April 28, 1936. H. A. SMITH ET AL 2,038,909

MACHINE FOR PROJECTING KALEIDOSCOPIC DESIGNS

Filed Oct. 1, 1934 2 Sheets-Sheet 1

Fig. 1.

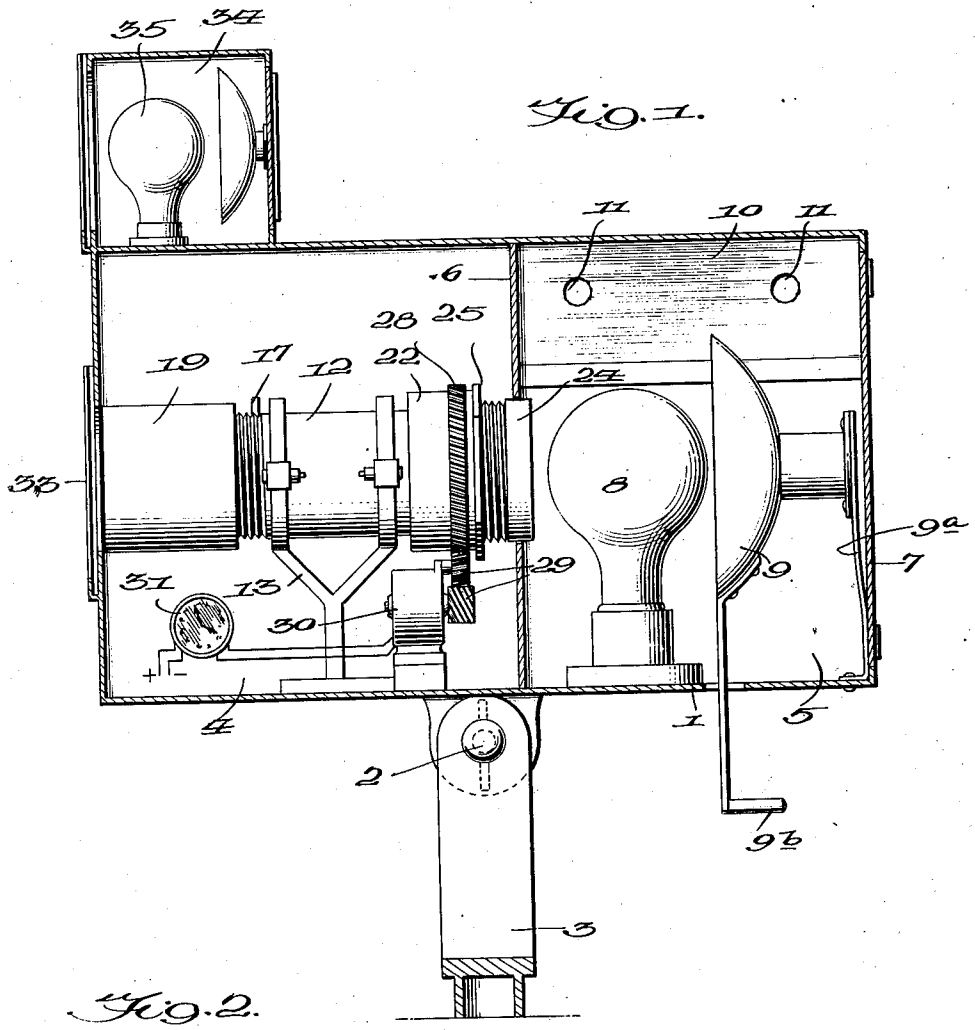
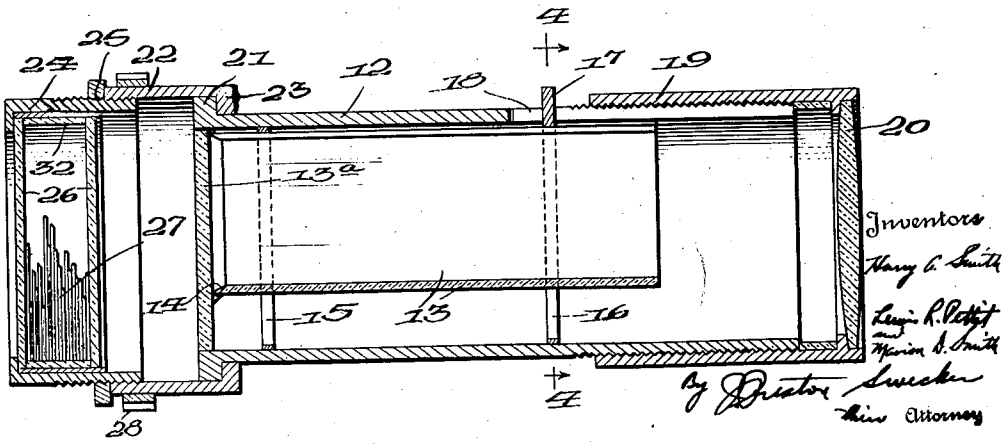


Fig. 2.



