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2,460,221

LUMINESCENT AMUSEMENT DEVICE

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FIG. 1.

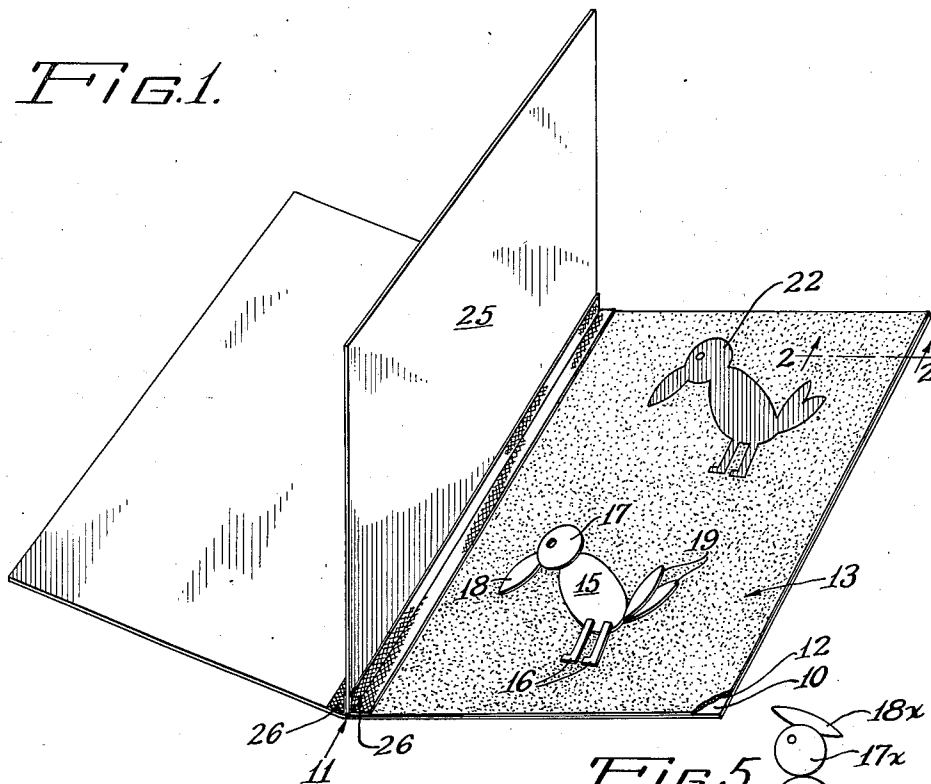


FIG. 2.



FIG. 5.

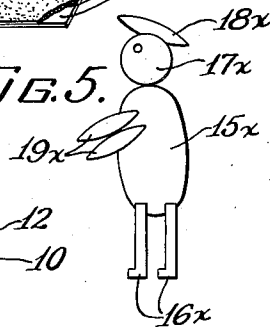


FIG. 3.

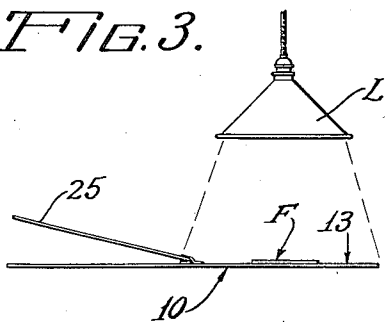
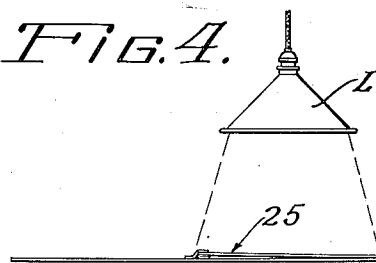


FIG. 4.



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LUMINESCENT AMUSEMENT DEVICE

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6 Claims. (Cl. 250—71)

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This invention pertains to amusement and instruction devices of a type involving the use of light-activated luminescent substances which will glow or give off light when exposed to a suitable light source.

