

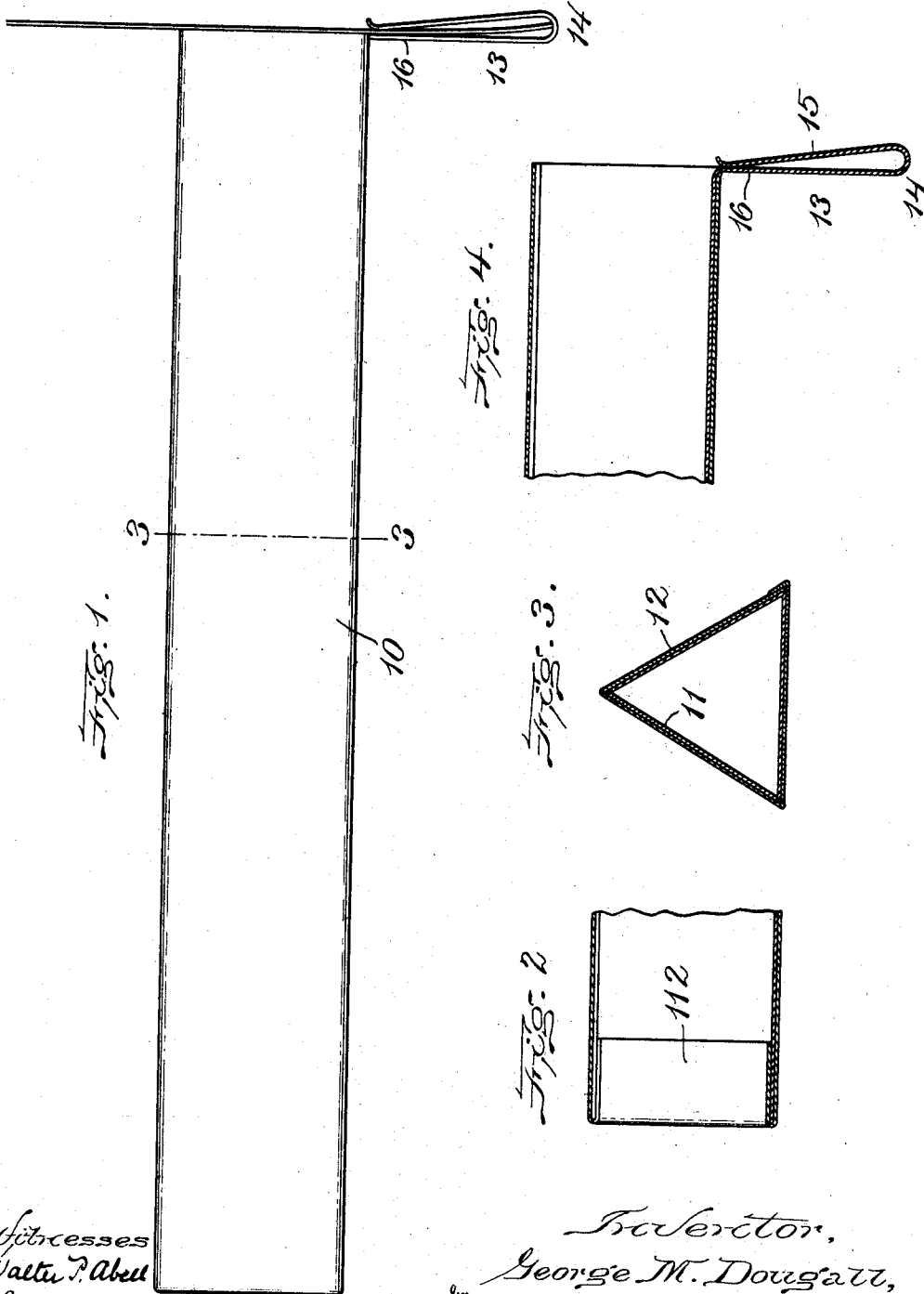
G. M. DOUGALL.
KALEIDOSCOPE.

APPLICATION FILED NOV. 14, 1905.

984,198.