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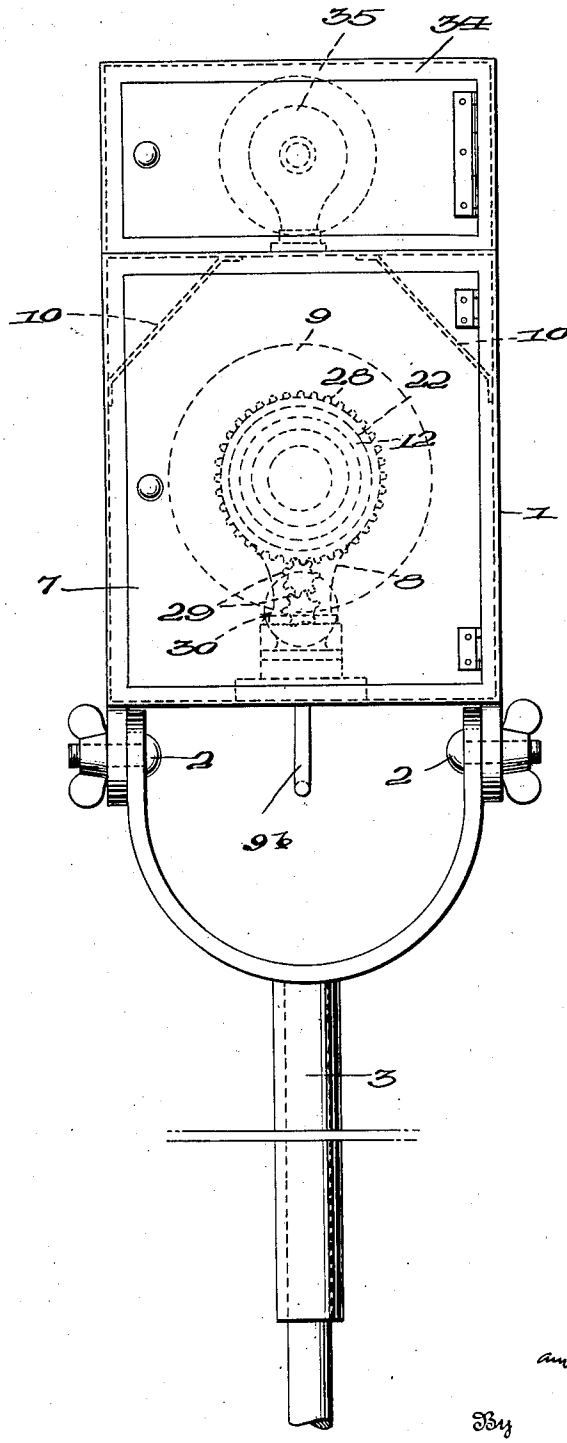
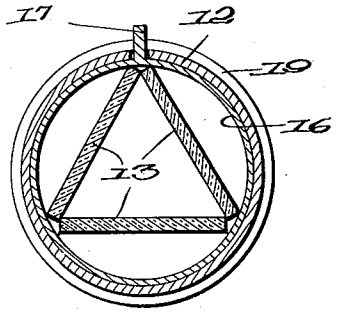


Fig. 3.

Fig. 4



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MACHINE FOR PROJECTING KALEIDOSCOPIC DESIGNS

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12 Claims. (Cl. 88—24)

This invention relates to an improvement in machines for projecting kaleidoscopic designs.

The object of the invention is to improve the kaleidoscopic projecting machine and to make it capable of projecting varying designs on a screen for advertising purposes or for amusement, or to assist in designing material on which designs or patterns are made, or for decorating buildings, such as theaters, ballrooms, private homes, or other buildings, etc.

