

H. S. STRONG.
ILLUMINATING DEVICE.
APPLICATION FILED MAY 27, 1911.

1,043,981.

Patented Nov. 12, 1912.
3 SHEETS—SHEET 1.

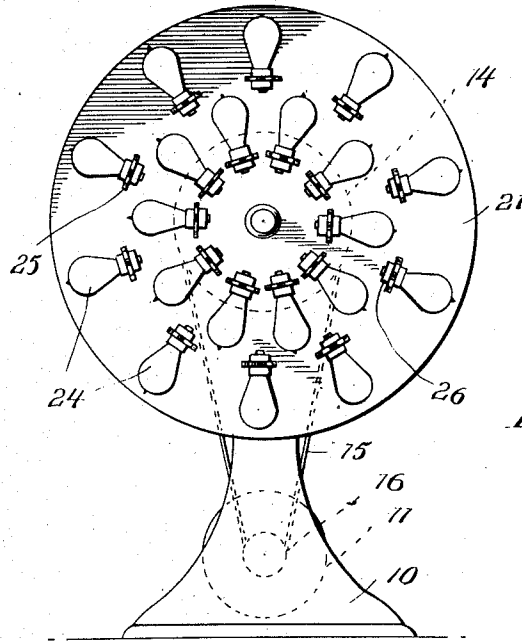
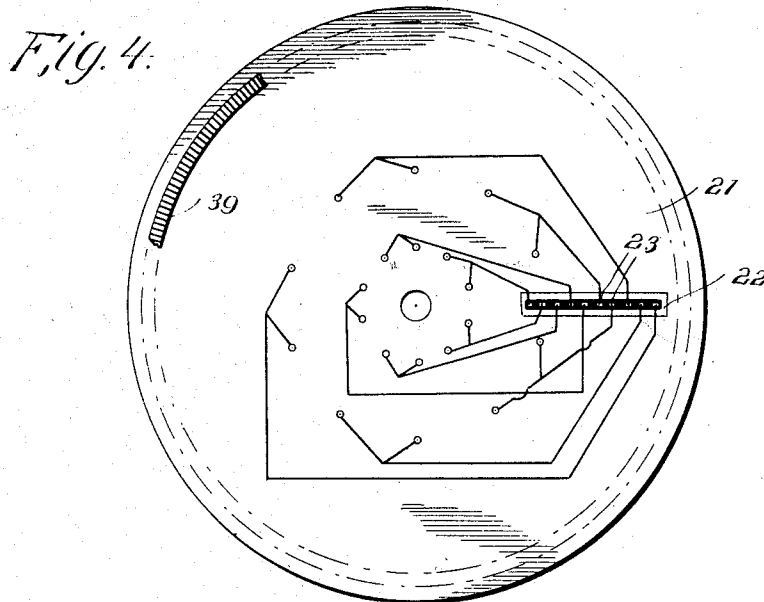


Fig. 1.



Witnesses

William R. Smith
C. R. Nielsen

Inventor

Henry S. Strong.

