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Hill et al.

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[45] **Oct. 30, 1973**

[54] **POP-UP LEARNING TOY**

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[52] **U.S. Cl.** ..... **35/9 R,** 35/70, 46/146

[51] **Int. Cl.** **G09b 1/06**

[58] **Field of Search** ..... 35/8 R, 9 R, 6, 35 D, 35/35 J, 31 C, 31 G, 69, 70, 71; 46/146

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Attorney—Seymour A. Scholnick

[57] **ABSTRACT**

A pop-up toy which can be constructed at low cost and which has a simple appearance and manner of operation, including a cube-shaped housing which can be squeezed to release the lid and cause a pop-up member to rise through the top of the housing. A toy set includes numerous pop-up blocks, each having a marking on the outside that represents a question, and each block having a pop-up member which displays a marking that shows the answer to the question. In one embodiment, the lid and pop-up member are formed integrally with brackets that attach to the housing. In another embodiment, the pop-up member is carried on one end of a normally-extended, coiled, extensible member having its other end seated in the cube-shaped housing.

4 Claims, 19 Drawing Figures

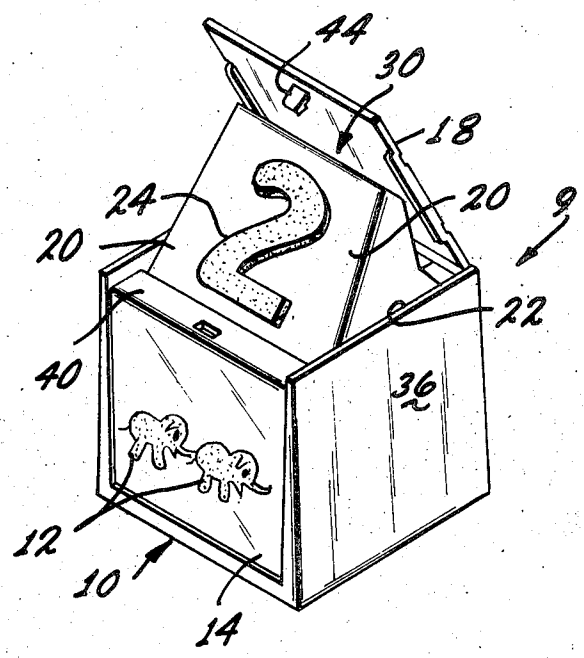
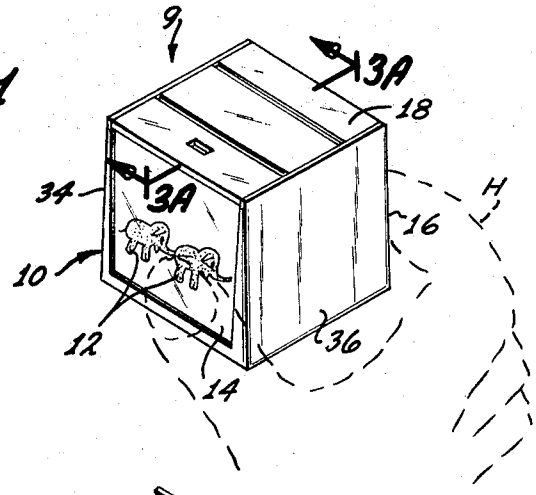


