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2,616,332

TOY PROJECTOR

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1 Claim. (Cl. 88—28)

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This invention relates to a toy and has particular reference to a projector for throwing pictures upon a miniature screen.

An object of this invention is the particular construction, as will be set forth, of the casing of the projector to give access to the interior of same.

A further object of this invention is the provision, in the projector, for progressively moving a series of pictures arranged upon an endless film and simultaneously closing an electric circuit to light a bulb to project each picture upon a screen as it moves into projection position.

A still further object of this invention is the provision of a device in which the constituent elements are so arranged structurally and functionally as to assure improved results with materials and members which may be manufactured at reasonable cost, may be easily assembled and which will be efficient in operation with minimum wear to the parts.

The invention possesses other objects and features of advantage, some of which, with the foregoing will be set forth in the following description and in the claim wherein parts will be identified by specific names for convenience but they are intended to be as generic in their application to similar parts as the art will permit. In the accompanying drawings there has been illustrated the best embodiment of the invention known to me, but such embodiment is to be regarded as typical only of many possible embodiments, and the invention is not to be limited thereto.

The novel features considered characteristic of my invention are set forth with particularity in the appended claim. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of a specific embodiment when read in connection with the accompanying drawings, in which:

Fig. 1 is a top view, partly broken away, of a picture projector used in this invention.

Fig. 2 is a bottom view of same.

Fig. 2a is a fragmentary view of a modified hinge construction.

Fig. 2b is a sectional view of same showing the hinge members drawn apart.

Fig. 2c is a side view of one element of the hinge.

Fig. 2d is a fragmentary end view of a locking member.

Fig. 2e is a similar view showing the parts pulled apart.

Fig. 3 is a view with one half of the casing removed and showing the interior of same.

Fig. 4 is a plan view of a part of the casing and shows half of the lens cylinder.

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Fig. 5 is a plan view of a part of the casing complementary to the part shown in Fig. 14 and without the half lens cylinder which is fitted thereto.

Fig. 6 is a plan view, partly in section, of a half cylinder which is adapted to fit upon that part of the casing shown in Fig. 15.

Fig. 7 is a front elevational view of a part of the split casing and is partly in section (line 17—17) of Fig. 1 and has a removable part of lens cylinder omitted.

Fig. 8 is a top view of controlling button or slider.

Fig. 9 is a side elevational view of same.

Fig. 10 is an end view of same and shows part of the split casing or housing.

Fig. 11 is a section of a part of the housing taken approximately along line 21—21 of Fig. 13, and

Fig. 12 is a detail showing a modification which will be hereinafter described.

Referring in detail to the parts, 60 designates a projector having legs 61 thereon and formed of two semi-housing units 62 and 63 which are held together by hinged joints 64 and a lip member 108 having tapered lip members 121 and 122, as will be hereinafter explained.

The leg formations upon the bottom of the semi-housings 62 and 63 comprise the strips 61 upon the semi-housing 62, each having a perforation which engage pins 68 formed upon strips 69 on the bottom of the semi-housing 63. Both strips are slightly flexible to enable them to be sprung apart for attachment or detachment. The semi-housing 63 is formed with a half cylindrical lens holder 70 which is integrally formed thereon. The semi-housing 62 is formed with a lug 71 adapted to engage the outer edge 72 of the detachable half cylinder lens holder 73.

When the two half sections 62 and 73 of the housing are brought together along the line 74, the half cylinder 73 is slipped over the lug 71, against the semi-cylinder 70 and the both semi-cylinders held together by means of the split rings 65 and 66. Fixed focus lens 75 and 76 are held within the said semi-cylindrical members 70 and 73 to form the lens holding cylinder 67. Within the housing there are two batteries 77 and 78 connected in series by a connector 79 removably mounted upon slotted insulating members 80. The upper end of the battery 77 contacts a spring conducting element 81 which is removably mounted upon slotted insulating members 82. An electric light bulb 83 is carried upon a metallic mounting 84 in turn removably mounted upon slotted insulating members 85. One side of the said light bulb 83 has electrical contact with the said mounting 84 while its other side has electrical contact, through the contact point 86, with the said spring conductor 81. An electrical conductor 87 having an angular flexible upper end 88 is removably mounted upon slotted insulating members 89 and makes contact at 90 with a terminal of the battery 78. The upper end 91 of the metallic mounting 84 is bent approximately at right angles to the said metallic mounting 84 in close proximity to the flexible end 88 so that an open or circuit breaking gap is normally maintained at that point. An opening 92 in the housing of the projector 60 is alined with the said lenses 75 and 76 and removably mounted in the semi-housing 63, upon slotted mounting members 93 is a condenser lens 94 also alined with and disposed between the opening 92 and light bulb 83.