Patented Feb. 14, 1911.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 5.

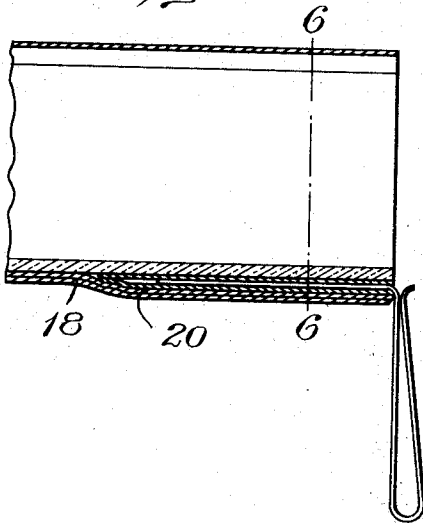


Fig. 6.

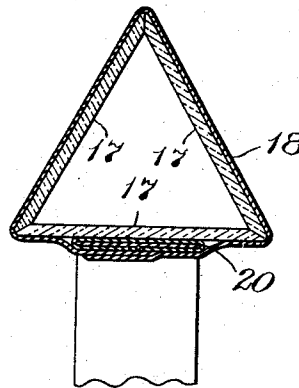


Fig. 7.

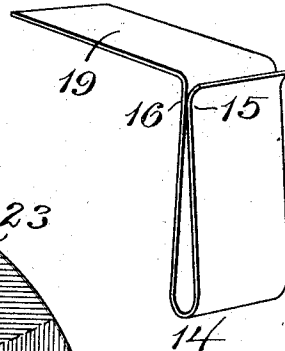


Fig. 8.

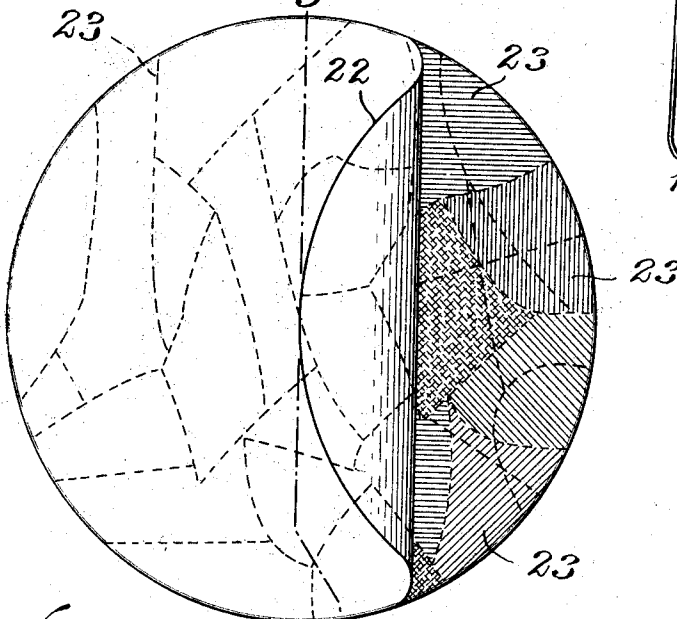
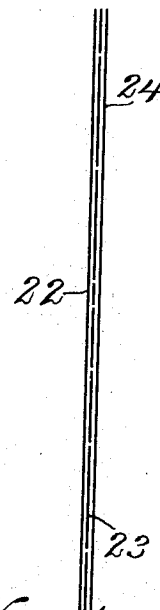


Fig. 9.



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In Witness Whereof
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UNITED STATES PATENT OFFICE.

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KALEIDOSCOPE.

984,198.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed November 14, 1905. Serial No. 287,245.

To all whom it may concern:

Be it known that I, GEORGE MATILE DOUGALL, of Wolfville, Nova Scotia, Canada, have invented certain new and useful Improvements in Kaleidoscopes, of which the following is a specification.

This invention has relation to kaleidoscopes, and has for its object to provide certain improvements therein, the nature of which is illustrated on the accompanying drawings, explained in the following specification, and set out with particularity in the appended claims.