FIG. 1



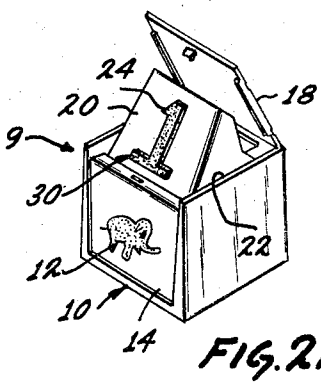


FIG. 2A

FIG. 3

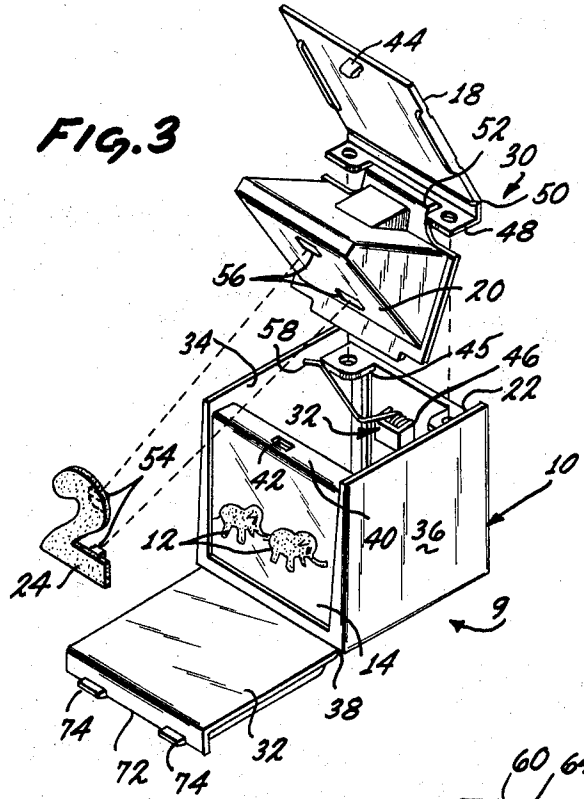
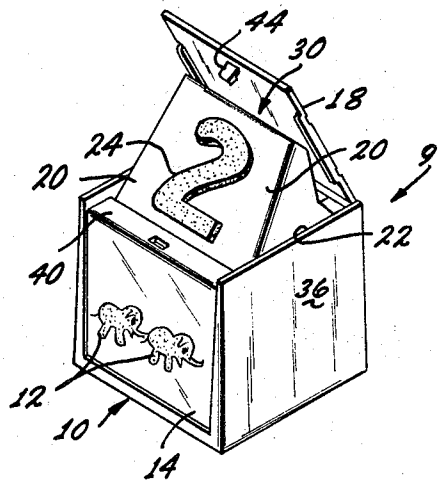


