# United States Patent [19]

**Tepper et al.**

[11] **3,786,577**

[45] **Jan. 22, 1974**


[54] **EDUCATIONAL TOY**


[75] Inventors: **Sidney Tepper**, Millburn; **Thomas J. Fauls**, West Orange, both of N.J.

[73] Assignee: **Educational Toys Inc.**



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[52] **U.S. Cl.** ..... **35/35 D**

[51] **Int. Cl.** ..... **G09b 1/14**

[58] **Field of Search** ..... 35/35 D, 35 R, 9 R, 35/9 D



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*Primary Examiner*—Wm. H. Grieb

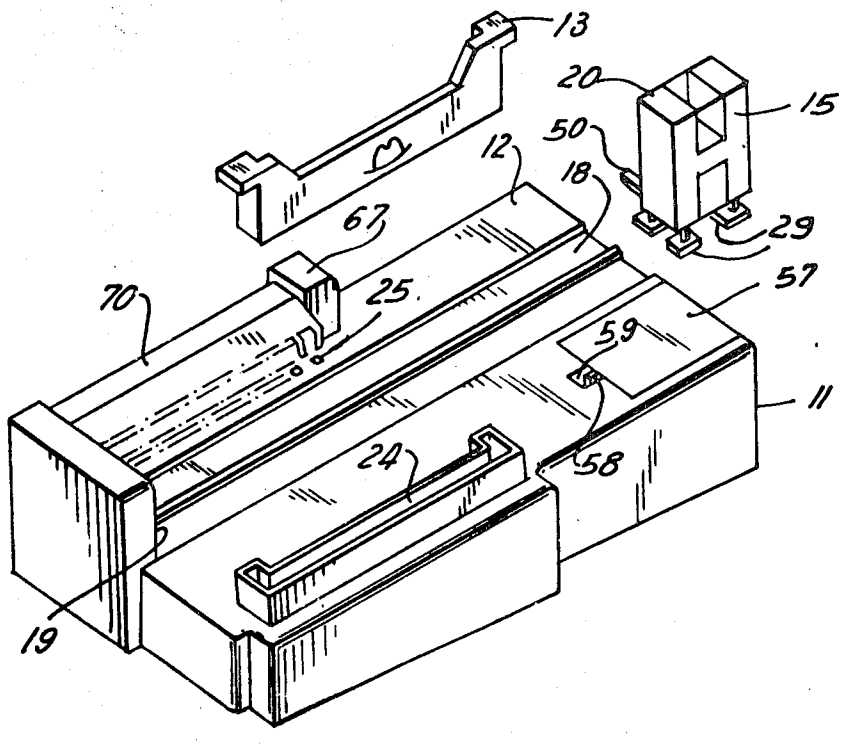
*Attorney*—Alan H. Levine



[57] **ABSTRACT**

A spelling toy wherein movable structures carrying letters of the alphabet are caused to move by gravity down an inclined path to predetermined positions on a housing. The housing includes a plurality of slots, and an orifice for guiding any one of a plurality of verifying means or actuators into the housing. In addition, the housing pivotally supports a plurality of levers, each of said levers being capable of passing through one of the slots when operated by an actuator. Each actuator corresponds to a word to be spelled and includes a plurality of unequaly spaced abutments for engaging some of the plurality of levers. Each of the movable structures includes projections which extend over some of the plurality of the slots when the structures are at the predetermined positions. As a result, when the letters associated with the structures at the predetermined positions spell out a word associated with an actuator, and that actuator is depressed into the orifice, the activated levers pass through their respective slots without engaging the projections of the structures. The actuator does, however, engage a lever which causes a lid on the housing to open, thereby permitting a doll to pop up. Alternatively, if a word is not spelled out, the actuator causes the levers to knock over the structures of the letters which are out of place. The projections of the falling structures engage a member which in turn drives a link into the path of the lid lever, thereby preventing movement of the lid lever and preventing the lid from opening. As a result, the doll does not pop up.


