May 10, 1960 H. E. FREEZE 2,935,814

DISPLAY DEVICE

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Fig-1

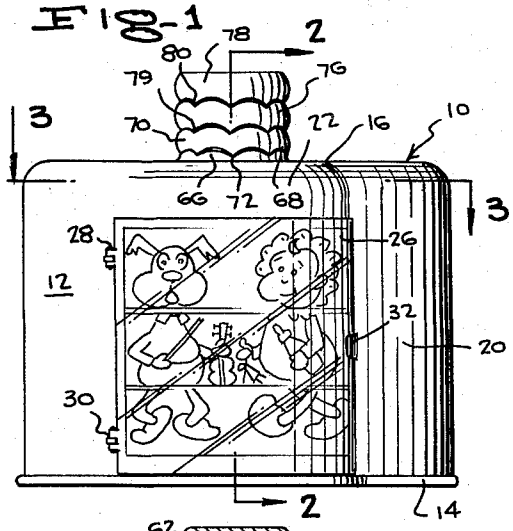


Fig-2

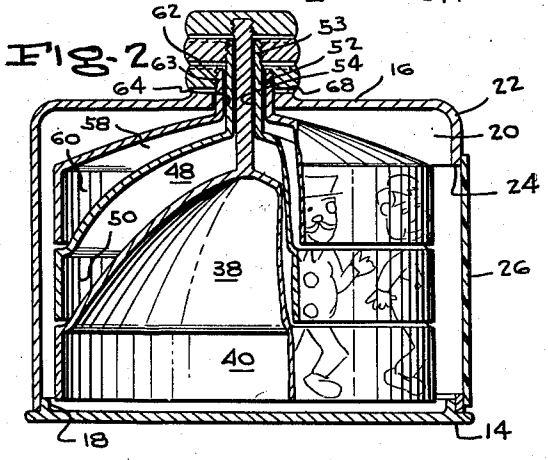


Fig-3

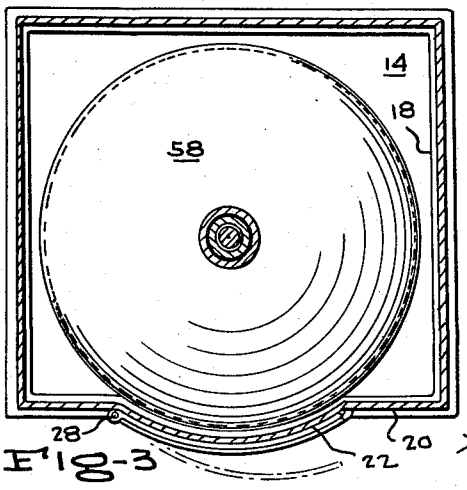


Fig-4

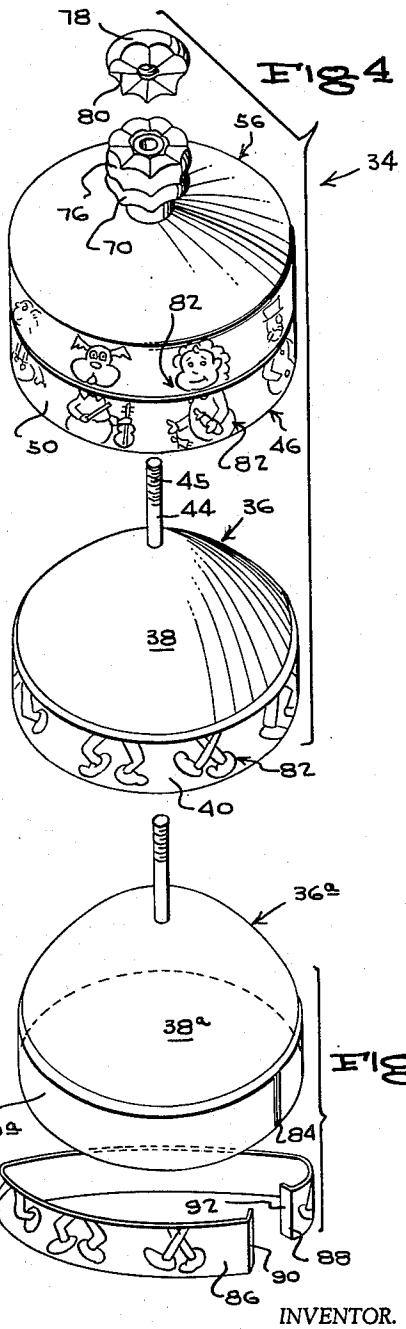


Fig-5

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DISPLAY DEVICE

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3 Claims. (Cl. 46—35)

This invention relates to display devices and, more specifically, to a picture display device which is operable to produce a plurality of indicia by its selective operation.

An object of this invention resides in the provision of a picture display device wherein segments of the pictures to be exhibited are printed on movable strips, and the strips are capable of alinement in various positions to provide a plurality of different pictures utilizing the aforesaid segments in different arrangements.