FIG. 2



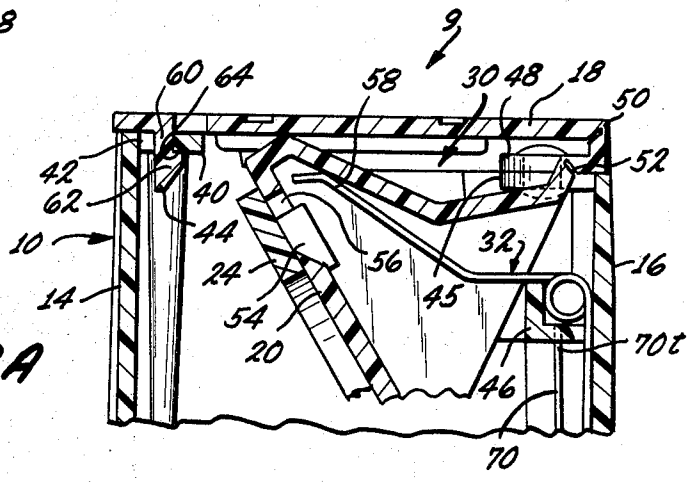


FIG. 3A

FIG. 4

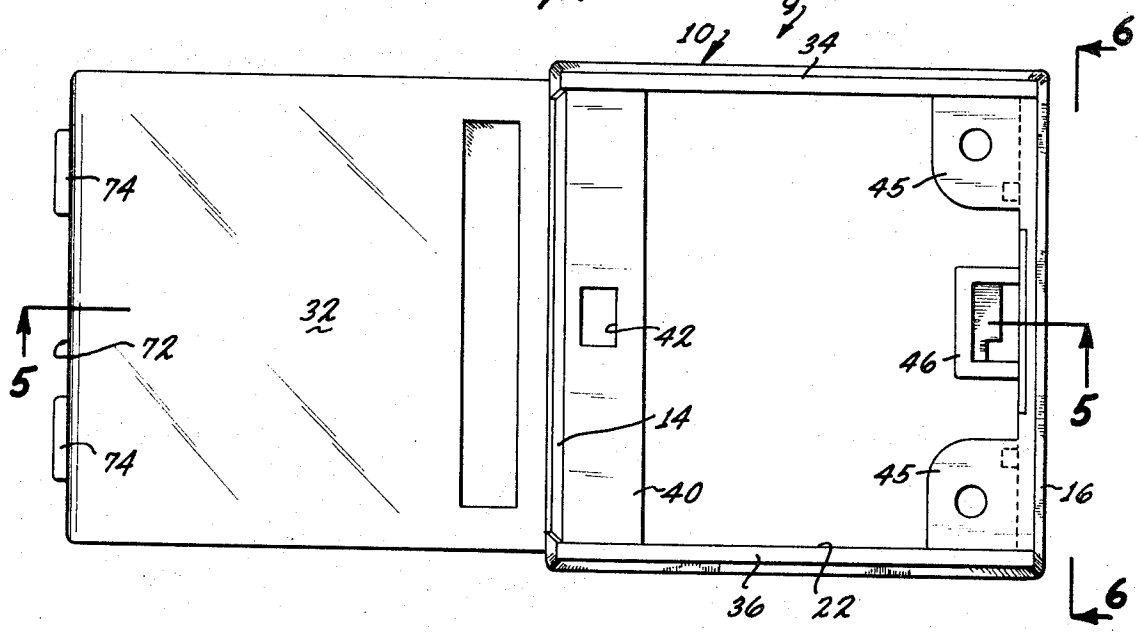


FIG. 6

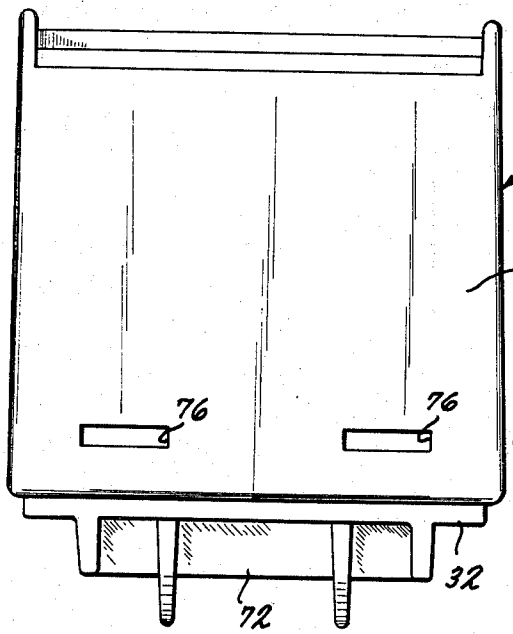


FIG. 5

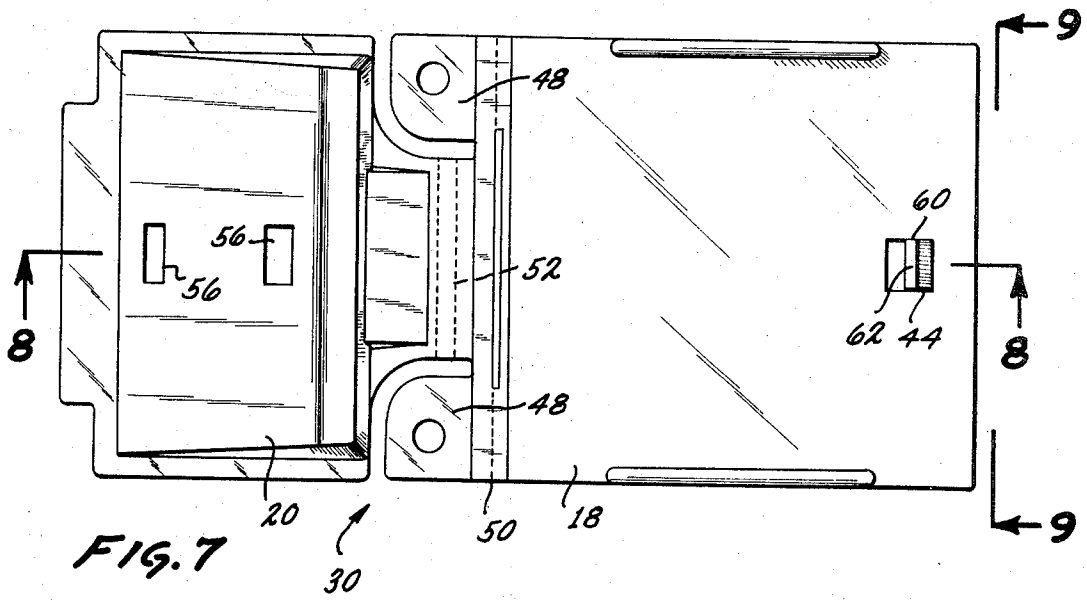


FIG. 7

FIG. 9

