C. W. DRUMMOND.

KALEIDOSCOPE.

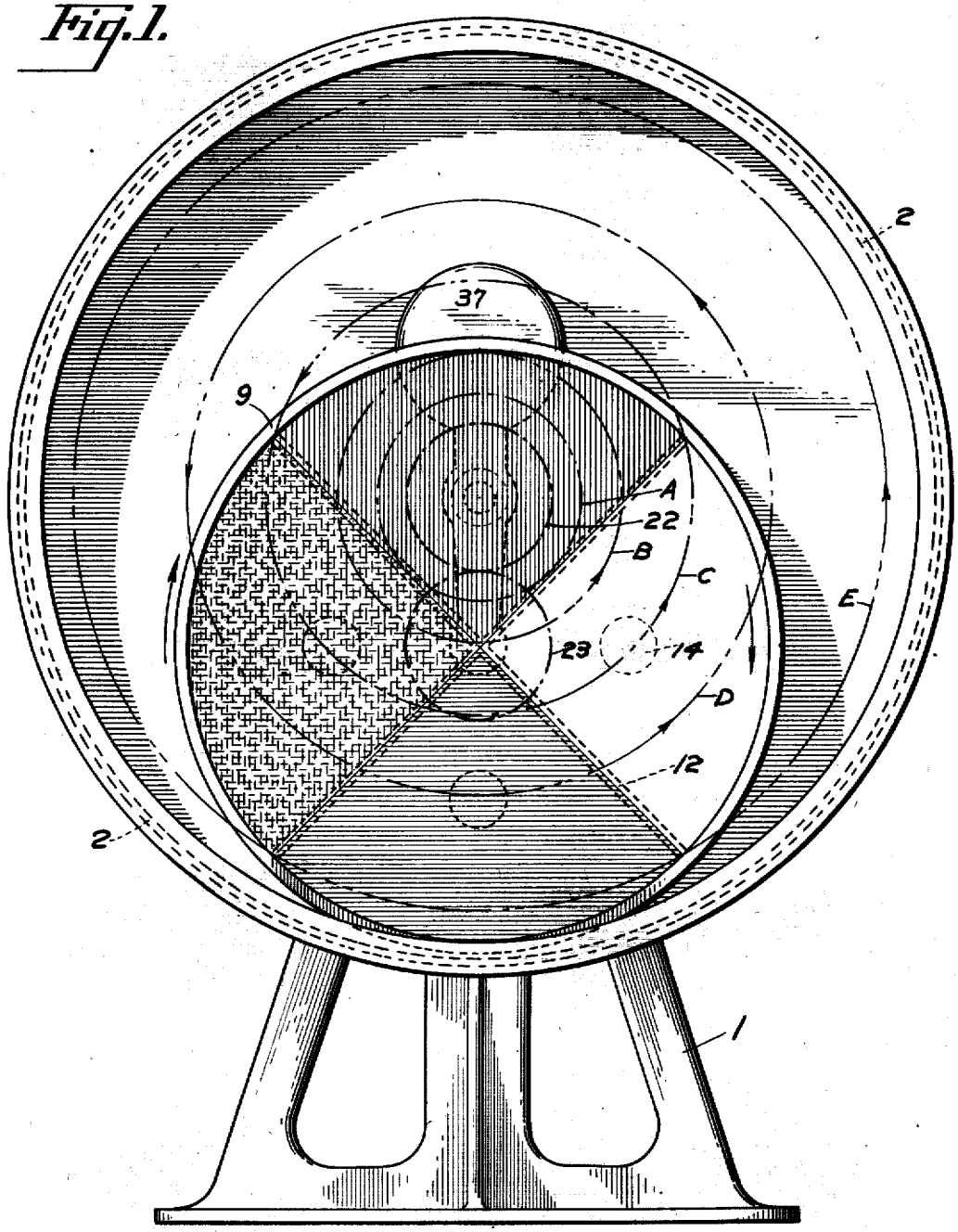
APPLICATION FILED MAY 29, 1918.

1,313,848.

Patented Aug. 19, 1919.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor.

Charles W. Drummond.

By Arthur L. Slee

Atty.