**14 Claims, 10 Drawing Figures**



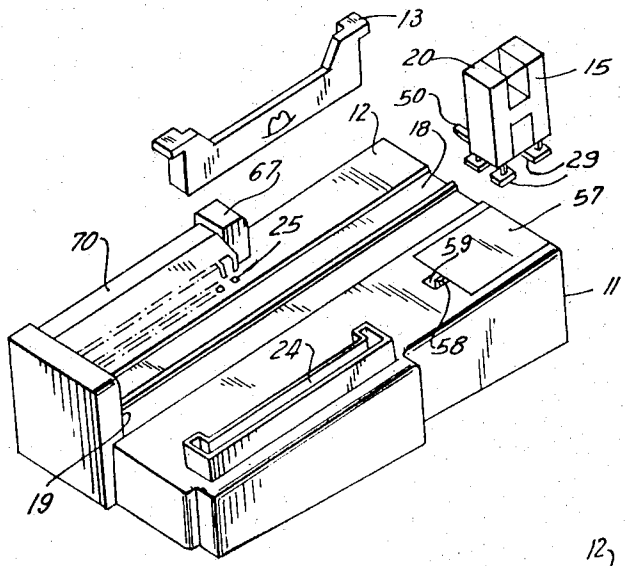



FIG. 1

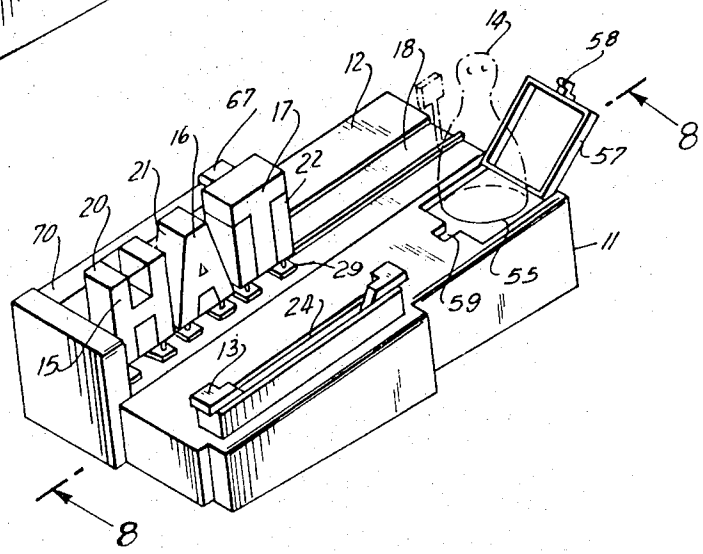



FIG. 2

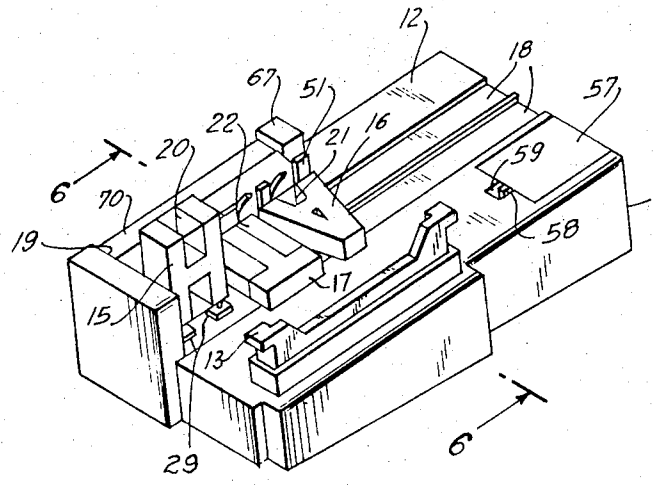
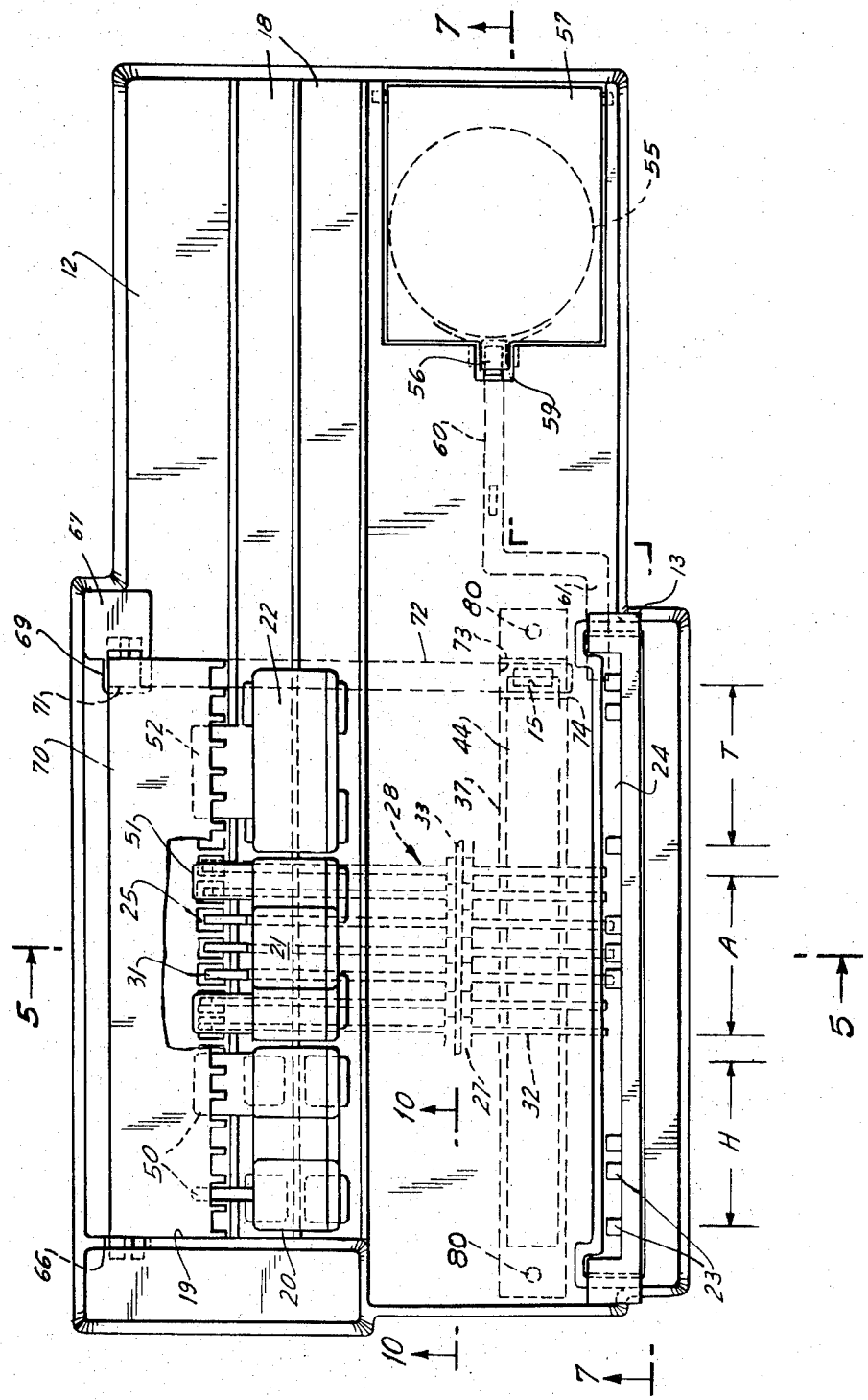