By

H. Woodward

Attorney

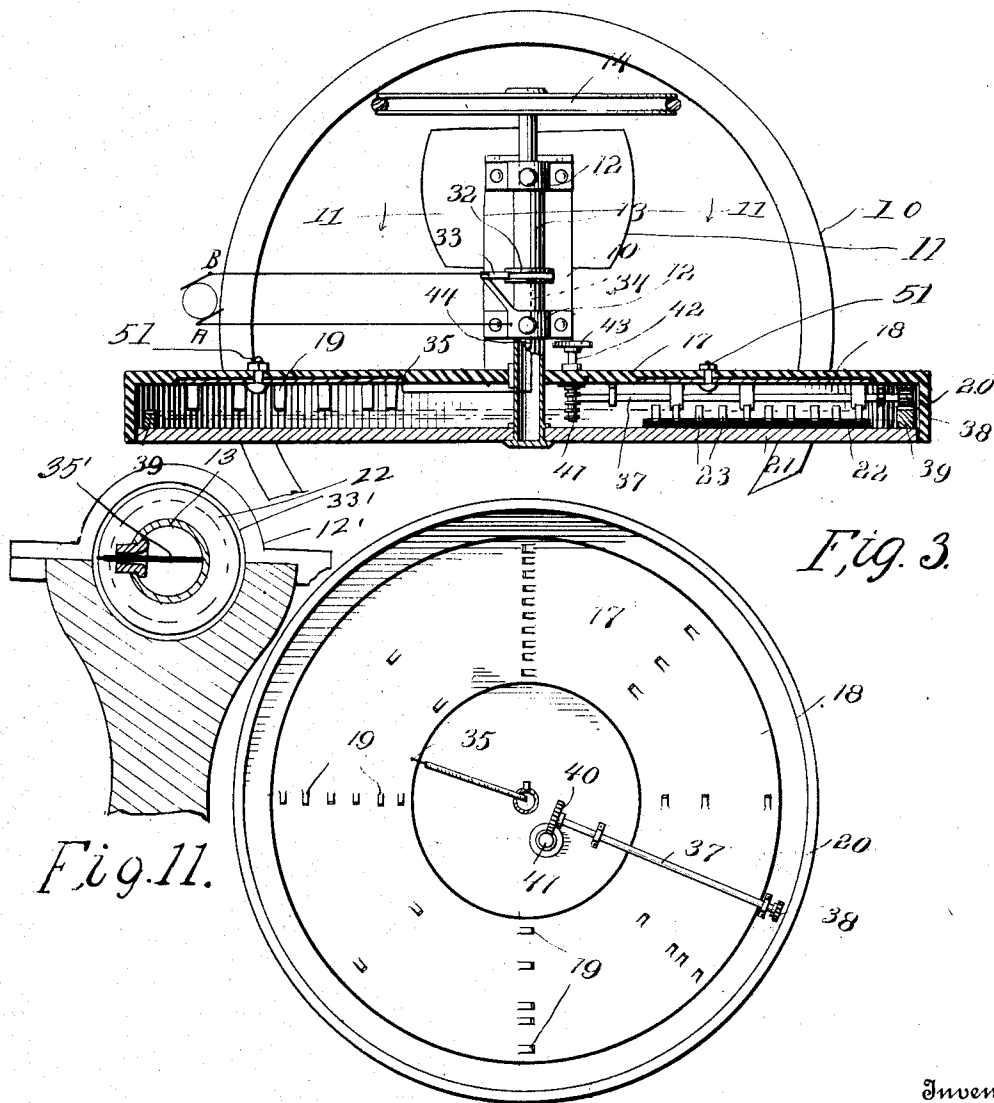
H. S. STRONG.
ILLUMINATING DEVICE.
APPLICATION FILED MAY 27, 1911.

1,043,981.

Patented Nov. 12, 1912.

3 SHEETS-SHEET 2.

Fig. 2.



Witnesses

William A. Smith
C. B. Nielsen

Inventor

Henry S. Strong.

By *H. Woodward*

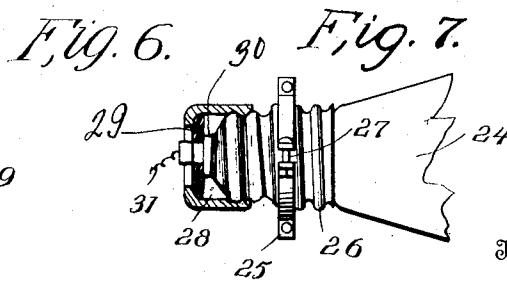
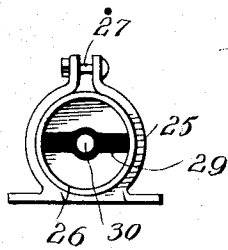
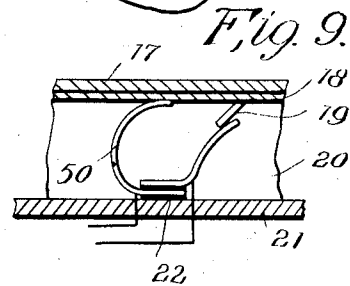
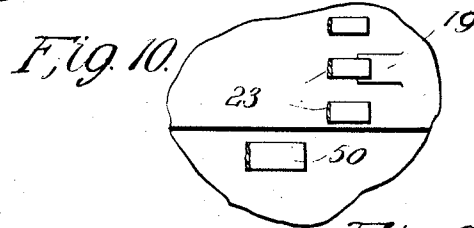
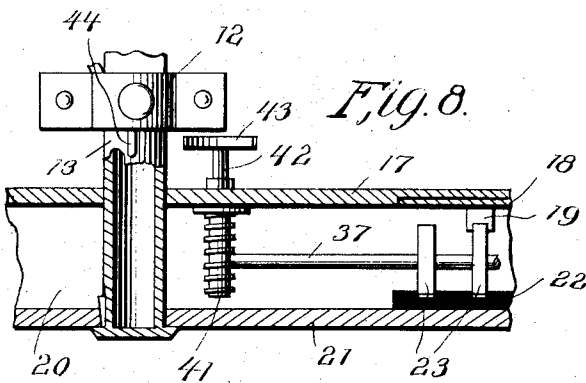
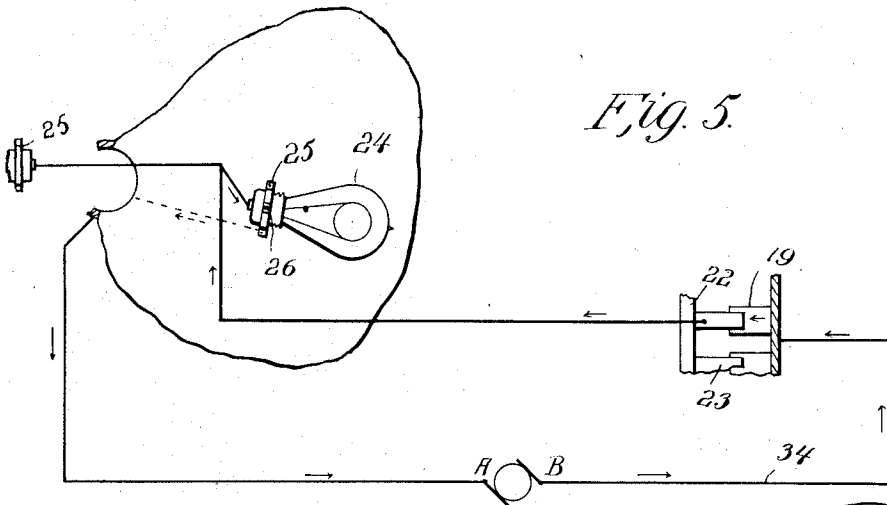
Attorney