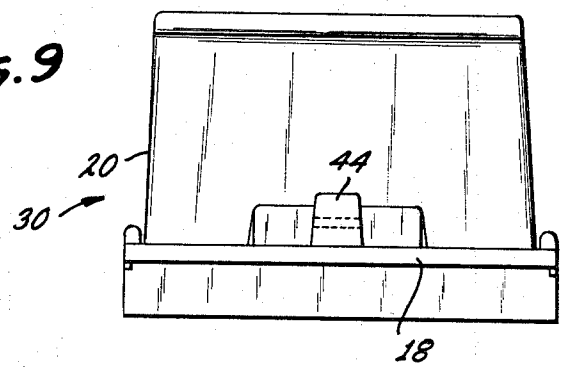


FIG. 8

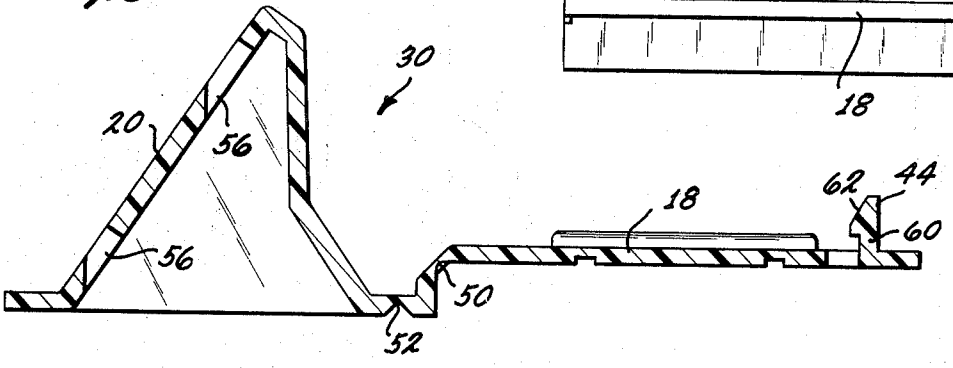


FIG. 10

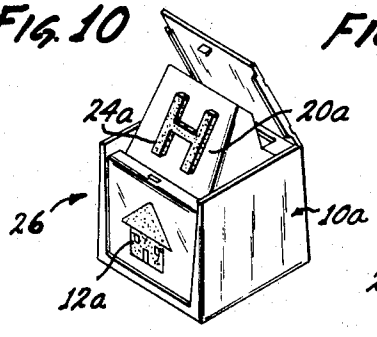


FIG. 10A

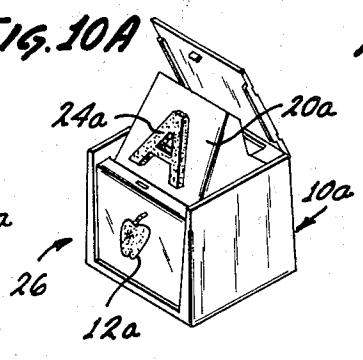
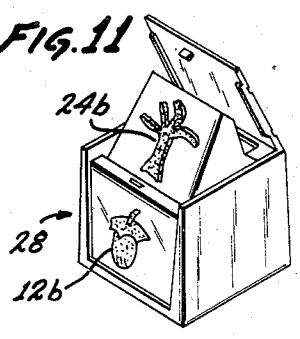


