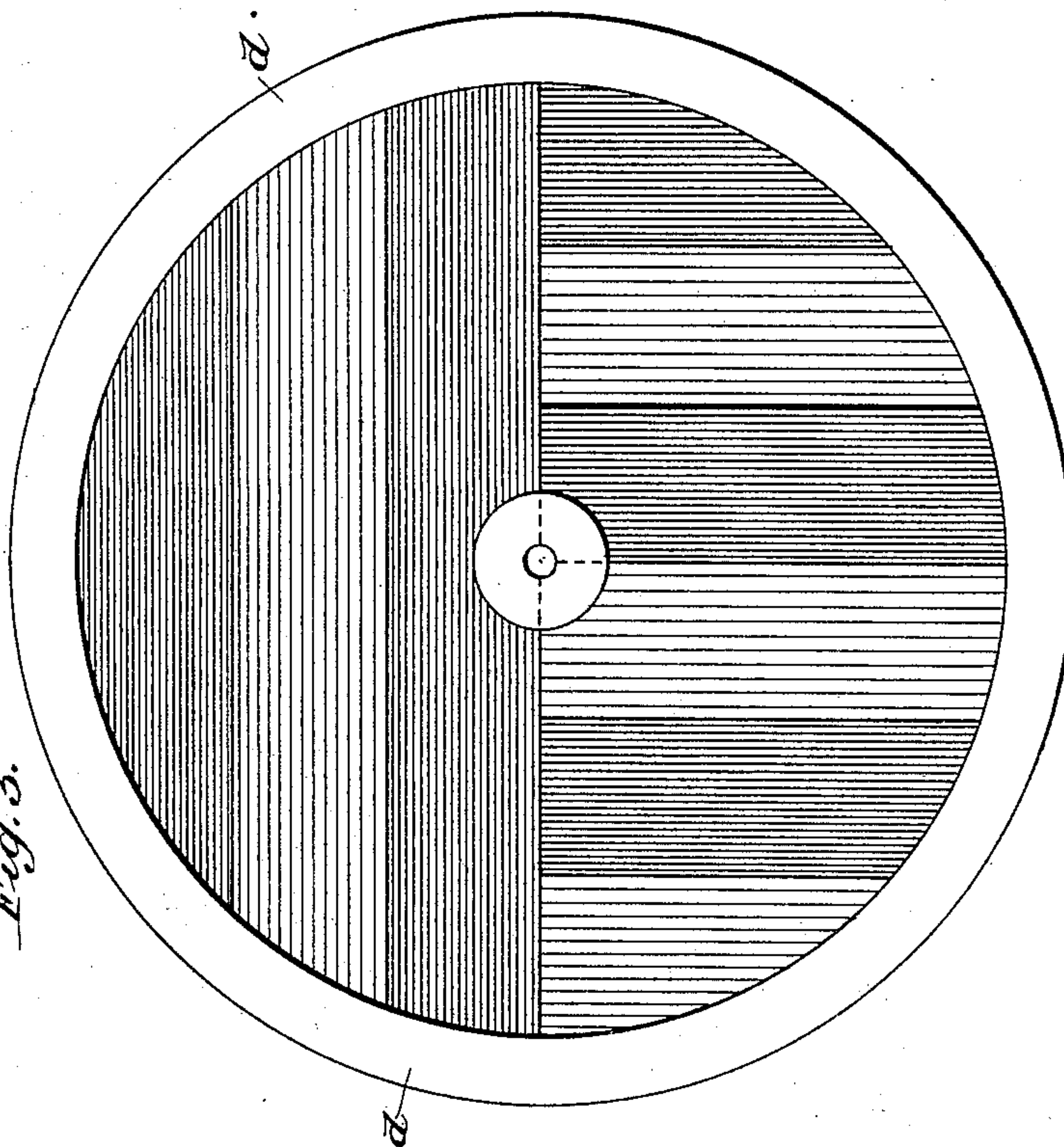
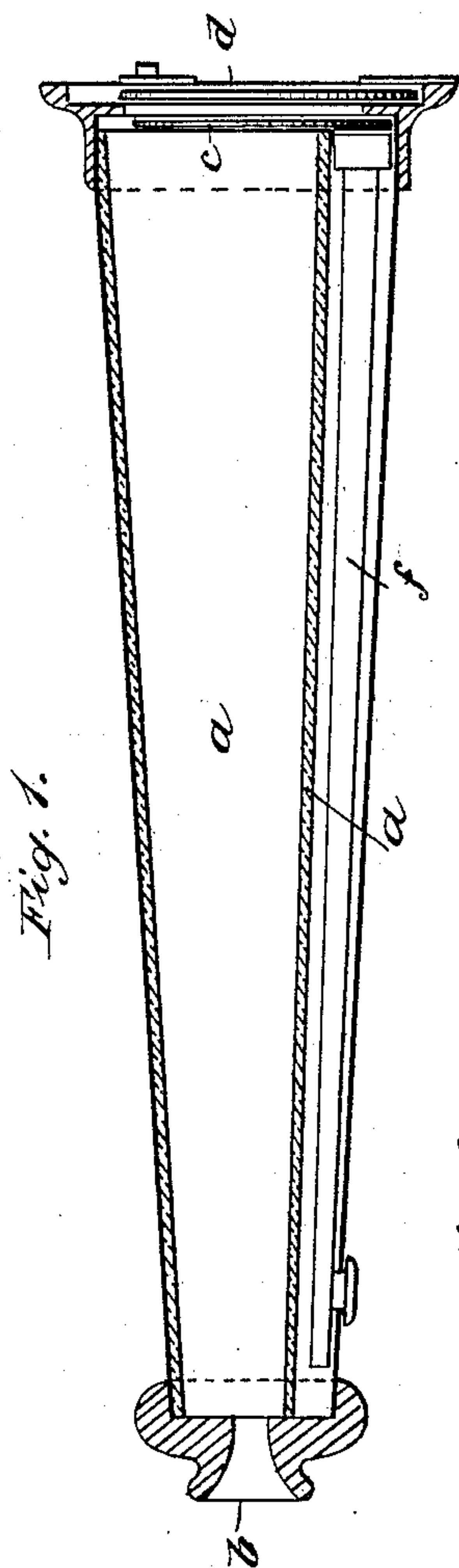