H. S. STRONG.
ILLUMINATING DEVICE.
APPLICATION FILED MAY 27, 1911.

1,043,981.

Patented Nov. 12, 1912.

3 SHEETS-SHEET 3.



Witnesses
William R. Smith,
C. R. Nielsen

Inventor
Henry S. Strong.
By *H. Woodward*
Attorney

UNITED STATES PATENT OFFICE.

HENRY S. STRONG, OF MEAD, WASHINGTON.

ILLUMINATING DEVICE.

1,043,981.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed May 27, 1911. Serial No. 629,833.

To all whom it may concern:

Be it known that I, HENRY S. STRONG, a citizen of the United States, residing at Mead, in the county of Spokane and State of Washington, have invented new and useful Improvements in Illuminating Devices, of which the following is a specification.

This invention relates to electrical illuminating devices, and has for its object to provide an appliance adapted for use as an amusement novelty, to attract public attention, or for use in demonstrating the composition of light and color.

Another object is to provide a desirable commutator mechanism of simple construction, adaptable to use in various other forms of devices where the illumination is intermittently varied in color or arrangement of units.

Other objects and advantages will be apparent from the following description and from the drawings, in which,

Figure 1 is a front view of the machine, Fig. 2 is a top view thereof, partly in section, the electrical source and connections being shown diagrammatically, Fig. 3 is a sectional view showing the face of the commutator disk, Fig. 4 is a similar view to Fig. 3, showing the light disk, and brushes, the wiring being illustrated diagrammatically, Fig. 5 is a diagrammatic view of the wiring system, Figs. 6 and 7 are detail views of one of the light units, Fig. 8 is a fragmentary sectional view of a modification of the device showing the light carrying disk secured positively to the driving shaft while the commutator disk is made revoluble thereon, Fig. 9 is a similar view illustrating a detail of the commutator construction in a modification, Fig. 10 is a fragmentary section showing the relation of the brushes to the ring in the modification last mentioned, Fig. 11 is a detail cross section through the bearing looking toward the front.

There is shown a support 10 of any desirable form, adapted to be set upon a table or other surface, and carrying an electric motor 11 of any usual type suitable for my purposes. The support 10 is provided at its upper end with suitable journal-boxes 12 in which there is journaled the hollow shaft 13 upon one end of which there is secured the pulley 14 from which a suitable belt 15 is run to the pulley 16 of the motor. Secured upon the shaft 13 a spaced distance

inwardly of its extremity oppositely of the pulley 14, there is a large disk 17 of insulating material, and secured concentrically thereon is the annular commutator plate or ring 18 having portions stamped outwardly therefrom at an inclination opposite the direction of its rotation, and forming commutator points 19. The disk carries the peripheral forwardly projecting guard flange 20, and rotating freely within this flange there is a light disk 21, carrying a radially disposed brush bar 22 having a multiplicity of individual insulated brushes 23 projecting toward the ring 18 and arranged to engage the points 19 in passing. The disk 21 is engaged revolubly on the projecting extremity of the shaft 13, and held thereon in any suitable manner. Carried upon the front face of the disk 21 there is a multiplicity of light units 24 arranged in concentric series, and preferably including translucent or light diffusing members, the diffusing members in adjacent series being arranged as may be found most desirable to present an even field of light as nearly as possible, when the wheel is rotated. Any desirable form of light unit suitable for the purpose may be utilized, and in the embodiment of the invention illustrated, the ordinary incandescent bulb is utilized, spring clip arms 25 being spaced in place suitably on the disk, and clamped upon the threaded bases 26 of the bulbs by means of bolts 27 engaged through the extremities of the clip arms, as may be readily understood. The bulbs are extended outwardly from the point of their securement, so that the strain of centrifugal force produced under rapid rotation of the device will occur in a direction least likely to result in damage. The circuit is made through the central contacts of the lights by means of an annular cap 28 threaded upon the base of the bulbs confining a washer 29 of insulating material in which is carried a binding post 30 one end of which is arranged to bear against the central contact of the lamp and the other engaged with a wire 31 which is led to a corresponding brush 23 on the brush bar 22. The circuit with the light is completed through the disk 21 itself and the shaft 13, connection with the electrical source being made directly between one shaft journal and an electrical source, as at A. At B a connection of opposite potential is made through a brush 33, between