FIG. 11



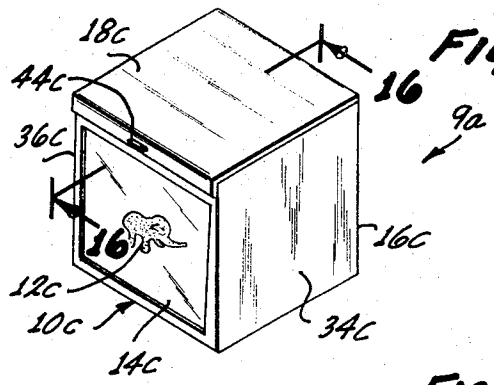


FIG. 12

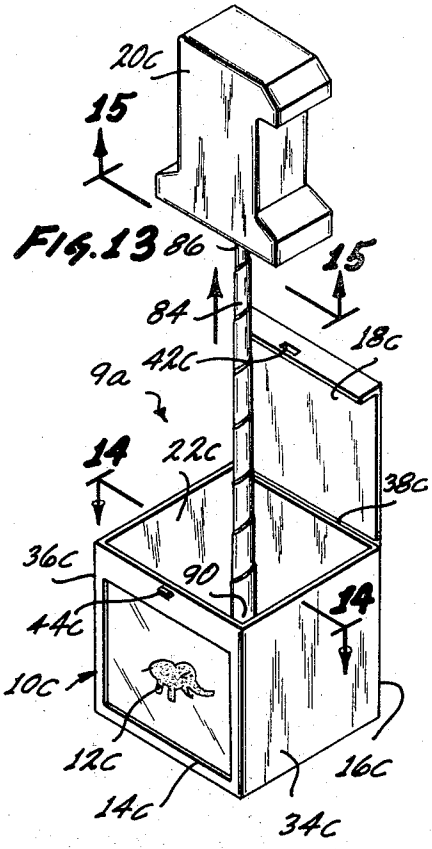


FIG. 13

FIG. 14

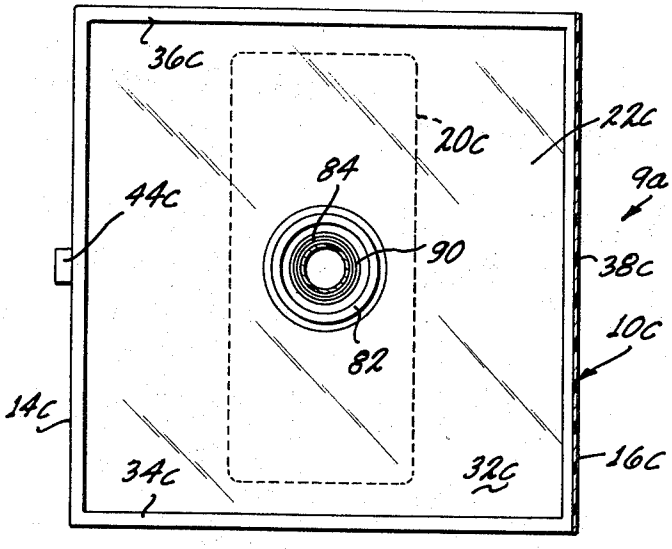


FIG. 16

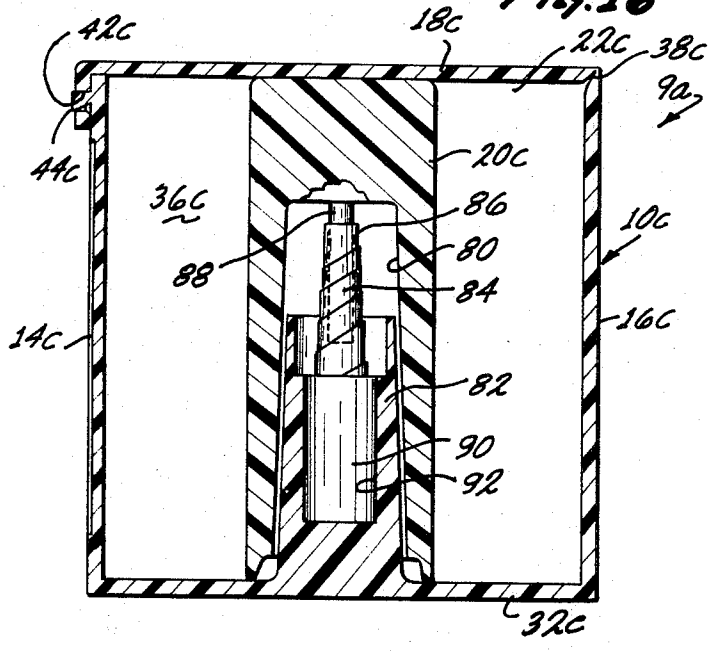
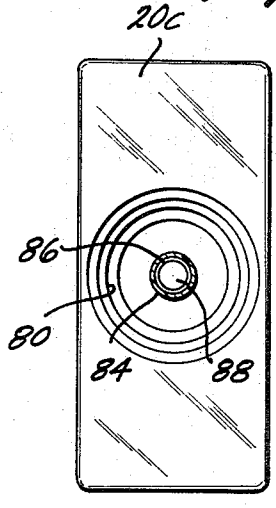


FIG. 15



POP-UP LEARNING TOY

BACKGROUND OF THE INVENTION

This invention relates to jack-in-the-box types of toys.

Sets of toy blocks have been long recognized as entertaining and educational toys. Additional educational and play value could be obtained if the toy blocks incorporated entertaining mechanisms, such as jack-in-the-box types. However, the cost of such mechanisms can significantly increase the cost of each block, and therefore greatly increase the cost of a set of blocks. If blocks with moveable mechanisms could be constructed at very low cost, then sets of such blocks could be sold at moderate cost. In order to permit traditional uses of such blocks and maintain the attractiveness arising from their simplicity, it is desirable that the animated blocks be of simple geometrical shape without artificial protuberances being required for their operation.

SUMMARY OF THE INVENTION

In accordance with one embodiment of the present invention, a toy of simple geometrical shape is provided which can be operated in a simple manner to relase a pop-up member. The toy includes a housing in the form of a cube with an open top, a lid pivotally mounted over the top, a pop-up member pivotally mounted to rise through the opening when the lid is open, and a spring that urges the pop-up member to move up. The lid and pop-up member are portions of a unitary device that includes brackets that can be fixed to the housing, and which also includes integral living hinges that connect the lid portion and the pop-up portion to the brackets.

