March 29, 1938. E. N. ANKETELL 2,112,642

KALEIDOSCOPE

Filed Dec. 11, 1936

Fig. 1.

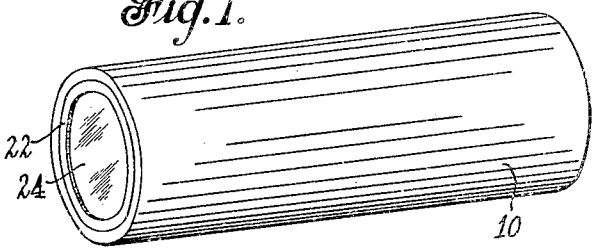


Fig. 2.

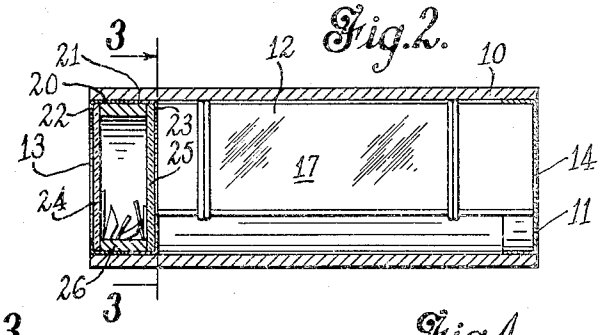


Fig. 3.

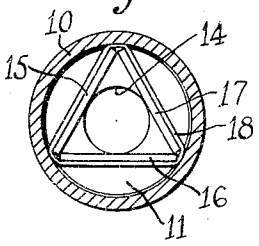


Fig. 4.

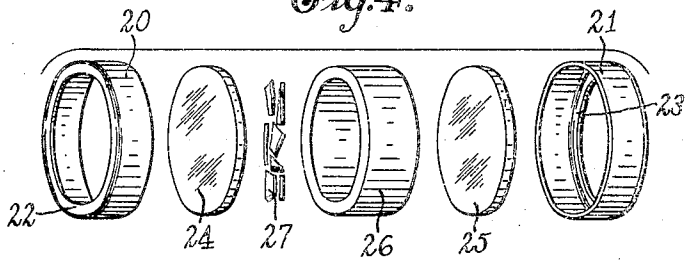


Fig. 5.

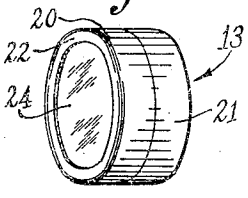
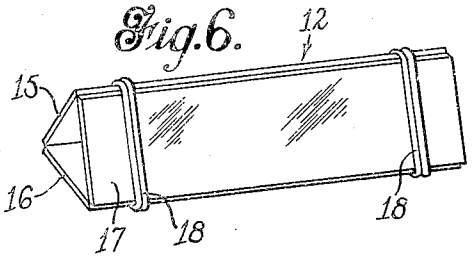


Fig. 6.



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UNITED STATES PATENT OFFICE

2,112,642

KALEIDOSCOPE

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Application December 11, 1936, Serial No. 115,374

3 Claims. (Cl. 88—15)

This invention relates to optical apparatus, and more particularly to a kaleidoscope of a simple and inexpensive character which may be fabricated from separate parts by children, the parts being those embodied in a complete optical set from which other devices as well may be made. In this manner the child constructs its own kaleidoscope and thereby learns the nature of the parts necessary for such a device, as well as securing an insight into the principles of its operation.

Moreover, the parts of the device when assembled are designed to be frictionally held together so that no tools or fastening elements are required. This is a distinct advantage, as it not only provides that the device may be constructed from the separate parts very quickly, but also renders its construction so easy that the difficulty of placing the parts together will not overcome the interest of the child in the completed device.

One object of the invention, therefore, is the provision of a kaleidoscope of novel and simple construction.

A further object of the invention is the provision of an optical device of the character described which may be readily and easily constructed by means of the assembly of a number of simple parts.

A still further object of the invention is the provision of a kaleidoscope which may be assembled from a number of simple parts designed to be held in place by friction, whereby no tools or fastening devices will be necessary in its construction.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a perspective view of a kaleidoscope embodying my invention;

Fig. 2 is a longitudinal sectional view of the same;

Fig. 3 is a transverse section on line 3—3 of Fig. 2;

Fig. 4 is an exploded view of the parts entering into the construction of the cell of the kaleidoscope;

Fig. 5 is a perspective view of the assembled cell; and

Fig. 6 is a perspective view of the reflecting prism.