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An endless strip of film 95 carrying a multiplicity of equally spaced pictures 96 (shown by dot and dash line in Fig. 3 and in part in Fig. 1) is mounted between guide pins 97 and the outer top, bottom and end walls of the semi-housings and is held in proper alinement by means of guide blocks 98 upon the semi-housing 63 and guide blocks 99 upon the semi-housing 62. The said film strip 95 is perforated, at intervals between pictures, as at 100 (Fig. 1) and provides a means for engagement with selector points 101 formed upon a slider 102 movable upon the top of the projector 60 in an opening 103 in same. The said slider (Fig. 10) is formed with grooves 104 and 105 which engage over the edges of said opening 103. The groove 105 is formed with a lip 106 which engages over a ridge 107 formed along the edge of the opening 103 and acts to hold the said slider upon the semi-housing 63 when the semi-housing 62 is disconnected therefrom. The inactive position of the slider 102 is shown in Fig. 3 but when it is moved forward it engages the upper surface of the said flexible end 88 and depresses same to close the circuit between same and the end 91 of the metallic mounting 84. With the circuit closed the light bulb 83 is illuminated and projects the picture, alined therewith, upon the screen.

When the slider 102 is retracted to its normal, inactive position, the circuit is broken and the light is extinguished. To project the following picture upon the screen, the slider 102 is again moved forward, whereupon the selector points 101 engage the corresponding perforations 100 and moves the film 95 forward to aline the following picture and close the said circuit. This operation may be continued until all of the pictures have been successively projected. Side guides 104' and 105' are provided upon the semi-housings 62 and 63 respectively and are adapted to assure correct alinement of the said film perforations with the said selector points (Figs. 3 and 11).

On Fig. 12 there is shown a modified form of hinge comprising a flanged member 110 having a slotted or hook opening 111 which is adapted to engage over a pin 68' similar to the pin 68 heretofore mentioned.

A lip member 108 is formed by two sections, one upon each of the semi-housings 62 and 63 and functions as a means for snap locking the two said semi-housings 62 and 63 together. Each of the said lip members are formed with a tapered lip member 121 upon the semi-housing 62 and a complementary tapered lip member 122 upon the said semi-housing 63 (Figs. 2d and 2e). The two said tapered lips 121 and 122 co-act with the lock hinges 64.

Figs. 2, 2b and 2c show a form of hinge wherein the aforesaid leg strips 61 are formed with offsets 123 having a bearing perforation 124 and slots 125 into and along which pins 126, formed upon the leg strips 69 are adapted to engage. The pins 126 being adapted to snap into the perforations 124.

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I claim:

In a miniature toy projector, comprising a housing formed of detachably joined half sections, lens upon the housing aligned with an orifice in the housing, hinges and a snap lock upon the half sections of the housing, multiple pairs of slotted, insulating supporting members upon and inside of one of the half-sections of the said housing, a condenser lens removably mounted within the housing and aligned with the orifice in said housing, a metallic light bulb carrying member removably mounted in a pair of said insulating supporting members and forming one terminal of a normally open electric circuit, a light bulb engageable through the said metallic light bulb mounting and having electrical connection therewith and arranged in alignment with the said lens, orifice and condenser, a pair of dry batteries within the housing, an electrical conductor element engageable with the opposite poles of said dry batteries and removably mounted in a second pair of the said slotted insulating supporting members, a spring conductor element removably mounted in another pair of slotted insulating supporting members, the said spring conductor having an angularly projecting end engageable with one pole of one of the said batteries and having electrical connection with the contact point of the said light bulb, a conductor element mounted in a fourth pair of slotted insulating and supporting members, the said conductor element having contact, at one end, with the opposite pole of a second dry battery and having its opposite end angularly bent and projected toward the upper end of the said metallic light bulb member, but out of contact therewith to normally maintain an open electric circuit, an endless film having a multiplicity of spaced pictures thereon engageable upon guide pins around the inner periphery of the said housing, the said pictures upon the endless film adapted to consecutively and intermittently align with the said orifice, lens and light bulb, and a sliding button upon and projecting through the casing to engage the endless film and the said angularly bent projection upon the said conductor element adapted to intermittently move the said endless film and close the electric circuit to light the bulb and project a picture through the condenser and lens.

