** moves recess **50** between registry with portals **23** and **24**. An object **20** can be rolled through upper portal **23** and into recess **50**, and knob **49** can be turned to move recess **50** into registry with lower portal **42** to carry the trapped object **20** down to lower portal **24** where it drops down into chamber **13**. This also is repeated as desired to move objects **20** down through barrier **17**.

Shutter **43** is linearly reciprocal in a slot **51** between upper wall **35** and lower wall **36** of barrier **18**. Shutter **43** has a through recess **52** shaped to receive one of the objects **20**. Upper portal **25** and lower portal **26** are offset along the line of the reciprocal motion of shutter **43** so that recess **52** can be registered with upper portal **25** to receive an object **20** dropping through portal **25**, and then shutter **43** can be moved to register recess **52** with lower portal **26** to drop the trapped object **20** through portal **26** into chamber **14**. Shutter **43** has a knob **53** shaped to be gripped for accomplishing such linear reciprocal motion which is repeated as desired to move objects **20** through barrier **18**.

Shutter **44** is rotatably reciprocal between upper wall **37** and lower wall **38** of barrier **19**. Journals **55** support shutter **44** for such reciprocal arcuate motion, and handle **54** extends outward to be gripped and moved back and forth to accomplish such reciprocation. Shutter **44** has a through recess **56** shaped to receive one of the objects **20**, and recess **56** is eccentric to move in an arc around journals **55** as shutter **44** is reciprocated. Upper portal **27** and lower portal **28** are each positioned on the path of recess **56**, but are arcuately offset and preferably near the ends of the reciprocal path of shutter **44**. If recess **56** of shutter **44** is registered with upper portal **27**, an object **20** can fall through portal **27** into recess **56**. Then if shutter **44** is moved through its arc to register recess **56** with lower portal **28**, the object **20** is carried along in recess **56** until it drops through lower portal **28** into chamber **15**.

An escapement timer is preferably mounted in a visible position behind wall **9** to help in timing the passage of objects **20** from top to bottom of toy **10**. Housing wall **9** is preferably transparent so that the progress of objects **20** can be clearly seen, and the escapement of particles in timer **57** can be observed.

Toy **10**, if constructed as illustrated, is invertable so that objects **20** can either move downward from chamber **11** to chamber **15** or toy **10** can be inverted so that objects **20** can move downward from chamber **15** to chamber **11**. Such invertability is preferred so that objects **20** do not have to be removed from toy **10**, and it can be operated in either upright orientation.

One object **20** can be moved through each of the barriers **16 – 19** by successive manipulation of shutters **41 – 44**, or all the objects **20** can be moved successively through one barrier by repeated operation of a single shutter, before objects are advanced through a successive barrier. These operations can be timed with timer **57**, and players can race against one another for the best time in accomplishing an object-moving task. The different motions of shutters **41 – 44** are preferred for adding to the variability and interest of the toy.

Persons wishing to practice the invention should remember that other embodiments and variations can be adapted to particular circumstances. Even though one point of view is necessarily chosen in describing and defining the invention, this should not inhibit broader or related embodiments going beyond the semantic orientation of this application but falling within the spirit of the invention. For example, those skilled in the art will appreciate the different materials, constructions, and shutter and object movements available within the spirit of the invention.

I claim:

1. In an obstacle toy having a plurality of superposed compartments separated by barriers and at least one object to be moved successively down through said compartments, the improvement comprising:

a. each of said barriers having generally flat and parallel upper and lower walls spaced apart by more than the vertical height of said object;

b. said upper walls having an upper portal that said object can roll into, and said lower walls having a lower portal that said object can drop down through;

c. movable shutters mounted between said upper and lower walls to block the path of said object between said upper and lower portals;

d. said shutters having a recess shaped to receive said object;

e. said shutters being configured so said toy is invertible and operable in either upright orientation with either of said barrier walls serving as a floor that said objects can roll about on;

f. said shutters being arranged for moving said recess between registry with said portals so that said object received through said upper portal can fall into said recess and be moved between said barrier walls to drop through said lower portal;

g. said shutters being different from each other to require a different manual shutter movement at each barrier; and

h. said shutters having manually grippable extensions shaped to facilitate the respective shutter movement.

2. The toy of claim **1** wherein one of said shutters is linearly reciprocal and has a through recess movable between a pair of said upper and lower portals that are offset along the line of movement of said recess.

3. The toy of claim **1** wherein one of said shutters is rotatable on a vertical axis and has an eccentric, through recess movable between a pair of said upper and lower portals that are offset along the arc of said recess rotation.

4. The toy of claim **1** wherein one of said shutters is rotatably reciprocal and has an eccentric, through recess movable between a pair of said upper and lower portals that are offset along the arc of said recess movement.

5. The toy of claim **1** wherein one of said shutters is rotatable on a horizontal axis and has a pocket recess movable between a pair of said upper and lower portals that are vertically aligned.

6. The toy of claim **5** wherein one of said shutters is rotatably reciprocal and has an eccentric, through recess movable between a pair of said upper and lower portals that are offset along the rotatably reciprocal arc of said recess.

7. The toy of claim **6** wherein one of said shutters is rotatable on a vertical axis and has an eccentric, through recess movable between a pair of said upper and lower portals that are offset along the circle of rotation of said recess.

8. The toy of claim **7** wherein one of said shutters is linearly reciprocal and has a through recess movable between a pair of said upper and lower portals that are offset along the line of movement of said recess.

9. The toy of claim **8** including an invertible escapement timer.

10. The toy of claim **1** including an invertible escapement timer.

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