FIG. 3

FIG. 4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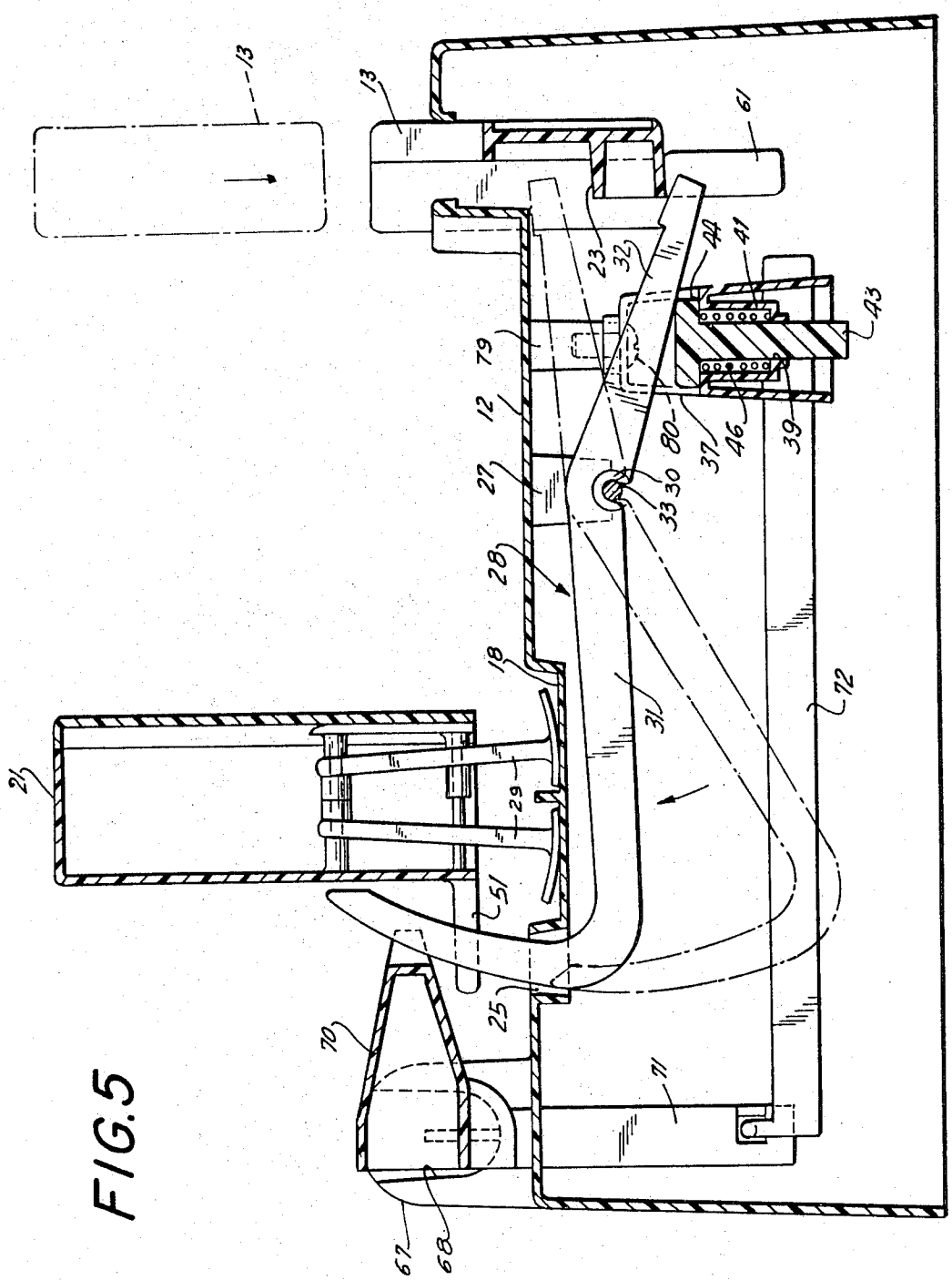
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