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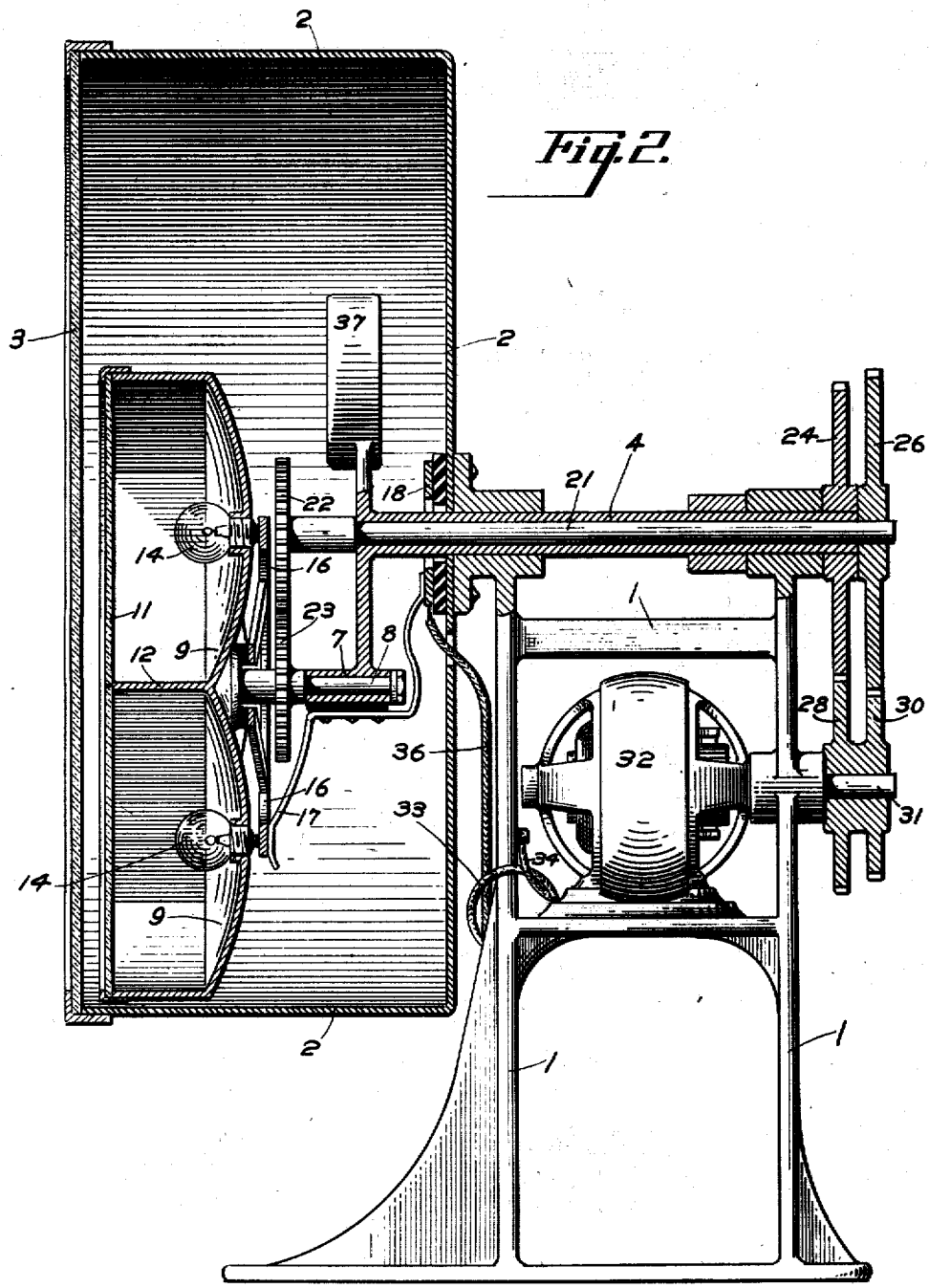
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2 SHEETS—SHEET 2.

Fig. 2.



Inventor:

Charles W. Drummond

By Cutler L. S. Co.

Atty.

UNITED STATES PATENT OFFICE.

CHARLES W. DRUMMOND, OF SAN FRANCISCO, CALIFORNIA.

KALEIDOSCOPE.

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To all whom it may concern:

Be it known that I, CHARLES W. DRUMMOND, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented a new Improvement in Kaleidoscopes, of which the following is a specification.

My invention relates to improvements in kaleidoscopes wherein a rotating member having colors thereon is revolved around a center to bring successive colors into coincidence with the center of revolution; and the objects of my invention are

First, to provide an improved kaleidoscope;

Second, to provide an improved device of the character described whereby the effect of combining different colors in different proportions may be observed; and

Third, to provide an improved kaleidoscope adapted to present a constantly changing variation of colors.