The lid has a hook that engages a catch formed at the front of the housing. When a child squeezes together the front and rear walls of the housing, the catch is deflected to release the hook so the lid can be raised by the upwardly biased pop-up member. The outside of the cube contains markings indicating a question, while the pop-up member carries markings defining the answer to the question. For example, the markings on the cube may consist of five objects, thereby defining the question: "How many objects are there?" The pop-up member may carry the numeral 5 which defines the answer. A set of cubes may include many blocks marked with different numbers of objects, and each cube having a pop-up member with a different corresponding numeral.

In a second embodiment of the present invention, the pop-up member is carried on one end of a coiled, extensible, normally-extended member having its other end seated in the cube-shaped housing.

The novel features that are considered characteristic of this invention are set forth with particularity in the appended claims. The invention will best be understood from the following description when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a pop-up toy constructed in accordance with a first embodiment of the present invention, in a closed configuration;

FIG. 2 is a perspective view of the toy of FIG. 1 in an open configuration;

FIG. 2A is a perspective view of another toy in a set containing the toy of FIG. 2;

FIG. 3 is an exploded perspective view of the block of FIG. 1;

FIG. 3A is a sectional side view taken on the line 3A—3A of FIG. 1;

FIG. 4 is a plan view of the housing of the block of FIG. 3;

FIG. 5 is a view taken on the line 5—5 of FIG. 4;

FIG. 6 is a view taken on the line 6—6 of FIG. 4;

FIG. 7 is a plan view of the pop-up mechanism of the toy of FIG. 3, shown in the configuration in which it is molded;

FIG. 8 is a view taken on the line 8—8 of FIG. 7;

FIG. 9 is a view taken on the line 9—9 of FIG. 7;

FIG. 10 is a perspective view of a pop-up toy constructed in accordance with a modified form of the first embodiment of the invention;

FIG. 10A is a perspective view of another toy in a set containing the toy of FIG. 10;

FIG. 11 is a perspective view of a pop-up toy constructed in accordance with another modified form of the first embodiment of the invention;

FIG. 12 is a perspective view of a pop-up toy constructed in accordance with a second embodiment of the present invention, in a closed configuration;

FIG. 13 is a perspective view of the toy of FIG. 12 in an open configuration;

FIG. 14 is a view taken along line 14—14 of FIG. 13;

FIG. 15 is a view taken along line 15—15 of FIG. 13; and

FIG. 16 is a view taken along line 16—16 of FIG. 12.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a block or pop-up toy **9** in a closed configuration, and which is being operated by the hand H of a child. The toy includes a housing **10** in the shape of a cube, and bearing indicia or markings **12** of two elephants. When a child squeezes the housing to press the front wall **14** and the rear wall **16** together, the toy quickly changes to the configuration illustrated in FIG. **2.** In changing to this configuration, a lid **18** on the housing pops up and a pop-up member **20** moves up from a chamber formed by the housing, and through an opening **22** formed at the top of the housing. The pop-up member **20** carries a marking **24** in the shape of the numeral 2 which corresponds to the number of objects pictured by the markings **12** on the outside of the housing. The block **9** is one of a set of similar blocks, each of which is marked with a different number of objects on its housing, and each of which has a pop-up member with a numeral that corresponds to the number of objects on the housing. FIG. **2A** illustrates another block of the same set. The markings **12** essentially ask a question answered by markings **24** on the pop-up members, the question essentially being: "How many objects are there?" Different sets of blocks can be provided which ask different questions. For example, FIG. **10** illustrates a pop-up toy **26** which is one of a set including the block of FIG. **10A**, wherein each housing **10***a* bears a marking **12***a* which essentially asks the question: "What is the first letter of the name of this object?" The popup member **20***a* carries a marking **24***a* which is the letter that corresponds to the marking on the housing. Of course, different blocks of the set have different objects and different corresponding letters. FIG. **11** illustrates a block **28** of another set wherein the markings **12***b* and **24***b* both represent related objects,

the markings 12*b* essentially asking the question: "What does this grow up to be?"