The principal object of the invention is the provision of amusement or instruction means which includes a sheet treated with a so-called luminous paint or pigment, such that when the sheet is exposed to natural or artificial light, it will glow with an appreciable amount of luminosity after the light source is removed or exposure discontinued, together with the provision of substantially opaque outline-forming or shadow-casting figures, which may be arranged variously upon the treated sheet prior to exposure, so that upon such exposure, and subsequent removal of the figures from the sheet, there will remain delineated upon the sheet the outlines of the figures.

A further object is the provision of means for erasing the aforesaid outlines easily and quickly in order that other and different figure arrangements may be made at the pleasure of the user.

A further object is the provision of an assemblage of figure or outline forming elements adapted to be combined in various ways to produce different figure or outline patterns.

A further object is the provision of means for mounting the light-sensitive sheet and quenching or erasing means in a convenient unit suitable for use by children, and generally facilitating the manipulation of the novel device.

Additional objects and aspects of novelty and utility relate to details of the embodiment hereinafter described in view of the annexed drawing, in which:

Fig. 1 is a perspective view of the novel device including the light-sensitive sheet, the quenching sheet, and certain figure or outline forming objects thereon;

Fig. 2 is a fragmentary cross section taken along lines 2—2 of Fig. 1;

Fig. 3 is a view illustrating the use of the device in forming an outline by artificial light;

Fig. 4 is a view illustrating the use of the erasing or quenching means;

Fig. 5 illustrates a modified assemblage of the figure-forming elements;

The embodiment illustrated in Fig. 1 includes a sheet 10 of cardboard or the like folded along a line 11 to form a book.

Adhesively secured to one inside face of the folder or book is a sheet 12 (see Fig. 2 also) treated with a light-sensitive coating 13 of zinc sulphide, activated to increase its luminescent qualities. Other luminous paints or salts known in the art may be used if desired. The zinc sulphide is preferably mixed in cellulose nitrate lacquer and sprayed or screened onto the sheet

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12. When exposed to light, the sheet portion 12, that is to say the coating 13 thereon, will glow with a characteristic greenish hue when taken out of strong light.

5 After the light-sensitive member 12—13 has been exposed to artificial or natural light as aforesaid and removed to a place of relative darkness, the glow or luminescent effect will persist for a considerable time and finally fade away.

10 Various outline or shadow patterns may be formed on the light-sensitive member by means of figure-forming elements such as shown arranged at the bottom of Fig. 1, and including in this instance a body element 15, leg elements 16, head and beak elements 17 and 18 respectively, and tail elements 19.

The aforesaid figure-forming elements may preferably be made of opaque cardboard or the like and are supplied in a variety of shapes adapted to be assembled to form different outline patterns according to the skill and imagination of the user.

For example, the same elements used at the bottom of Fig. 1 may be arranged to provide a different pattern, as in Fig. 5, wherein the elements are identified by the same reference numerals followed respectively by the suffix X.

Assuming that the figure-forming elements have been arranged as at the bottom of Fig. 1, the light-sensitive surface 13 is exposed to light from the source or lamp L, as in Fig. 3, wherein the arrangement of elements is generally indicated at F. The arrangement of elements F will shield the light-sensitive surface from the radiation from source L, with the result that when the device is withdrawn to a place of relative darkness, or the lamp L is turned off, and the elements 15, 16, 17, 18 and 19 removed from surface 13, there will be left an area of surface 13 which is not excited and which will not glow, and this area, generally indicated at 22 at the top of Fig. 1, which may be assumed to have originated from a previous exposure of figure-forming elements arranged near the top of the book, will have the outline of the particular pattern or arrangement of elements which has been thus exposed.

As previously alluded to, the outline will be in the nature of a shadow-picture or silhouette 22, which will persist for some minutes after withdrawal of the exciting light source.

In order to quickly erase outlines thus formed and clear the light-sensitive surface 13 for reception of further patterns, there is provided a quenching means in the form of a sheet 25 of paper or suitable cellulose material or the like, colored or pigmented or dyed red or amber to degree sufficient to permit the passage therethrough of light radiations near the infra-red portion of the spectrum, and to substantially ex-

clude visible and higher frequencies of light above the infra-red.

This quenching sheet 25 is secured along the fold line 11 of the book member as by adhesive hinge means 26, so that this sheet 25 may be folded into the positions of Figs. 3 and 4.