I accomplish these several objects by means of the improved device disclosed in the drawings forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout the said specification and drawings, and in which—

Figure 1 is a front elevation of my improved kaleidoscope with the translucent glass removed from the front of the housing; and

Fig. 2 is a vertical sectional view of the device.

Referring to the drawings a suitable frame 1 has a cylindrical housing 2 secured to the front thereof, said housing 2 being provided with a ground glass 3 or other suitable translucent member.

A hollow crank-shaft 4 is rotatably mounted within suitable bearings on the frame 1 and is provided with a hollow crank pin 7 within which is rotatably mounted a shaft 8 of a hollow member 9 having a translucent member or glass 11 in the front portion thereof and adjacent to the translucent member 3 of the housing 2.

The hollow member 9 is divided into sectors, preferably quadrants, by means of partitions 12 to form compartments in back of the glass 11 as disclosed in Fig. 1 of the drawings.

The glass 11 is colored differently in front of each compartment. Preferably the primary colors, red, yellow, blue and also white are arranged in front of the several compartments.

Lamps 14 are located within each compartment and are screwed into suitable sockets formed in the back of the housing or hollow member 9. The contact point of each lamp 14 bears upon a ring 16 carried by and insulated from the back of the hollow member 9. A suitable contact spring 17 is carried by and insulated from the hollow crank 7 of the hollow crank-shaft 4 and has one end in sliding contact with the second ring 18 secured to and insulated from the housing 2 and arranged concentric with the hollow shaft 4.

A shaft 21 is rotatably mounted within the hollow crank-shaft 4 and is provided with a gear 22 meshing with a gear 23 on the colored member 9.

The hollow crank-shaft 4 is provided at its end opposite the crank 7 with a gear 24 while the adjacent end of the shaft 21 is provided with a gear 26 slightly larger in diameter than the gear 24.

The gears 24 and 26 are in mesh with and driven by gears 28 and 30 respectively of suitable ratios to drive the hollow shaft 4 at a slightly different speed than the speed of the shaft 21 the purpose of which will hereinafter be more fully set forth.

The gears 28 and 30 are secured to the shaft of a suitable motor 32, or said gears 28 and 30 may be rotated by hand or any other suitable motive power.

An electric conductor 33 leads to the motor to supply electrical energy to operate the same and a return conductor 34 leads from the motor 32 to the frame 1 so that the current after leaving the said motor 32, traverses the frame 1, shaft 4 and crank-pin 7, shaft 8 and housing 9 to one side of the lamps 14 and returning through said lamps to the ring 16 is carried by the contact spring 17 to the insulated ring 18 within the housing 2 from whence a conductor 36 conducts the current to its source.

A suitable weight 37 is diametrically opposed to the crank 7 of the hollow crank-shaft 4 to balance said crank-shaft and thereby reduce vibration due to centrifugal force when the housing or member 9 is revolved around the center or axis of the shaft 4.

Referring to Fig. 1 of the drawings it will

be noted that the colors are arranged radially or in sectors, said sectors meeting at a point coincident with the axis of the crank 7 and the approximate centers of the various colors will coincide with the axis of the crank-shaft 4 when the member 9 is rotated on the crank-pin 7.

In operation the crank-shaft 4 is rotated to revolve the member 9 around the axis of said crank-shaft 4. If the gears 24 and 26 were of the same diameter and rotated at the same speed it is obvious that the colors yellow, blue and white would be revolved around the red for the reason that the member 9 would remain stationary upon the crank-pin 7.

Assuming that the lamps 14 are lighted colors would be diffused through the colored translucent member 11 of the housing or member 9 and the translucent member 3 in the housing 2.

The result would then be a solid disk of red color within the limits of the double-dot-and-dash circle A. Between the circles A and B the color red would predominate combined with a small portion of white and yellow thereby imparting an orange tinge to the ring of color surrounding the red central disk.

As the annular space between the rings B and C intercepts and includes the apex of the blue sector it is evident that said space would disclose a mixture or combination of red, yellow, blue and white and therefore present a different shade of color than that of the other rings.

The space between the circles C and D would present no red color but a combination of yellow, blue and white or a light green color. Similarly the ring of color between the rings or circles D and E would also be a combination of yellow, blue and white but it should be noted that the amount of yellow and white colors decrease as the outer edge of the housing 2 is approached while the amount of blue increases. Therefore the green color would be gradually shaded from a light to a dark green from the inner toward the outer edge of the ring of colored light thus presented.