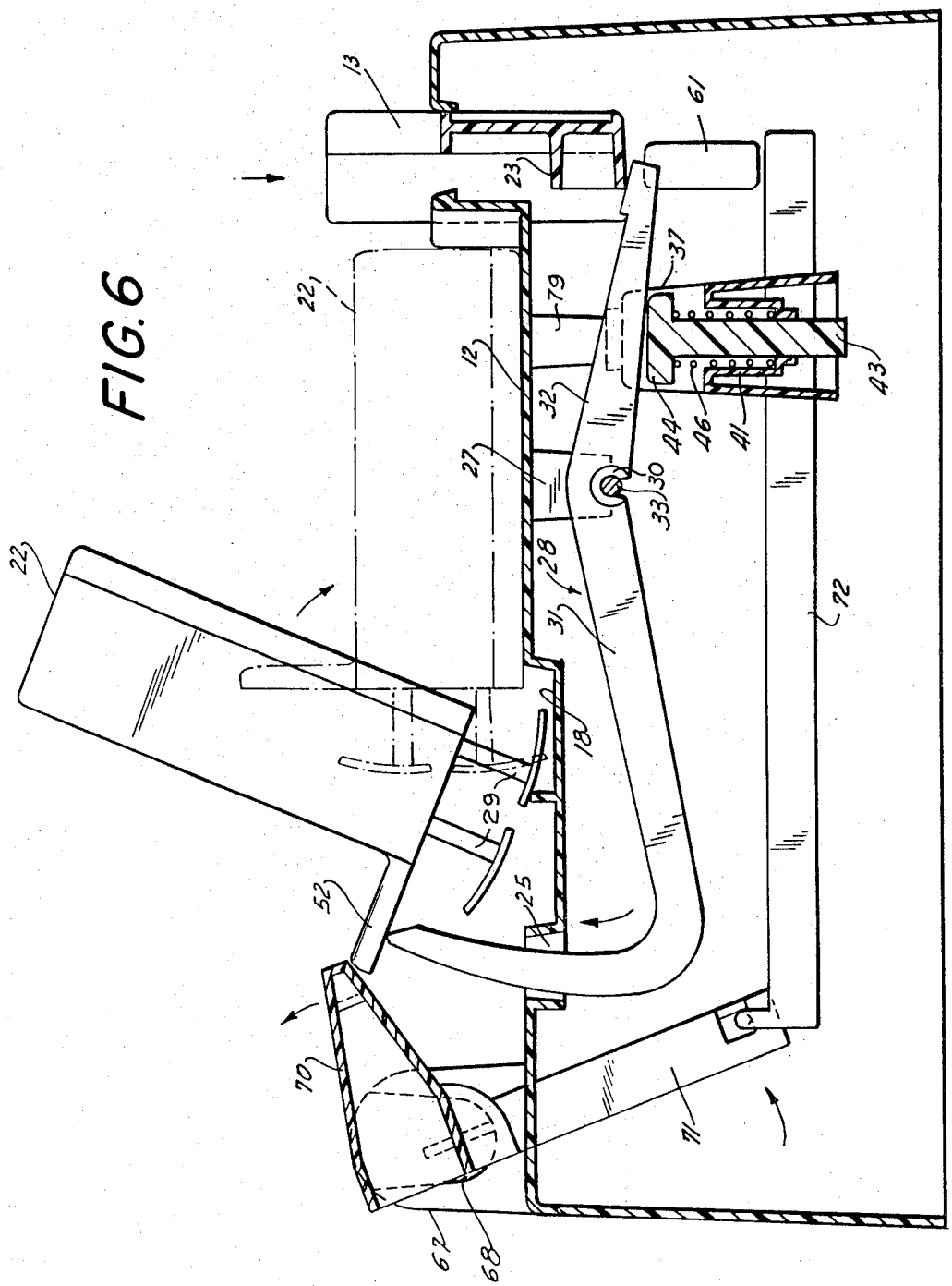
FIG.5

FIG. 6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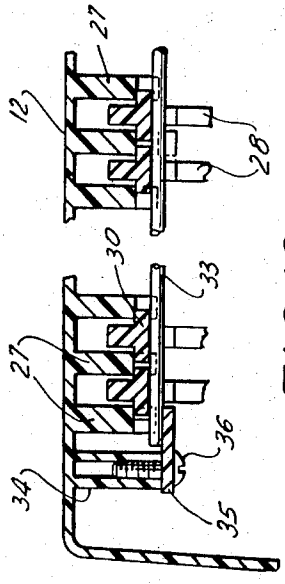