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TOY PROJECTOR

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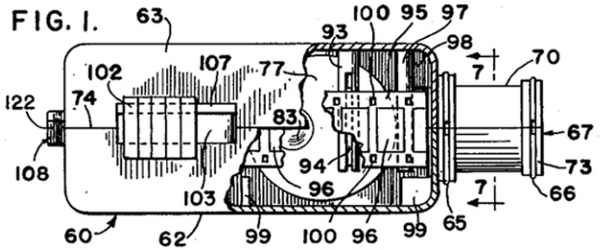

FIG. 1.

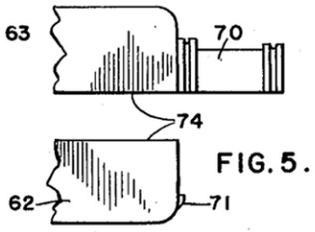

FIG. 4.

FIG. 5.

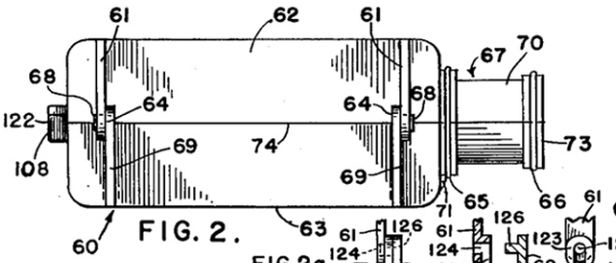

FIG. 2.

FIG. 6.

FIG. 2a.

FIG. 2b.

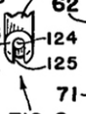

FIG. 2c

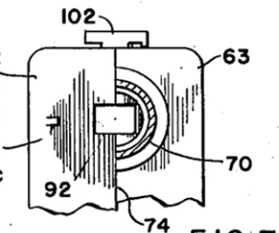

FIG. 7.

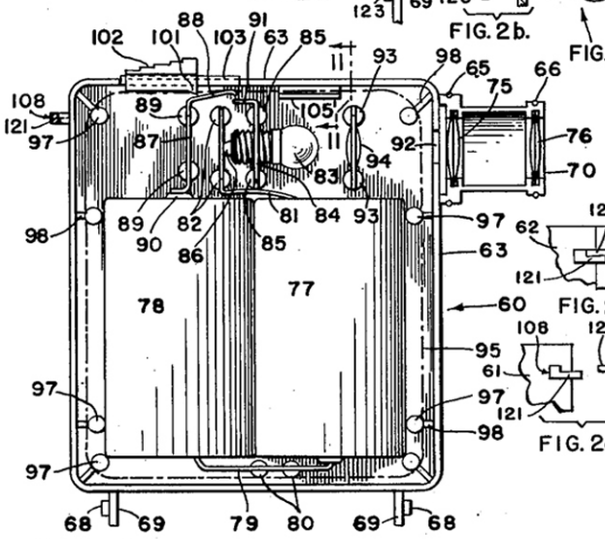

FIG. 3.

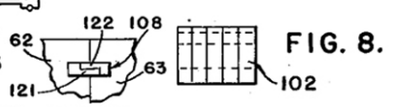

FIG. 2d

FIG. 8.

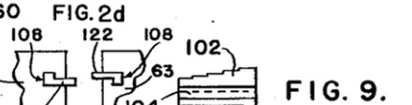

FIG. 2e

FIG. 9.

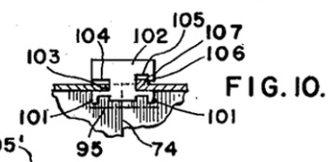

FIG. 10.

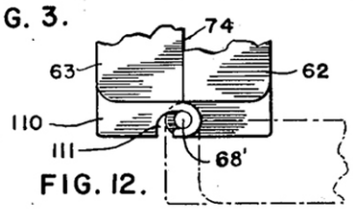

FIG. 12.

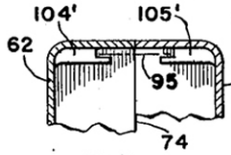

FIG. 11.

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