Between the circle E and the outer edge of the housing 2 or the edge of the translucent glass 3 a blue ring would be presented for the reason that no other color would pass beyond the circle E.

As the gears 24 and 26 are of different diameters it is obvious that the member 9 would be revolved at a different speed than the shaft 4.

Therefore the said member 9 would be slowly rotated on the axis of the pin 7 while said pin 7 and member 8 are being revolved around the axis of the crank-shaft 4, in the direction indicated in Fig. 1 of the drawings.

The result will then be that at first a small portion of the yellow sector would be moved inside of the circle A and toward the center of the housing 2 or the shaft 4.

This would have the effect of gradually introducing a yellow or orange tinge or tint into the central disk or red color until the entire yellow sector is rotated on the axis of the shaft 4. Simultaneously a greater amount of red would be moved into the ring of colored light between the circles A and B thereby affecting the shade of that ring of light in varying proportions as the outer edge of said ring is approached.

Simultaneuosly a portion of the white sector would be moved outward into the outer blue ring of light thereby changing the said tint to a lighter color.

It should be observed that while the yellow color is moving inwardly toward the center of the member 3 or the axis of the shaft 4, the white color is moving outwardly toward the outer edge of the member 3 therefore there would be no defined rings of light moving outward or inward but there would be a barely perceptible change of tint, and from a tint to a defined color.

The result would be at once interesting, perplexing and pleasing and not devoid of scientific value.

As the area of the intercepted arcs of the various colors may be determined as well as the ratio of the gears 24 and 26 the result of the combination of various proportions of colors may be noted.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is—

1. A kaleidoscope comprising a member having colored sectors thereon and mounted to rotate on its center; means for revolving the center of the said member around an axis approximately concentric with one of the sectors; and means for rotating said member on its axis.

2. A kaleidoscope comprising a crank-shaft; a member rotatably mounted upon the crank of the crank-shaft and having colored sectors thereon, the centers of the sectors being adapted to coincide with the center of the crank-shaft; and means for rotating the crank-shaft and the member on the crank thereof so as to bring successive sectors into coincidence with the center of the crank-shaft.

3. A kaleidoscope comprising a crank-shaft; a member rotatably mounted upon the crank of the crank-shaft and having colored sectors thereon, the centers of the sectors being adapted to coincide with the center of the crank-shaft; means for rotating the crank-shaft and the member on the crank thereof so as to bring successive sectors into coincidence with the center of the crank-

shaft; and means for illuminating the colored sectors independently.

4. A kaleidoscope comprising a circular housing; a translucent member in the front of the housing; a member mounted to revolve within the housing and around the center thereof and having colored sectors; and means for revolving the colored member and rotating said member on its own center to rotate successive colored sectors at the center of the housing.

5. A kaleidoscope comprising a circular housing; a translucent member in the front of the housing; a member mounted to revolve within the housing and around the center thereof and having colored sectors; means for revolving the colored member and rotating said member on its own center to rotate successive colored sectors at the center of the housing; and means for illuminating the colors on the member.

6. A kaleidoscope comprising a hollow-crank shaft; a member rotatably mounted upon the crank of the crank-shaft and having variously colored sectors thereon, the centers of the sectors being adapted to coincide with the center of the crank-shaft; a shaft mounted within the hollow crank-shaft and operatively connected to the member on the crank-shaft to rotate the same so as to bring successive sectors into coincidence with the center of the hollow crank-shaft; and means for rotating the hollow crank-shaft and the shaft mounted therein at different speeds.

7. A kaleidoscope comprising a hollow-crank shaft; a circular housing arranged concentric with the crank-shaft; a translucent cover in the front of the housing; a translucent member rotatably mounted upon the crank of the crank-shaft and having variously colored sectors thereon, the centers of the sectors being adapted to coincide with the center of the crank-shaft; means for illuminating the sectors; a shaft rotatably mounted within the hollow crank-shaft and geared to the translucent member; and means for rotating the hollow-crank-shaft and the shaft mounted therein at different speeds to revolve the sectors around the crank-shaft axis and to rotate said sectors on the crank of said crank-shaft whereby successive sectors will be brought into coincidence with said axis.

In witness whereof I hereunto set my signature.

CHARLES W. DRUMMOND.