FIG. 10



FIG. 7

FIG. 8

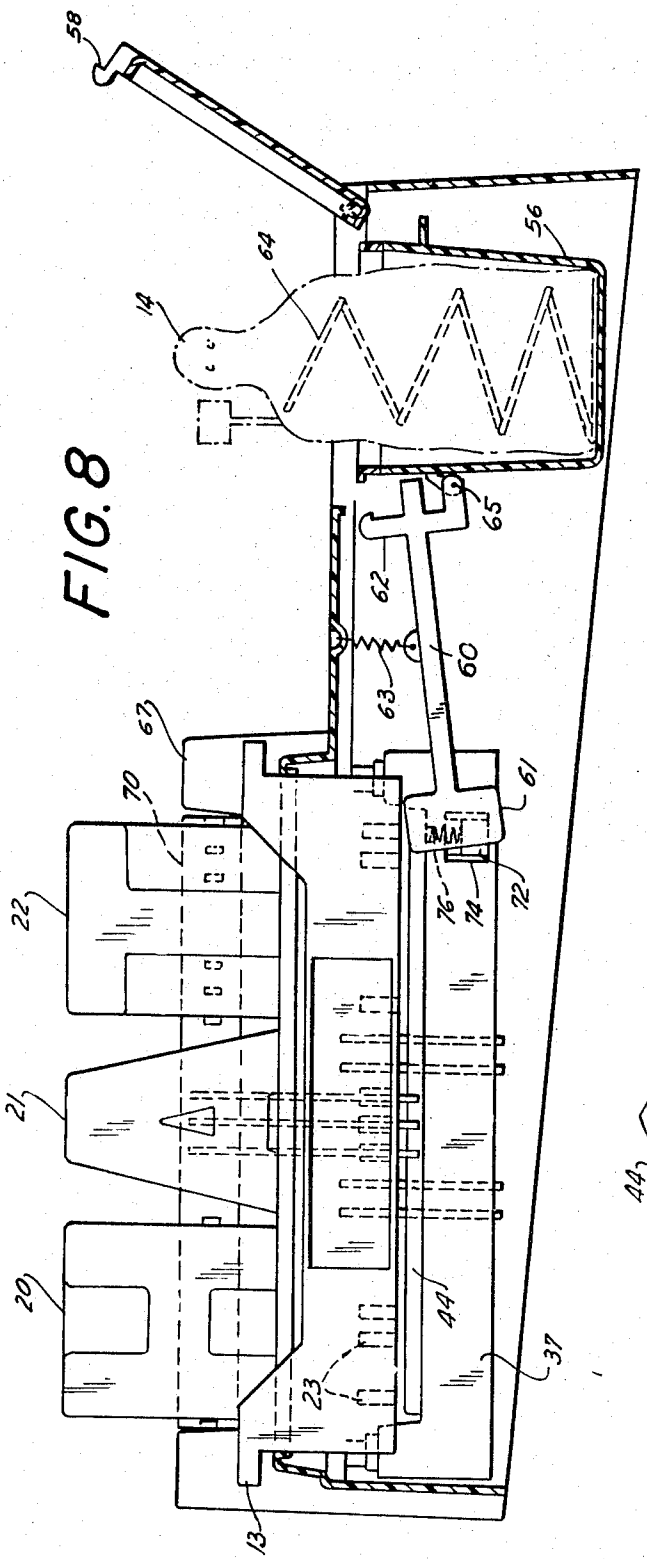
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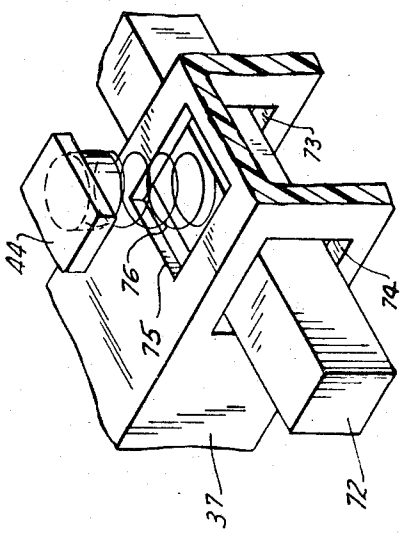
FIG. 9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# EDUCATIONAL TOY

The subject invention relates to educational toys.

It is well known that people learn how to spell words by selecting letters from the alphabet, by grouping the selected letters in a particular order, and by verifying that the order of the letters corresponds to the word to be spelled. In addition, it is also known that in the learning process the pupil should be motivated, taught, and rewarded.

It is an object of the present invention to provide a toy for teaching pupils how to spell.

It is another object of the invention to provide a toy having letters mounted on movable structures which move under the influence of gravity, thereby amusing and motivating the pupil.

It is a further object of the present invention to provide a toy which provides a response for rewarding the pupil when a predetermined word has been spelled correctly.

It is a still further object of the present invention to provide a toy which indicates to the pupil which letters of a word to be spelled are out of place.