One of the principal objects of the invention is the simplification of kaleidoscopes by eliminating the eye-piece and the exterior cylindrical barrel which have hitherto been deemed necessary in devices of this character.

In carrying out my invention, it is my purpose to have the reflectors constitute the barrel or tube, the unobstructed aperture in the end of the tube serving the purpose of an eye-piece. The tube itself is preferably open from end to end, and the reflectors are secured together, according to my invention, by an external layer or covering of suitable flexible material such as paper or cloth. The tube may be made in a variety of ways, being in cross-section in the form of a polygon with three or more sides. I find that, for general purposes, a tube having three sides arranged to form in cross-section an equilateral triangle is well suited for the purpose of the invention.

The holder, which may be formed integrally with the tube, or which may be detachably connected thereto, is preferably so constructed and arranged as to hold the plates hereinafter described at right angles to the tube, and across the end thereof, without extending over the end, or casting a shadow thereon. This holder may itself be constructed in any one of a variety of ways, but preferably I construct it in the form of a spring clip, the arms of which will form opposing jaws for the purpose of yieldingly engaging both faces of a plate.

The plate itself is made of some translucent material and is preferably circular or disk-shaped. It is quite apparent that the material of which this plate is constructed may be any suitable substance selected for the purpose, as, for instance, paper, or gelatin, celluloid, or other light-weight, rela-

tively flexible material. In some instances a sheet or plate formed of an opaque substance which may be slotted or pierced in various designs to let the light through, may be used for this purpose alone or in combination with translucent plates or sheets.

Referring to the drawings,—Figure 1 represents one embodiment of the invention. Fig. 2 represents a longitudinal vertical section of that end of the tube, which is applied to the eye. Fig. 3 represents a section on the line 3—3 of Fig. 1. Fig. 4 represents a vertical longitudinal section of the end of the tube on which is located the holder. Fig. 5 represents in section the end of a kaleidoscope, the body of which is formed of glass. Fig. 6 represents a section on the line 6—6 of Fig. 5. Fig. 7 represents the holder detached. Fig. 8 represents one of the disks or translucent plates that may be applied. Fig. 9 is in the nature of a diagrammatic section on line 9—9 of Fig. 8, to show the layers which constitute the plate or disk.

In Figs. 1 to 4, the main body 11 of the kaleidoscope is formed of sheet metal having a burnished or polished face, so that it is capable of reflecting light. Any suitable metal may be used for this purpose, as tin or zinc. The tube, in the form shown, is triangular in cross-section, being constructed, if desired, of a sheet of metal which is bent along longitudinal lines.

The side edges or corners of the tube are illustrated as parallel, but the sides of the tube might converge toward one end. That part of the tube which is to be applied to the eye I may term the "inner end", whereas the part to which the plates or disks may be applied may be termed the "outer end". The inner end itself may be reduced, but I find that for general purposes a tube such as illustrated is more satisfactory, and the inner end may be brought close to the face so that the person may see into the tube with facility, and the side light may be more effectively excluded.

Inclosing the metallic shell or tube is a layer 12 of paper, cloth, or any other suitable fabric, which serves to form a protecting cover for the tube, and also to hold the meeting edges of the reflectors together. This outer cover may be plain or ornamented, and may bear advertising matter or directions for the use of the kaleidoscope. The cover when applied to the body of the

tube is longer than the said body so that the projecting end may be folded inwardly, as indicated at 112 in Fig. 2, so as to form a limit for the reflections on the inner faces of the sides of the tube, and also to protect the face of the user from the end edges of the body. At the outer end of the tube there is a holder which projects outwardly from the tube, substantially at right angles thereto, so as to be out of the longitudinal lines of the bore of the tube. This holder, in Fig. 4, is indicated as a whole at 13. In this case it consists of a metallic strip formed integrally with one of the sides of the tube, said strip being doubled upon itself, as at 14, to provide a free spring end 15, and thus constitute a jaw to cooperate with the opposing jaw 16 and forming a spring clip. Between the jaws of the holder may be inserted a plate, such as will be hereinafter described. This holder, although at practically right angles to the body, is slightly inclined outwardly, so that the plate or sheet will be held against the open end of the tube, to prevent the entrance of side light.