We have improved the kaleidoscope by so assembling the mirrors that they may be adjusted according to the material used in the object holder to cause a more nearly equal distribution of light, which in turn will cause the design on the screen to be clear and bright over the entire surface of the screen, which was not accomplished by prior inventions, so far as we are aware. This also provides for properly spacing the mirrors from the object holder and keeping them in proper relation to each other. The proper distance of the mirrors from the object holder depends not only on the number of objects in the holder, but also on the size, shape, and density of the objects. When the objects in the holder are changed, unless the mirrors are correspondingly changed, the design will be shown very dimly at the edges and upper part. The ends of the mirrors facing toward the design holder and the light are beveled and silvered so as to eliminate a line around each image on the screen.

An improved form of design holder is provided and is so connected with the barrel that the holder may be rotated by any suitable power, such as a small electric motor, in order to present a constantly changing design, pattern, or advertisement on the screen.

In the accompanying drawings,

Fig. 1 is a sectional view through the casing of our projecting machine showing the kaleidoscope in side elevation;

Fig. 2 is a longitudinal sectional view through the kaleidoscope detached;

Fig. 3 is an end elevation of the projecting apparatus; and

Fig. 4 is a transverse sectional view through the kaleidoscope barrel and mirrors taken on the line 4—4 of Fig. 2.

The projecting apparatus is shown as comprising a casing 1 pivotally supported as at 2 on a suitable tripod or other support 3 to permit adjustment thereof to different angles.

The casing 1 is divided into compartments 4 and 5 by a vertical partition 6 therebetween, the compartment 5 being at the rear to which access may be had by a door 7. The compartment 5 encloses the source of illumination, such as one or more electric lamps 8 behind which is arranged a reflector 9 supported by a leaf spring 9a, on which the reflector may be moved by a handle 9b, attached to the reflector 9. When the handle 9b is moved in any suitable manner, it will cause the projected light to quiver which in turn will cause the designs on the screen to move up and down, and thereby time may be kept to music. For the purpose of ventilating the compartment 5 inclined shields 10 are arranged on opposite sides thereof and openings 11 in these shields out of alignment with adjacent openings in the side walls ventilate the chamber through the sides thereof.

The kaleidoscope is mounted in the chamber 4 and is shown as comprising a barrel 12 carried by a suitable support 13 in the chamber so that the end of the barrel will be in horizontal alignment with the lamp or lamps 8, the partition 6 and opposite end of the chamber 4 being formed with registering openings therefor. Mounted in the barrel 12 is an assemblage of three mirrors 13 arranged to form an equilateral triangle, although a greater or less number of mirrors may be used if desired, and should be arranged to form a geometrical design.

At the end of the assemblage of mirrors 13 toward the light, is a glass lens or object holder 13a, approximately fitting the inside of the barrel 12 and fastened to the ends of the mirrors as by cement or the like. The lens 13a will move with the mirrors, and may be used either with or without the revolving object holder hereinafter described. The lens 13a should be painted black around the edges to keep all light from between the mirrors 13 and barrel 12. By pasting a small strip on the lens 13a, a border of one or more colors may be placed around the picture when thrown on the screen, when used with the revolving object holder. By removing the objects from the revolving holder and placing two small strips on lens 13a, the screen will show as many as seventy-two strips. With only slight changes, many different designs may be produced. As the designs are stationary, they can be photographed or drawn from the screen.

The mirrors 13 may be constructed of metal, glass or other suitable material with inner reflecting surfaces and each of these has one end beveled as at 14 in Fig. 2, which beveled portions are silvered so as to eliminate lines around each image projected on the screen. The mirrors 13 are mounted in rings 15 and 16 near their opposite ends, which rings fit within the barrel 12 so as to be slidable longitudinally therein. The ring 16 has an upstanding arm 17 projecting through a slot 18 in a side of the barrel 12 to slide the mirrors lengthwise of the barrel for adjustment thereof according to the material used in the object holder and to increase the brilliancy of the light projected on the screen.

One end of the barrel 12 is shown as screw threaded to receive a lens holder 19 which is

threaded thereon and carries the lens 20 so as to adjust the lens relative to the barrel, although the holder may be slidable longitudinally of the barrel for adjustment of the lens with an omission of the screw threads if desired.

One end of the barrel 12 is provided with a circumferential flange 21 to receive a collar 22 which has an inturned flange 23 to hook over the flange 21 and hold the collar in place on the end of the barrel, but to permit turning of the collar about the barrel. A design holder 24 is screw-threaded into the outer end of the collar 22 where it is held in place by a lock-nut 25. The design holder 24 has two lenses 26 spaced apart to receive the design objects 27 which may be made up of small particles of colored glass and celluloid in various shapes and figures or other suitable material may be employed for the object if desired.