To achieve some of the objectives mentioned above, and others, the invention employs individual letter means resembling letters of the alphabet; a predetermined position on a housing at which said letters can be arranged in succession to spell a word; a verifying means adapted to be placed in a verifying position after the spelling of a word has been completed; and means responsive to the placement of said verifying means in its verifying position for disorienting at least one of said letters in the event the word has been misspelled, said responsive means leaving the orientation of said letters unaffected in the event the word has been correctly spelled.

Additional objects and features of this invention will become apparent by reference to the following description in conjunction with the accompanying drawings, in which:

FIG. 1 is a partially exploded perspective view of a toy according to the invention;

FIG. 2 is a perspective view of the toy, the word HAT having been spelled correctly and an actuator having been depressed, thereby causing a doll to project from the housing of the toy;

FIG. 3 is a perspective view of the toy, the word HAT having been misspelled and an actuator having been depressed, thereby causing the letters of the word which were out of place to be knocked down;

FIG. 4 is a top view of the toy, a section having been removed to partially illustrate how uniquely spaced abutments on an actuator engage levers for verifying the correct placement of the housing of a letter in a word being spelled;

FIG. 5 is a vertical cross-sectional view of the toy, taken along line 5—5 in FIG. 4;

FIG. 6 is a vertical cross-sectional view of the toy, taken along line 6—6 in FIG. 3, showing a structure associated with a letter in the process of being knocked down;

FIG. 7 is a vertical cross-sectional view of the toy, taken along line 7—7 in FIG. 4;

FIG. 8 is a vertical cross-sectional view of the toy, taken along line 8—8 in FIG. 2;



FIG. 9 is a fragmentary perspective view of a part of the toy which illustrates a spring applying a normal force to a link; and

FIG. 10 is a vertical cross-sectional view, taken along line 10—10 in FIG. 4.

An educational toy chosen to illustrate the invention is shown in perspective in FIGS. 1, 2, and 3. In general, the toy includes a plurality of movable letter means 15, 16, and 17 (only three are shown, but as many letters as necessary to spell a number of desired words may be provided); a housing 11 having an inclined platform 12 for supporting three of said letters 15, 16, and 17 at predetermined positions, these positions defining a station; and a plurality of verifying means or actuators 13 (only one shown), each actuator 13 being engageable with means, more fully described below, in the housing 11 to verify whether the three letters 15, 16, and 17 on the platform 12 correctly spell out a word associated with that particular actuator 13. As shown in FIG. 2, the actuator 13 causes a doll 14 supported by the housing 11 to pop up if selected letters 15, 16 and 17 are located at predetermined positions on the platform 12 so as to spell out the word associated with the actuator 13 correctly. In the event that the selected letters 15, 16 and 17 are not arranged at the platform 12, so as to spell out correctly the word associated with the actuator 13, the actuator 13 causes the letters 16 and 17 which are out of place to be knocked down (see FIG. 3).

To insure that the letters 15, 16, and 17 are located at predetermined positions on the platform the letters 15, 16, and 17 are housed in structures 20, 21, and 22, respectively, of equal width. Each structure includes a mechanism which permits the structures 20, 21 and 22 to move, under the influence of gravity, along an inclined path. Although the structures 20, 21, and 22 could, for example, be mounted on wheels, four legs 29 (see FIGS. 5 and 7) pivotally mounted with each structure, such as is shown and described in U.S. Pat. No. 376,588, are preferred so as to provide letters which give the appearance of walking when the structures 20, 21, and 22 move along an inclined path.

As shown in FIG. 2, the inclined platform 12 includes a pair of parallel grooves 18 which define an inclined path and a wall 19 which projects perpendicularly from the lower edge of platform 12. Thus, when the legs 29 of structure 20 are placed in the grooves 18, the structure moves down the inclined path until it abuts against the wall 19. As a result, the structure 20, the groove 18, and the wall 19 define a position for the first letter 15. When the legs of the second structure 21 are placed on the grooves 18, this structure moves down the inclined path until it abuts against the first structure 20. Similarly, when a third structure 22 is placed on the grooves 18, it moves down the inclined path until it abuts against the second structure 21. Since the letters 15, 16, and 17 are housed in structures of equal width which are biased by gravity into contact, the letters 15, 16, and 17 come to rest, respectively, in first, second, and third predetermined positions where the spelling of a word, as described below, may be verified.

More specifically, in order to enable a user of the toy to determine whether a selected word has been properly spelled, there is associated with each word an actuator 13 having a plurality of uniquely spaced abutments 23 (see FIGS. 4–8).

Referring to FIG. 4, the housing 11 includes an orifice 24, located parallel to the grooves 18, which serves to guide the actuator 13 into the housing 11; and the inclined platform 12 includes a plurality of evenly spaced slots 25 which are adjacent to the grooves 18. Depending from the under surface of the top wall of the housing 11, between the orifice 24 and the plurality of slots 25, there is located a plurality of fulcrums 27 (FIGS. 4–6) which serve to pivotally support a plurality of levers 28. One of said plurality of levers 28 is shown in detail in FIGS. 5 and 6. As may be seen in FIG. 5, each lever 28 includes a bracket 30 for engaging two of the fulcrums 27, an arm 31 extending from the bracket 30 which has a curved extension, and an arm 32 extending from the bracket 30 to which forces for pivoting the lever 28 are applied by the abutments 23 on the actuators. A rod 33 fixed at each end to spacers 34 on the housing 11 by washers 35 and screws 36, one such end being shown in FIG. 10, rotatably engages the plurality of brackets 30 and retains the levers 28 against the fulcrums 27. Although it is only shown in FIG. 4 with regard to the letter A, when the actuator 13 is pushed into the orifice 24, each of its abutments 23 engages and drives one of the levers 28, thereby causing the arm 31 of each driven lever to pass through one of the slots 25.