It is quite apparent that in lieu of a metallic body I may employ a body formed of strips of glass, as illustrated in Figs. 5 and 6. In this instance, the sides of the tube are formed of strips 17 of looking-glass, which are bound together by the outside cover or layer 18 of paper or cloth, as hereinbefore described. Plain glass without a mercury backing may be used, and in such case I form the cover 18 of opaque material, such as heavy dark-colored paper.

In Fig. 6, the holder is shown as detachable from the outer end of the tube, said holder being shown in detail in Fig. 7. It is provided with a shank 19 which may be removably inserted in a socket 20, formed of suitable material and secured to one of the faces of the tube near the outer end thereof by the covering 18.

Inasmuch as the plates are preferably in circular form, I shall refer to them as "disks". As previously indicated, these disks may be formed of any suitable flexible or pliable material, such as paper, celluloid, gelatin, or the like, which is translucent. For all general purposes, however, I prefer to construct these disks of layers of paper, although I do not limit myself to this precise construction, or to this particular material.

In constructing the disks, I paste upon one layer of paper 22 (see Figs. 8 and 9) a series of small pieces 23 of colored paper, and then upon this layer of colored paper I paste a third layer 24 of thin white paper. This last-mentioned layer may be omitted, if desired. The bits of colored paper may be arranged with their edges meeting, or they may overlap. In addition to the bits of

paper I may use thin bits of sheet metal which are opaque, or opaque paper, or natural objects, as leaves, grasses or flowers, to produce different kaleidoscopic effects. By constructing the disks of paper, they may be easily and cheaply made, and they are very effective when used with the tube. Since the disks are to be detachably placed in the holder, they may be constructed with relatively great diameters, being in effect two or three times the diameter of the tube. The disks are so held in the holders that they may be moved in any direction transversely of the tube to bring any particular part of the disk into alinement with the bore of the tube.

It will be seen that the described disk is translucent throughout its entire area, so that all portions of it are adapted to be utilized in producing optical effects in a kaleidoscope. Moreover, the described flexible construction of the disk makes it practically non-breakable so that it is adapted to withstand rough usage, and is not liable to be injured if dropped from a considerable height as from the kaleidoscope to the floor.

A kaleidoscope constructed as hereinbefore described possesses many features of advantage over those which have been heretofore proposed or used. The form of the tube, particularly when it is triangular in cross-section, enables it to be more easily packed for shipment than heretofore. The tube may be handled more easily than one which is round or cylindrical, and it fits well between the fingers and thumb, and takes up less space, for the same breadth of reflectors, than a round barrel inclosing such reflectors. The tubes may be nested where it is desired to ship different sizes.

It may be stated that the tube or reflector-box, as it may be termed, is constructed of strips of suitable material bound together by the outer layer or covering of fabric, cemented or glued thereto. Although the strips in Fig. 3 may have their edges bent together, nevertheless the strips may be formed separately.

Having thus explained the nature of the invention, and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the modes of its use, I declare that what I claim is:

1. A kaleidoscope comprising a tube or reflector-box, and a detachable plate-holder consisting of a strip of spring metal having clamping jaws adapted to be attached to the outer end of said tube or reflector-box.

2. A kaleidoscope comprising a tube or reflector-box and a detachable holder adapted to be attached to the outer end of said tube or reflector-box, said holder being formed of a metallic strip bent to provide opposing yielding jaws adapted to hold a plate at sub-

stantially right angles to the bore of said tube or reflector-box.

3. In a kaleidoscope, the combination with a tube or reflector-box and a laterally-extending holder composed of separable opposed jaws offset from the box, of an exposed disk which is considerably larger than the bore of said tube or reflector box and which is frictionally engaged with said jaws and adapted to be moved edgewise in any

direction to bring any part of said disk into alinement with the bore of said tube or reflector-box.

In testimony whereof I have affixed my signature, in presence of two witnesses. 15

GEORGE MATILE DOUGALL.

Witnesses:

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C. C. STECHER.