Quenching or erasing of patterns or silhouettes procured by previous exposure is accomplished as in Fig. 4 by turning the sheet 25 over onto the surface 13 and exposing the upper surface of sheet 25 to radiation from a light source such as lamp L for a few seconds, following which the light-sensitive surface 13 is again ready to receive new exposures, the previously existing patterns have been entirely erased by the infra-red radiation passed through the filter means 25.

While the invention affords amusement and instruction in the commercial embodiment illustrated and described, additional applications are contemplated where temporary record may be useful in a region of darkness, for the device may be used with a suitable flashlight to impress numbers on the light-sensitive recording sheet through thin paper upon which relatively opaque numbers are imprinted. Also, photogenic negatives and the like may be employed for the outline or pattern-forming means.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent of the United States is:

1. A device of the class described comprising a sheet surfaced with a luminescent paint adapted to glow for record purposes after exposure to visible light, and a filter member hingedly mounted with said first-mentioned sheet to move onto and away from said sheet and colored red to a degree adapted to filter out light which will excite said luminescent paint but which will pass light of longer wavelength than visible light and in the neighborhood of infra-red wavelengths for the purpose of quenching excitation of said luminescent paint by radiation including infra-red radiations and visible light, which is directed upon the filter member when in position upon said sheet.

2. A device of the class described including means providing a record-receiving surface of zinc sulphide, which will afterglow to outline the form of opaque record-forming patterns which have been placed thereupon, and said surface and patterns having been exposed to light of a type to excite the portions of said surface not covered by said patterns, and an infra-red filter shaped to be received in place upon said surface and exposed to a light source including infra-red radiation which is passed by said filter upon said surface to erase excitation on the record-receiving surface.

3. An article of manufacture, namely amusement and instruction means, including luminescent copying means comprising a sheet of light-sensitive material adapted to glow after exposure to visible light and of the class of zinc sulphide activated; a plurality of detached pattern-forming elements opaque to light which will excite said light-sensitive material and variously shaped so as to be arranged in various manners by placement on said sheet to form thereon a variety of corresponding silhouettes by exposing the sheet and pattern elements thereon to visible light and then removing said elements, said silhouettes being apparent upon viewing of the exposed sheet in relative darkness, together with a red paper filter sheet joined in association with said light-sensitive sheet for movement onto and away from

the latter and adapted for exposure to visible light to erase the silhouettes formed thereon as aforesaid.

4. Luminescent copying means comprising a member coated with activated zinc sulphide which will be excited by visible light to provide a temporary record luminescence, and a quenching sheet treated to be color-selective in transmission of light to exclude light which will excite the coating on said member, but which will transmit light energy capable of quenching said record excitation of said coated member when the latter has been exposed to visible light, said coated member and quenching sheet being joined in relatively movable operative association such that the quenching sheet may be moved into positions upon and off of the coated member.

5. Luminescent copying means comprising a member coated with a light-sensitive substance adapted to become luminous temporarily after exposure to light, and a second member color-treated to exclude light which will excite luminosity in the first member, but which will transmit light energy adapted to extinguish luminosity of the first member when placed upon the latter and exposed to a source of light including infra-red portions of the spectrum, said members being hingedly joined together such that the said second member may be turned onto or off of the coated portion, at least, of the other said member, into and out of luminosity-extinguishing relationship thereto.

6. Amusement and instruction copying means comprising, in combination as an article of manufacture, a folder including a sheet treated with a luminous substance adapted to glow in the dark after exposure to light; a sheet colored red to reddish amber hinged in said folder to turn upon or away from said first sheet, and a plurality of pattern-forming elements of material opaque to light which will excite luminosity in said first sheet, said elements being adapted for arrangement upon said first sheet to form copy figures, the silhouette of said figures appearing upon said first sheet after exposure of the latter with an arrangement of said elements thereon to light, said silhouettes becoming apparent upon removal of the elements after exposure and examination in a place of relative darkness, said silhouettes being extinguished by turning said second sheet upon the first and exposing the first sheet to light transmitted through the second sheet.

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