While devices of this general type are often employed as children's toys, they are also capable of many other important functions, such as, for example, educational testing machines, advertising display apparatus, and other visual communication machines.

Another object and advantage of one form of this invention is to provide a device of this general character wherein the movable strips are easily and quickly disconnectable from, and attachable to, their carrying means. This feature allows the provision of a number of different picture strips thereby increasing the possible forms of utilization of this device as well as the interest span of children playing with the device when it is in use as a toy.

Another object is, in a device of this class, to afford novel and improved control means which are easily actuated, but, at the same time, allow positive positioning of the various pictures.

Among the further objects of this invention is the provision of a display device of the class described supra, the display device being non-complex in construction and assembly, inexpensive to manufacture, and durable in use.

Numerous other and further objects and advantages will become more readily apparent from a consideration of the following specification when read in conjunction with the annexed drawing, in which:

Figure 1 is a front elevational view of a display device constructed and assembled in accordance with the teachings of this invention;

Figure 2 is a vertical detail cross-sectional view of the toy seen in Figure 1, the section being taken substantially along the plane of the section line 2—2 of Figure 1, looking in the direction of the arrows;

Figure 3 is a detail cross-sectional view of the device, the section being taken substantially along the horizontal plane of the section line 3—3 of Figure 1, looking in the direction of the arrows;

Figure 4 is an exploded perspective view of the rotating mechanism, and picture carriage means, forming a part of this invention; and

Figure 5 is an exploded view of a modified form of one of the nested skirts and its picture strip, illustrating the means whereby the strip is attached to the skirt.

Proceeding now to a more specific description of the invention, with special reference to Figures 1 through 3 of the drawing, it will be seen that reference numeral 10 is applied to the display device in general. The device 10 has a substantially rectangular main body housing 12 having a pair of opposed open and closed ends and a substantially flat, rectangular base 14, the closed end of the

housing 12 being designated at 16. The base 14 has a flange 18 projecting upwardly therearound, the flange being adjacent to but spaced from the outer marginal edges thereof, and the open end of the housing 12 is press fit around the aforesaid flange. The front wall of the main body 12, identified by reference numeral 20, has an arcuate protuberance 22 which is cut out at 24 to form a viewing and access door opening described more fully below, and the base 14 and flange 18 thereof are likewise extended to accommodate the protuberance 22.

A bowed viewing and access door 26 extends across the cut-out portion of the front wall 20 and is hingedly secured thereto at 28, 30. The door 26 is transparent and may be formed of any suitable material, and an intergrally formed handle 32 is formed on the outer side thereof.

The indicia carrying assembly and actuating means are identified by general reference numeral 34 and includes a plurality of picture carrying, nested skirts, having a common rotational axis. In this embodiment of the invention, three skirts have been illustrated, but it should be clearly understood that it is within the scope of this invention to provide any number thereof.

A bottom skirt 36 is seen to include a parabolic main body 38 having an annular rim 40 depending from the outer marginal edge thereof. Also, a substantially cylindrical control shaft 44 having a threaded upper end 45 extends upwardly from the apex of the main body 38.

A centrally disposed skirt 46 is similar to the bottom skirt 36 and includes a parabolic main body 48 and a depending rim 50. The control shaft 52 thereof extends upwardly from the apex of the main body 48 and has an axially extending bore 54 through which the control member 44 of the bottom skirt 36 is slidably and rotatably passed. As seen in Figure 2, the upper end of the control 52 is also threaded at 53 for a purpose described below.

The upper skirt 56 has a parabolic main body 58 and depending rim 60 as well as a cylindrical control shaft 62. The control shaft 62 has a threaded outer end 63 and an axial bore 64 through which the control shaft 52 is slidably and rotatably passed.

Referring to Figures 1 and 2 of the drawing, it will be seen that the closed end 16 of the housing 12 has a centrally disposed substantially cylindrical boss 66 having a series of circumferentially spaced, pointed depressions 68 formed therein. An annular lower control knob 70 is threadeadly connected to the control shaft 62 and has pointed circumferentially spaced projections 72 which are engageable in the aforementioned depressions 68, and the opposed upper side thereof has a plurality of spaced radial depressions 79 formed therein. A central control knob 76 is threadedly connected to the control shaft 52 and is identical in construction to the knob 70 with the single exception that the threaded opening is necessarily of a lesser diameter than the threaded opening of the last named knob. The uppermost knob 78 has a flat outer end and an opposed inner end which is provided with spaced radial projections 80 for engagement within the depressions in the upper end of the knob 76. The knob 78 is threadedly secured to the upper end of the shaft 44.