To insure that the arms 31 do not inadvertently pass through the slots 25, the arms 32 of the levers 28 are biased against the housing 11. As shown in FIGS. 5, 6, and 7, to bias the levers 28, a member 37, fixed to spacers 79 on the the housing 11 by screws 80, includes a pair of spaced apart holes 39, the holes 39 having, respectively, counterbores 41 and 42. Hole 39 slidably supports a shaft 43 which is perpendicularly fixed to a rectangular rod 44 and hole 40 slidably supports a shaft 45 which is also perpendicularly fixed to the rectangular rod 44. The shaft 43 supports a compression spring 46 which at one end abuts against the rectangular rod 44 and at the other end abuts against the seat of the counterbore 41. Similarly, the shaft 45 supports a compression spring 47 which at one end abuts against the rod 44 and at the other end abuts against the seat of the counterbore 42. As a result, the springs 46 and 47 urge the rod 44 against the arms 32 of the plurality of levers 28, thereby forcing the arms 32 against the bottom of the housing 11 and the extensions of the arms 31 away from their respective slots 25. This arrangement insures that all the levers 28 return to the broken line position shown in FIG. 5 when actuator 13 is removed from orifice 24.

Each of the structures 20, 21, and 22 includes projections 50, 51, and 52, respectively, which extend over some of the slots 25 when the letters 15, 16, and 17 are in position at the platform (see FIG. 4). Thus, when the actuator 13 associated with a word is pushed into the orifice 24, the abutments 23 of the actuator 13 engage the arms 32 of certain of the levers 28, the rectangular rod 44 is moved downwardly towards member 37, and the arms 31 of the actuated levers 28 pass through their respective slots 25. The arms 31 either push some or all of the projections 50, 51, and 52 of the structures 20, 21, and 22 (see FIG. 6) or pass through the slots 25 and the unobstructed spaces between the projections (see FIG. 5). As shown in FIG. 6, when an arm 31 pushes a projection, its corresponding letter is tipped over. As partially shown in FIG. 4, when a word has been spelled correctly, the actuated levers 28 do not engage any of the projections of the structures 20, 21, and 22. However, it should be noted that if the arrangement of letters shown in FIG. 4 is changed for example, by reversing the positions of structures 21, and 22, the arms 31 of the levers 28 pivoted by the actuator 13 will engage the projections 51 and 52 of the structures 21 and 22 and tip them over as shown in FIG. 3.

In addition to the foregoing, the toy includes a response which is triggered by the actuator 13 if its corresponding word has been spelled correctly. As shown in FIGS. 2, 7, and 8, to provide this response, the platform 12 includes a hole 55 below which there is mounted a container 56 and above which there is pivotally mounted on the platform 12 a lid 57 for the container 56.

Referring to FIG. 7, the lid 57 includes a step extension 58 which, when the lid is closed, passes through a hole 59 (see also FIGS. 1–4) in the platform 12, The container 56 pivotally supports at 65 a lever 60 having an extension 61 (see also FIGS. 5 and 6) which extends into the path of the actuator 13 and a latch 62 which is engageable with the step extension 58 to keep the lid 57 closed. The engagement is maintained by a tension spring 63 connected at one end to the bottom of the platform 12 and at its other end to the lever 60. The container 56 and lid 57 house a doll 14 which is connected to the container 56 by a compression spring 64. As a result, when a word has been spelled correctly and the actuator 13 is depressed the lever extension 61 is engaged by the actuator 13 (FIG. 8) and caused to pivot, thereby causing latch 62 to disengage from the step extension 58 of the lid 57. Thereafter, compression spring 64, causes the doll 14 to push the lid 57 open and the doll 14 pops up through the hole 59.

To prevent the doll 14 from popping up when a word has been spelled incorrectly, the wall 19 includes a hole 66; (FIG. 4); the housing 11 includes a support 67 (FIGS. 1–5) having a hole 68, the holes 66 and 68 having a common axis which is parallel to the platform 12; and the platform 12 includes a hole 69 below the axis and adjacent to the support 67. Holes 66 and 68 rotatably support a member 70 having an extension 71 (FIGS. 4, 5 and 6) which passes through the hole 69 and a projection which partially extends over the plurality of slots 25. The size of the hole 69 serves to limit rotation of the member 70. The end of the extension 71 pivotally supports a link 72 which is slidably supported by a pair of holes 73 and 74 in the support member 37 (see FIGS. 7–9) In addition, the support member 37 includes a hole 75 through which a spring 76 connected to the rectangular rod 44 extends. The axis of the spring 76 is perpendicularly located with respect to the rectangular rod 44 so that when the rectangular 44 is depressed by the action of the actuator 13 on the levers 28, the normal force applied by the spring 76 to the link 72 will increase the friction between the link 72 and holes 73 and 74 to keep the link 72 stationary until a positive force is applied to change its position.