Referring to FIG. 3, the toy block is constructed of only four separate parts, including the housing 10, a pop-up assembly 30, a spring 32, and a marking member 24 that forms the marking on the pop-up member 20. Each of these parts, except the spring 32, may be constructed of low-cost plastic and formed in a single injection molding, and the spring 32 also may be formed easily. The limited number of parts also facilitate assembly, so that a complete set of blocks an be sold at a low price. The housing 10 includes a bottom wall 32 and four upstanding walls including the front and rear walls 14, 16 and two side walls 34, 36. The housing 10 may be formed of a material such as a polypropylene that is flexible in thin sections. The bottom wall 32 is joined to he front wall 4 by a thin region 38 that forms a living hinge. In addition to the bottom and upstanding walls, the housing has a lip 40 at the top of the front wall, the lip forming a hole 42 whose walls serve as a catch for a hook 44 adjacent the front side or edge portion of the lid. A ledge 45 is formed at the top of the rear wall 16 to facilitate mounting of the pop-up assembly 30 on the housing. The housing also contains an internal bracket structure 46 that serves to hold the spring 32 securely in place.

The pop-up assembly 30 includes a bracket portion 48 that can be fixed to the ledge 45 of the housing. The lid 18 is connected to the bracket 48 by a living hinge 50 formed between them. Similarly, the pop-up member 20 is connected to the bracket 48 by a living hinge 52. The pop-up assembly 30 may be constructed of the same material as the housing 10, and the pop-up assembly similarly may be constructed in a single molding operation. Assembly to the housing may be accomplished by laying the bracket portion 48 of the pop-up assembly on the ledge 44 of the housing and fastening them together by ultrasonic welding, adhesive, rivets or the like. The marking member 24 is formed separately from the pop-up member 20 in order to permit the same pop-up assembly 30 to be utilized for all blocks. The marking member 24 is provided with tabs 54 that readily snap into holes 56 formed in the pop-up member 20, to facilitate rapid assembly. The spring 32 is inserted in the housing 10 prior to fastening of the pop-up assembly 30 thereto. A spring arm 58 is inserted into an interior portion of the pop-up member when the pop-up assembly 30 is installed on the housing.

As described above, the block can be operated merely by pressing the front and rear walls together. The absence of any levers or buttons that must be pressed makes the operation a more mysterious action since it is not obvious from the outside of the block that the block is animated. The elimination of levers or other projections also enhances the appearance of the block and permits it to be stacked on other blocks. As illustrated in FIG. 3A, the hook 44 on the lid 18 holds the lid in a closed position on the housing 10. The hook 44 has a shank 60 that extends downwardly from the closed lid, and has a tip 62 which extends rearwardly from the shank, that is, the tip 62 has a portion that extends towards the rear wall 16 of the housing. The tip 62 lies under a ledge portion 64 formed by the lip 40 of the housing. When the front wall 14 of the housing is pressed rearwardly, the ledge 64 of the lip 40 moves rearwardly and out of engagement with the tip 62 of the hook. The lid 18 is then released to fly up.

The lid 18 is moved upwardly by the pop-up member 20 which, in turn, is upwardly biased by the arm 58 of the spring 32. Thus, when a child presses in the front wall 14, the lid and pop-up member 20 fly up simultaneously. It may be noted that the pop-up member 20 could be formed as part of the lid 18 or fixed to it. However, the use of a separate pop-up member 20 that can pivot independently of the lid 18 makes the block more entertaining. This is because after the block has been opened, a child can play with the pop-up member 20 pushing it down and letting it fly up again while the lid remains open.

FIGS. 4–6 illustrate details of the housing 10, showing its configuration as molded. After the housing is molded, a label with the markings 12 (FIG. 1) is applied to the front wall 14. FIGS. 7-9 illustrate details of the pop-up mechanism 30 in the configuration in which it is molded. The toy can be assembled by first inserting the spring 32 in the bracket 46 of the housing. This is accomplished by inserting an end 70 of the spring in the hold formed between the bracket 46 and rear wall 16 until the tip 70*t* of the spring engages the bracket 46. The pop-up marking member 24 can be installed on the pop-up mechanism 30, and the mechanism 30 is installed by fastening the bracket portion 48 to the ledge 44 of the housing with rivets. The bottom wall 32 of the housing is then pivoted so it closes off the bottom of the block. The bottom wall 32 includes a flange 72 that carries a pair of projections 74. The flange 72 is received in front of the rear wall 16, and the projections 74 fit into corresponding holes 76 formed in the rear wall. The bottom wall is then locked in place.

Referring now to FIGS. 12–16, a pop-up toy constituting a second embodiment of the present invention, generally designated 9*a*, includes a cube-shaped housing 10*c* bearing a marking 12*c* representing a single object. When a child-user squeezes the housing 10*c* to press its front wall 14*c* and its rear wall 16*c* together, toy 9*a* quickly changes to the configuration illustrated in FIG. 13. In changing to this configuration, a lid 18*c* on housing 10*c* pops up and a pop-up member 20*c* moves up from a chamber formed by housing 10*c*, and through an opening 22*c* formed at the top of housing 10*c*. The pop-up member 20*c* is made in the shape of the numeral 1 which corresponds to the single object pictured by marking 12*c*. As in the first embodiment, the block 9*a* may be one of a set of similar blocks each of which is marked with a different number of objects on its housing, and each of which has a pop-up member with a numeral that corresponds to that number of objects on the housing.