A small peripheral tube of glass, celluloid, or other material, preferably stained, surrounds the space between the lenses 26 as designated at 32 to aid in distributing the light on the screen brightening the images and making them clear and distinct throughout.

To present a constantly changing design on the screen we provided for constant rotation of the design holder through a gear 28 fixed to the periphery of the collar 22 and driven by speed reducing gears 29 from a motor 30 which is preferably located within the compartment 4 of the casing. The current to the electric motor 30 may be controlled in a suitable manner by a clock-switch or other controlling element or switch designated generally as 31 in Fig. 1. If desired, the design holder may be revolved by any other type of motor or by manual means.

The end of the casing 1 corresponding with the lens of the kaleidoscope is provided with guides 33 on opposite sides and bottom to receive a slide which may be constructed to vary the size or shape of the opening in the end, or to change the design or color projected on the screen.

A small casing 34 is arranged above the main casing 1 or at one side or below the same, containing illuminating means 35 for showing or advertising a name which may be thrown on the screen in association with the design.

We claim:

1. A kaleidoscope comprising a barrel having a plurality of mirrors assembled therein in a geometrical design, means for holding the mirrors in assembled relation, and means connected with said holding means and projecting through a side of the barrel for causing unitary adjustment of all of the mirrors longitudinally of the barrel.

2. A kaleidoscope comprising a barrel having a plurality of mirrors arranged therein, a plurality of rings encircling the mirrors within the barrel and holding the mirrors in proper assembled relation, said barrel having a slot in a side thereof, and an arm attached to at least one of the rings and projecting through the slot for adjustment of the mirrors lengthwise of the barrel.

3. A kaleidoscope comprising a barrel having a plurality of mirrors assembled therein in a geometrical design, each of the mirrors having an end thereof beveled, said beveled portions being silvered.

4. A kaleidoscope comprising a barrel, a collar journaled on an end thereof, a design holder detachably secured to the collar and having spaced lenses therein to receive design forming material therebetween, and an approximately transparent tube surrounding the space between the lenses and disposed within the design holder.

5. A kaleidoscope comprising a barrel having mirrors assembled therein, a design holder connected with the barrel and having spaced lenses therein to receive design-forming material therebetween, and an approximately transparent tube between the lenses and surrounding the space for the design-forming material for enhancing the designs thereof.

6. A kaleidoscope comprising a barrel having mirrors assembled therein, a design holder connected with the barrel and having spaced lenses therein to receive design-forming material therebetween, an approximately transparent tube between the lenses and surrounding the space for the design-forming material for enhancing projected designs thereof and illuminating means for the kaleidoscope.

7. A kaleidoscope comprising a barrel having a plurality of mirrors assembled therein, a collar journaled on an end of the barrel, a design holder detachably secured to the collar to receive design forming material therein, and means for rotating the collar and design holder relative to the barrel.

8. A kaleidoscope comprising a barrel having a plurality of mirrors assembled therein, a collar journaled on an end of the barrel, a design holder having a screw threaded connection with the collar adjustably securing the same thereto, means locking said design holder in adjusted position relative to the collar, and means for rotating the collar and design holder relative to the barrel.

9. A machine for projecting kaleidoscopic designs comprising a casing having a kaleidoscope mounted therein, illuminating means for said kaleidoscope, a reflector for said illuminating means, and a flexible spring mounting for said reflector permitting bodily movement thereof to produce quivering effects of the illuminating means.

10. A machine for projecting kaleidoscopic designs comprising a casing having a kaleidoscope mounted therein, illuminating means for said kaleidoscope, a reflector for said illuminating means, a flexible spring mounting for said reflector permitting bodily movement thereof, and means for causing quivering motion of the reflector on said flexible spring mounting.

11. A machine for projecting kaleidoscopic designs comprising a kaleidoscope, illuminating means for said kaleidoscope, a reflector for said illuminating means, and a leaf-spring supporting said reflector for quivering motion of the reflector relative to the illuminating means.

12. A machine for projecting kaleidoscopic designs comprising a kaleidoscope, illuminating means for said kaleidoscope, a reflector for said illuminating means, a leaf-spring supporting said reflector, and means for moving said reflector on the leaf-spring to swing the axis of the reflector relative to the illuminating means.

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