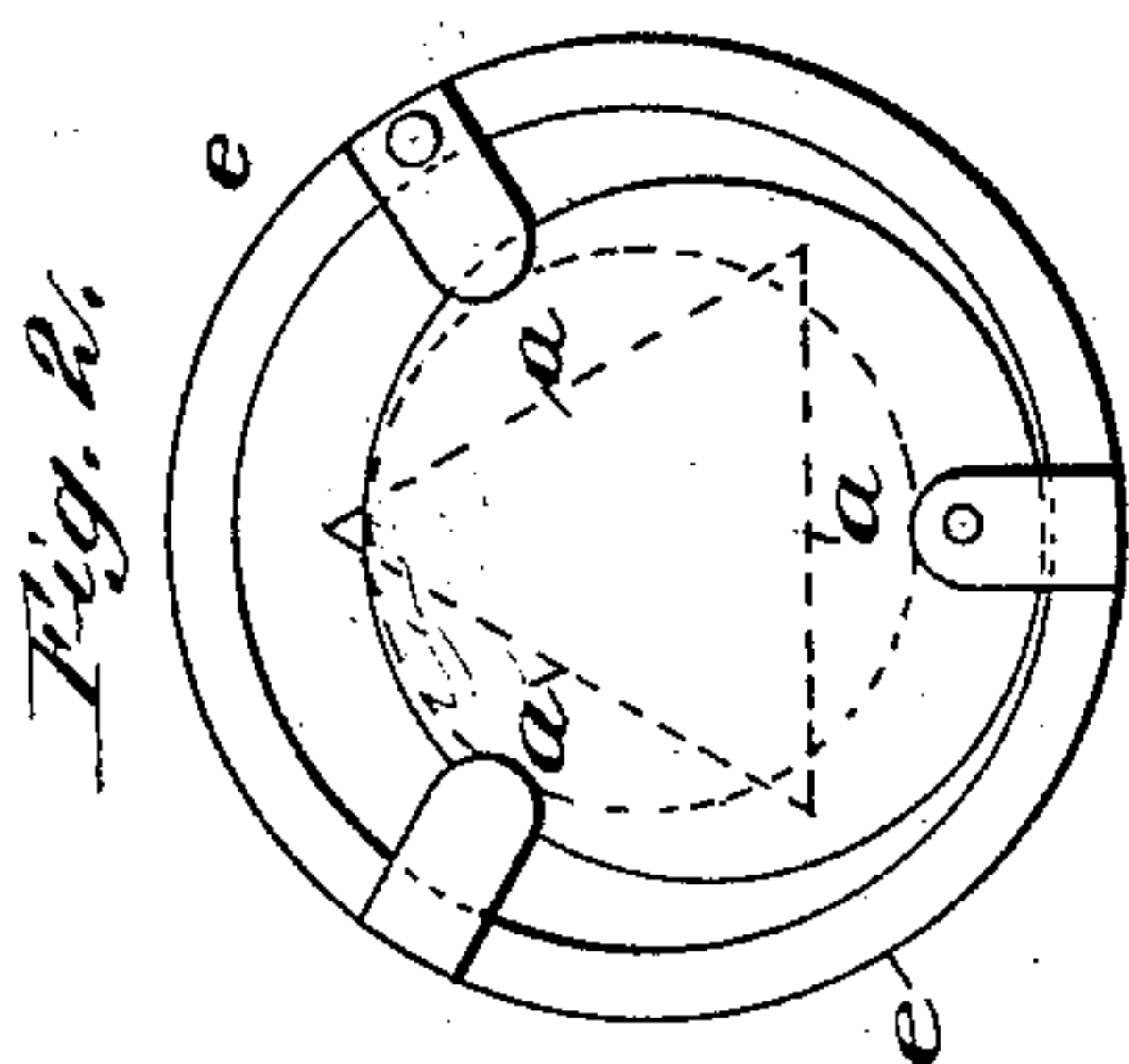