Operatively, when the word associated with an actuator 13 has been misspelled and the actuator 13 is inserted into the orifice 24, depression of the actuator 13 causes some of the leaves 28 to be moved and the rectangular rod 44 is moved towards the support member 37. Simultaneously, the spring 76 is brought into contact with the link 72 and is compressed. As the operator of the toy continues to depress the actuator 13, the arms 31 engage the projections 50–52 of the structures

which are out of place and commence tipping said structures (see FIG. 6), As each structure is tipped, its projection engages and rotates the member 70. Rotation of the member 70 causes the extension 71 to advance the link 72 into the path through which the lever extension 61 must pass in order to release the lid 57. As a result, after the lever extension 61 abuts against the link 72, the actuator cannot be further inserted into the orifice 24, and latch 62 does not release lid extension 58.

In the alternative (see FIGS. 5 and 8), when the word associated with an actuator 13 has been spelled correctly, depression of the actuator 13 into the orifice 24 causes some of the levers 28 to be moved and the rectangular rod 44 is moved towards the support member 37. Simultaneously, the spring 76 is brought into contact with the link 72 and is compressed, thereby preventing the link 72 from being inadvertently moved. As the operator of the toy continues to depress the actuator 13, the actuator 13 engages the extension of the lever 61 and causes the lever 60 to pivot, thereby releasing the lid 57. When the lid 57 is released, the doll 14 pops up.

After the doll 14 has popped up, the toy may be prepared for another attempt to spell a word by removing the actuator 13, pushing the doll 14 into the container 56, and closing the lid 57. As the lid 57 is closed, the step extension pivots the lever 60 until the step extension 58 clears the latch 62. Thereafter, spring 63 pivots the latch 62 of the lever 60 into engagement with the step extension 58.

It is to be understood that the description herein of a preferred embodiment according to the invention is set forth as an example thereof and is not to be construed or interpreted as a limitation on the claims which follow and define the invention.

What is claimed is:

1. A spelling toy comprising:
   a. individual letter means resembling letters of the alphabet,
   b. a station at which said letter means can be arranged in succession to spell a word,
   c. a verifying means adapted to be placed in a verifying position after spelling of the word has been completed, and
   d. means responsive to placement of said verifying means in its verifying position for disorienting at least one of said letter means in the event the word has been misspelled, said responsive means leaving the orientation of said letter means unaffected in the event the word has been correctly spelled.

2. A spelling toy as defined in claim 1 including a plurality of said verifying means, each verifying means being allocated to a different word.

3. A spelling toy as defined in claim 1 wherein each of said letter means carries a projection, and said responsive means cooperates with said projection to disorient said letter means when it is incorrectly located in the word.

4. A spelling toy as defined in claim 1 including a path leading to said station, and means for moving each of said letter means along said path from a point remote from said station to said station.

5. A spelling toy as defined in claim 4 wherein said path is inclined, and said letter means move along it by gravity.

6. A spelling toy as defined in claim 5 wherein said means for moving each of said letter means includes means carried by each letter means for movably supporting it on said path.

7. A spelling toy as defined in claim 6 wherein said means for movably supporting each letter means includes a plurality of legs depending from said letter means, each leg being pivoted to said letter means.

8. A spelling toy as defined in claim 1 wherein said verifying means is a member carrying at least one abutment, and said responsive means includes an element engageable with and movable by said abutment when said member is placed in the verifying position.

9. A spelling toy as defined in claim 8 wherein each of said letter means carries a projection, said projection being in the path of movement of said element when said letter means is at said station but incorrectly located in the word, whereby when said element is moved by said abutment said element in turn engages said projection and disorients said letter means.

10. A spelling toy as defined in claim 1 including a hidden member, and means responsive to placement of said verifying means in its verifying position for exposing said hidden member only in the event the word has been correctly spelled.

11. A spelling toy as defined in claim 10 including an enclosure within which said member can be hidden, and wherein said means for exposing said member includes means for opening said enclosure.

12. A spelling toy as defined in claim 11 including resilient means constantly tending to open said enclosure when the latter is closed, and a latch for holding said enclosure closed against the force of said resilient means, and wherein said means for exposing said member responds to placement of said verifying means in its verifying position for releasing said latch.

13. A spelling toy as defined in claim 10 including means for preventing said exposing means from responding to said verifying means when a word is misspelled.

14. A spelling toy as defined in claim 13 wherein each of said letter means carries a projection, said exposing means includes a part movable by said verifying means when the latter is placed in its verifying position, and said preventing means includes means responsive to movement of the projection of a letter means which is disoriented for preventing movement of said part by said verifying means.

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