The housing 10*c* includes a bottom wall 32*c* and four upstanding walls including the front and rear walls 14*c*, 16*c* and two side walls 34*c*, 36*c*. The housing 10*c* may be formed of any suitable polymeric material, such as a polypropylene, that is flexible in thin sections. The lid 18*c* may be connected to the rear wall 16*c* by a living hinge 38*c* formed by reducing the cross-section of the polypropylene material during the molding operation. Lid 18*c* may be provided with a notch or opening 42*c* engageable with a lug 44*c*, which is provided on front wall 14*c* for holding lid 18*c* in a closed position.

The pop-up member 20*c* may also be molded from a suitable polymeric material and is provided with a cylindrical cavity 80 adapted to encompass a hollow, cylindrical member 82 extending upwardly from bottom wall 32*c* inside housing 10*c*. The pop-up member 20*c*

is moved to its FIG. 13 position by a coiled, normally-extended, estensible member 84 having a first end 86 (FIG.16) seated on a depending pin portion 88 in cavity 80 and a second end 90 seated in a reduced diameter portion 92 of hollow, cylindrical member 82.

The extensible member 84 may be made from a spirally-wound band of resilient polymeric material, such as polyethylene terephthalate. The spiral has several turns which are heat set in the extended position shown in FIG. 13 and which may be caused to assume the compressed configuration shown in FIG. 16 having a height no greater than the width of the band. In this configuration, the cylindrical member 82 is disposed within the cavity 80 and the compressed band 84 is disposed within the cylindrical member 82.

Thus, the invention provides a pop-up toy in a simple geometrical shape, such as a block, which performs a novel and entertaining pop-up movement. The outside of the housing contains markings representing a question, while the pop-up member contains markings representing the answer to the question. The fact that the answer appears rapidly and in an entertaining manner helps to engage the attention of children, and enables the toy to be effectively used for educational purposes. The operation of the device by squeezing walls together rather than by manipulating projecting knobs or the like adds to the entertainment value, because it makes a seemingly ordinary block perform an unexpected motion. The toy is constructed from a minimum number of elements that can be injection molded at low cost and assembled in a simple manner. This permits a large set of blocks to be sold at low cost.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and consequently it is intended that the claims be interpreted to cover such modifications and equivalents.

1. A toy comprising:
- a box having a bottom wall and having upstanding walls surrounding the space over the bottom wall, said box having an open top;
- a pop-up mechanism including a bracket portion mounted on the box, a lid pivotally coupled to the bracket portion at a position to move over and away from the open top of the box, and a pop-up member pivotally coupled to the bracket portion and moveable at least partially through the top of the box when the lid is open and moveable into the box when the lid is closed; and
- spring means coupled to said pop-up mechanism for urging said pop-up member upwardly towards a position wherein it extends at least partially through the top of the box.

2. The toy described in claim 1 wherein:
- said upstanding walls of said box includes opposite front and rear walls and a rearwardly extending lip near the top of the front wall, the lip having a hook-receiving opening therein near the middle of the front wall;
- said lid has a front edge portion with a hook formed along the middle thereof for passing through the hook-receiving opening, the hook facing rearwardly so that it is released by rearward deflection of the lip relative to the hook, and said lid has a rear edge portion, which is pivotally coupled to the bracket portion;
- said front wall being unsupported against inward deflection, whereby squeezing together of the front and rear walls permits release of the lid.

3. A toy comprising:
- a hollow housing having sides and an open top;
- a lid pivotally mounted along the top edge of a first side of the housing for movement between positions over or away from the open top;
- a pop-up member pivoted on an axis adjacent said top edge of said first side and movable upwardly at least partially through the open top when the lid is released for opening;
- spring means urging said pop-up member to swing upwardly and thereby also open said lid;
- selectively releasable fastening means for holding said lid closed; and
- said pop-up member having an indicia bearing surface above said open top and facing away from said first side when said pop-up member is in its upper position.

4. The toy described in claim 3 including:
- a bracket constructed of material which is flexible in thin sections, said bracket fixed to said housing, and said lid and pop-up member are integral with said bracket and connected thereto by elongated regions of reduced thickness of said material.

* * * * *