As shown in the drawing, the kaleidoscope consists of a tubular body member 10 which may be made, for example, of a firm cardboard, the exterior surface of which may be quite smooth and colored to represent a metallic tube. Within this tube are mounted the various parts of the kaleidoscope such as the eye-piece 11, the reflecting prism 12, and the cell 13, the numerals designating each of these parts in its entirety.

The eye-piece consists of a cup-shaped member, the wall of which fits frictionally within the tube 10, as shown in Fig. 2, and the bottom portion of which is provided with the sight opening 14, through which the observer looks.

The reflecting prism 12 is shown in Fig. 3, and may consist of three flat pieces of plain glass 15, 16, and 17 placed together to form a hollow triangular prism and held in this relation by the rubber bands 18. This member also fits slidably within the tubular body, the sides of the prism being of such size as to form chords on the inner diameter of the tube, as shown in Fig. 3, so that the prism will fit snugly within the tube and be held in place by engagement with the inner surface of the tube.

The cell 13 is shown in its entirety in Fig. 5, the parts being shown in exploded relation in Fig. 4. This cell comprises end ferrules 20 and 21, these ferrules each being provided at one edge with an inwardly projecting flange designated at 22 and 23. A glass disk 24 is placed within the ferrule 20 against the flange 22, and a second glass disk 25 is placed within the ferrule 21 against the flange 23, the flanges preventing these disks from dropping outwardly through the ends of the ferrules.

The tubular spacing member 26 is then inserted within one of the ferrules, for example, the ferrule 20, this spacing member serving to hold the disk 24 against the flange 22. Pieces of colored celluloid or similar objects 27 may then be dropped into the spacing tube 26 on the glass 24. The ferrule 21 is then slipped over the spacing member 26, the adjacent edges of the ferrules 20 and 21 meeting at the center of the spacing member. That is, this member is of sufficient length so that, when the edges of the ferrules are telescoped thereover to meet at the central portion thereof, the glass disks 24 and 25 are held against the respective flanges 22 and 23 by the spacing member, as clearly shown in the sectional view in Fig. 2.

It is thus seen that the kaleidoscope is formed of very simple parts and may be readily assembled and disassembled so that it may be very attractive to a child for this reason, as well as on account of the pleasure the child derives from its use. The parts are so designed that certain

of them may be employed in other relations in an entire optical set to construct other devices so that fewer parts will be required in the set than if each part could be used in the construction of one device only. It may be noted that the disk **24** is preferably one of frosted glass, while the disk **25**, which is nearer the eye-piece, may be a plain glass disk.

It may also be noted that each of the members **15**, **16** and **17**, forming the reflecting prism, is merely a piece of ordinary transparent glass. The inner surface of the tubular body **10** will preferably be of a dark color so that the transparent glass members form reflecting surfaces. Obviously mirrors may be used instead of transparent glass if desired.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. A kaleidoscope comprising a tubular body having an eye-piece mounted at one end thereof and an object cell frictionally fitted within the body at the opposite end thereof, said object cell being of unitary character and insertable into the body as a unit, and comprising cell wall members and metal ferrules at the outside of the cell which frictionally and detachably hold the cell wall members in assembled relation, and the cell within the body.

2. A kaleidoscope comprising a tubular body member having an eye-piece at one end and at the opposite end an object cell frictionally fitted in the body at the inside thereof, so that the end of the cell lies substantially flush with the end of the body, said cell comprising a pair of glass discs, a spacing sleeve between said discs, and flanged metal ferrules telescoping over the ends of the sleeve and frictionally holding the discs in place against the ends of the sleeve, said ferrules frictionally engaging the inner surface of the body, said cell being insertable into, and removable from, said body as a unit.

3. An object cell for a kaleidoscope, said cell comprising a pair of glass disks, a spacing sleeve between said disks, object pieces within said sleeve, and means securing said disks upon the sleeve, said means comprising flanged metal ferrules telescoping over the ends of the sleeve, and the edges of said ferrules meeting each other upon the outer surface of the sleeve to form a metallic cover therefor adapted to engage the inner surface of a kaleidoscope tube.

EDWARD N. ANKETELL.