(No Model.)

J. W. LOVIBOND.  
KALEIDOSCOPE.

No. 407,937.

Patented July 30, 1889.



WITNESSES:

*W. M. Twitchell.*  
*C. Bedgwick*

INVENTOR:  
*J. W. Lovibond.*  
BY *Munn & Co.*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOSEPH WILLIAMS LOVIBOND, OF SALISBURY, COUNTY OF WILTS, ENGLAND.

## KALEIDOSCOPE.

SPECIFICATION forming part of Letters Patent No. 407,937, dated July 30, 1889.

Application filed July 6, 1888. Serial No. 279,233. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH WILLIAMS LOVIBOND, tintometer manufacturer, at present residing at 26 St. Ann Street, Salisbury, in the county of Wilts, England, have invented new and useful Improvements in Kaleidoscopes, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of optical instruments known as "kaleidoscopes," and particularly those used for designers' purposes; and it has for its object to enable a great variety of combinations of figures and colors to be obtained, both the figures and colors being to a certain extent predetermined, and being independently variable and capable of reproduction at will, in contradistinction to the fortuitous character of the combinations of design and color formed by the accidental juxtaposition of variously shaped and colored pieces of glass used in the ordinary kaleidoscope.

My invention consists, mainly, in the substitution for the irregularly-shaped and variously-colored loose pieces of glass ordinarily employed of disks—one, two, or more in number—movable independently by a rolling motion in the field of view, so as to separately or conjointly produce in the instrument designs of great variety, which are yet capable of being reproduced or repeated at will, and of being indefinitely varied by the substitution of other disks.

Reference is to be had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a longitudinal section; Fig. 2, an end view of the instrument provided with rolling disks. Fig. 3 is a plan view of a party-colored disk, and Fig. 4 is a sectional view of the same.

The same letters of reference indicate the same parts in the figures.

The disks, which I will respectively distinguish as the color and pattern disks, are generally two in number, one of each kind. They are placed in front of one another in the field of view, and are independently adjustable; but the invention comprises the use with the instrument of either a color or a pattern disk separately, and likewise the use of several of

the one kind of disk conjointly with one or more of the other kind.

The adjustment of the disks is effected by rotating the instrument, the disks *c d* being arranged to roll around the inner circumference of a rim or cap *e*, having a circular aperture and fitted on the tube of the instrument. These disks are smaller than the inner circumference of the rim *e* and would generally be of different diameters, so that when the instrument is turned round their rolling motion will bring different portions and different combinations of the disks into the field of view. The cap is readily removable from the tube to enable other disks to be substituted, and it may also be used to clamp the disks in any given position; or a disk-holder may be provided in the form of a slide *f*, adapted to press against the inner disk, so as to hold it stationary and fix the design, while the other is free to be revolved to vary the colors, or vice versa, as the case may be. This rolling motion so varies the positions of the disks in the field of view as to produce a great variety of design, while the arrangement is compact and the disks are prevented from injury.

The colored disk is composed of party-colored glass or of differently-colored segments of glass cemented or otherwise joined together. These segments may either be of plain-colored glass or be ribbed, corrugated, striated, figured, or otherwise variegated, and they may be in the form of sectors or strips, or of regular or irregular pieces arranged mosaically in an indefinite variety of ways and in various combinations of colors. The pattern-disk may be an opaque or semi-opaque diaphragm pierced with apertures of various shapes constituting the elements of an infinite variety of designs produced by reflection in the mirrors of the instrument. In combination with such a diaphragm and party-colored disk or disks I may use one or more disks of ribbed or corrugated glass, the ribs or corrugations modifying the effect of the designs produced by the perforations of the diaphragm.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

The combination, with a kaleidoscope, of two or more disks placed in front of one another and independently movable by rolling, as described, in the field of view of the instrument, one or more of the disks being translucent and party-colored or made of differently-colored segments united together to form a solid disk, and one or more of the disks being opaque with through-apertures, as and  
5 for the purpose specified.  
10

The foregoing specification of my improvements in kaleidoscopes signed by me this 2d day of June, 1888.

JOSEPH WILLIAMS LOVIBOND.

Witnesses:

G. W. WESTLEY,

WALTER J. SKERTEN,

*Both of 17 Gracechurch Street, London, E. C.*