Each of the rims 40, 50, and 60 is provided with a series of indicia 82, and it will be noted that the indicia carried by each of the rims are capable of selective alinement relative to each other in order to form completed figures as shown in Figure 1. In this form of the invention, the indicia 82 may be either printed or otherwise affixed directly on the rims 40, 50, or 60.

In operation, the device is assembled in the manner obvious from the description of its parts and is utilized as follows: When it is desired to change the picture appearing in front of the viewing door 26, this is done by manipulation of the control knobs 70, 76, or 78. It is obvious that the indica 82 on the rim 40 comprise the leg

portions of animated characters, while those on the center rim **50** represent the trunks of said characters, and the indicia on the rim **60** portray the heads of such characters. The rotation of the control knobs **70**, **76**, and **78** causes rotation of the corresponding rims. Thus, by collective rotation of all of the knobs, the entire assembled pictures may be rotated, or if desired, by rotation of a selected one of the aforementioned knobs, the leg portions, trunk portions, or head portions of the characters may be changed. It will be noted that the rotation of an elected one of the knobs **70**, **76**, or **78** will cause the projections thereof to bear against the curved sides of the corresponding depression and thus move upwardly. For example, if the knob **78** is rotated the projections **80** will rise against the curved sides leading to the depressions in the knob **76**, thus causing the shaft **44** to rise in the bore **54** and to lift and rotate the skirt **36**. The knobs are seen to rotate with the cam action as described above, and the seating of the radial projections in the corresponding depressions of the knobs and the boss causes a positive operation in the rotational movement of the various skirts and in the alignment of the various indicia.

In a modified form of the skirt, illustrated in Figure 5 of the drawing, the skirt **36***a* has a parabolic main body **38***a* and depending rim **40***a*. It is seen that the rim **40***a* is slotted at **84**, and an annular picture strip **86** is provided for surrounding the rim **40***a*. The strip **86** is split at **88** and has inwardly turned confronting flanges **90**, **92** at the split, the flanges being provided for insertion in the slot **84** of the rim **40***a*. The operation of the modified form is substantially the same as that previously described. However, in the latter case it is possible to substitute various sets of strips **86** on the various lower, central, and upper rims (which are all provided with slots as at **84**). The substitution may be accomplished without complete disassembly of the device by merely opening the viewing and access door **26** and disengaging one of the flanges **90** or **92** from the slot **84** and then rotating a selected rim while at the same time withdrawing the strip **86**. When a complete rotation has been effected, the other one of the flanges is removed from the slot. The foregoing process is merely reversed when another set of picture strips are to be connected to the rims.

It will readily be seen that many different means may be employed for securing the picture strips to the rims in addition to the novel means herein before described. For example, studs, snap fasteners, or other equivalent devices could be employed for this purpose.

Having described and illustrated two embodiments of this invention in detail, it will be understood that the same are offered merely by way of example and that this invention is to be limited only by the scope of the appended claims.

What is claimed is:

1. A display device comprising a main body housing, a transparent viewing and access door in said main body housing, said main body housing having a cylindrical boss positioned on its upper end, said boss having an aperture formed therein, a plurality of rotatable nested indicia bearing skirts, each of said skirts having a substantially parabolic main body and a depending annular rim, said rims being adapted to carry suitable indicia, said skirts having means extending through said aperture in said boss of said main body housing for effecting the selective rotation of same in order to align said indicia on said rims of said skirts, said means for effecting said rotation of said skirts including a substantially hollow cylindrical extension of the upper one of said nested skirts, said cylindrical extension having a threaded outer end for connection with the control knob, the next subjacent one of said skirts being provided with a substantially cylindrical hollow extension extending upwardly through and above the hollow portion of the preceding cylindrical extension and having a control knob secured to the outer ends thereof, the lower one of said skirts having a substantially cylindrical extension extending upwardly through and above the hollow portions of the preceding cylindrical extension and having a terminal control knob secured thereto, said knobs and said boss of said main body housing being provided with radially spaced opposed depressions and projections, said projections being engageable in the depressions in the adjacent one of said knobs and said boss, and the rotational movement of said knobs resulting in a cam action between said knobs.

2. A display device comprising a main body housing, a transparent viewing and access door in said main body housing, said main body housing including a pair of opposed lower and upper ends, said upper end having an aperture formed therein, a plurality of rotatable nested indicia bearing skirts, each of said skirts having a substantially parabolic main body and a depending annular rim, said rims being adapted to carry indicia, a plurality of rotating means extending through said aperture in said upper end of said housing, one of said operating means being operable connected with each of said skirts for effecting the selective rotation thereof, and interfitting means on each of said rotation means for effecting the alignment of the indicia on the skirts.

3. A display device as defined in claim 1 wherein said depending annular rims of said skirts are each provided with a transverse slot, and a like plurality of indicia bearing strips circumferentially embracing said annular rims, said strips having ends terminating in a pair of inwardly turned confronting flanges, and said flanges being releasably engageable in said slots in said rims.

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