the electrical source and a commutator device consisting in a disk 32 of insulating material secured upon the shaft 13 and carrying a commutator ring 33' from which
 5 a wire 34 is extended into the shaft and carried to a point adjacent the disk 17 where it is brought out and connected to the ring 18 at 35, as shown. Two or more of the lights in the same concentric series may
 10 be connected with the same brush 23, as found desirable for the effects which it is sought to produce, and it will be seen that when a particular brush 23 comes in contact with one of the points 19 the respective
 15 light or lights connected with the brush are illuminated.

It is desired to rotate the light disk 21 rapidly, by means of the connection between the motor and the large disk 14 while certain of the lights upon the disk are in circuit with the electrical source producing an illuminative effect. Various colors may be produced by having light units producing the basic colors and white, spaced at proper
 20 intervals, and illuminated simultaneously in various combinations. Thus if a green light is desired the yellow and blue lights should be illuminated, and this may be made light or dark in tone by including one or more
 25 while lights in the combination. Concentric bands of different colored lights may be produced with pleasing effect.

For producing relative rotation between the light disk and the commutator disk to
 35 change the light combinations, there is mounted on the disk 17 behind the commutator disk a radial shaft 37 having at its outer end a small gear 38 meshing with an annular rack 39 on the disk 21 outwardly
 40 of the commutator ring 18. At its inner end the shaft 37 carries a worm-wheel 40 engaged by a worm 41 extending at right angles to the plane of the disk 17, the shaft 42 of the worm carrying a star wheel 43 inwardly of the disk 17, and arranged so that its fingers will engage or strike a lug 44 fixed rigidly upon the journal-box 12 there-
 45 adjacent. Thus it will be seen that during rotation of the device the points 19 will
 50 successively engage the brush 23, and by arranging the points 19 in variously spaced radial series around the disk 18 various combinations of lights will be produced automatically in any effects desired.

In Figs. 9 and 10 a modification is shown in which, instead of the wire 34 being connected to the commutator plate it is carried outwardly through the shaft and to a brush
 50, carried upon the brush bar 22 and bearing constantly against a portion of the ring 18 whereby the same effects above described are attained. The construction of the means for rotating the devices relatively is the same, and also produces the same result. It
 65 may be found desirable to produce various

forms of commutator disks, that is to say having the portions 19 so spaced as to produce new combination of lights, or presenting old combinations in a different sequence, and to facilitate such use of the device the ring may be made detachable as at 51.

What is claimed is:

1. A device of the class described comprising a support, a revoluble hollow shaft carried thereby, a disk of insulating material secured to the shaft, a metal disk revoluble on and in electrical contact with the shaft outwardly of the first named disk, a plurality of electrical illuminating units on the outer disk, a plurality of insulated brush members carried by the outer disk, series connections between certain brushes, certain illuminating devices and the outer disk, commutator devices carried by the inner disk and adapted to engage certain of the brushes upon relative rotation of the disks, an insulated commutator ring engaged around the shaft, electrical connection between the ring and the commutator device first named, means for connecting the shaft and the ring electrically with electrical elements of opposite potential, means for rotating the shaft, and means for causing relative rotation of the disks.

2. A device of the class described comprising a support, a hollow shaft revoluble thereon, an annular commutator element carried thereby and insulated therefrom, said commutator member having a multiplicity of variously spaced contact portions, a light supporting member revoluble on the shaft and carrying a plurality of electrical illuminating units, a multiplicity of radially spaced brushes adapted to engage snugly the contact portions of the commutator member, connections between the respective brush members and certain of the illuminating units, and between the said units and the support, means for rotating the light support and commutator elements in the same direction, and means for differentiating the rate of movement of commutator member and light support.

3. A device of the class described comprising a support, a main shaft revoluble thereon, a commutator carrier on the shaft, an annular commutator plate carried thereby, a light carrier revoluble on the shaft adjacent the first named carrier, different colored electrical illuminating units carried thereby, brush members carried thereby for engagement with the commutator, electrical connections between the brushes and the illuminating units, electrical connections for the commutator and illuminating units, an annular rack face carried by the light support, a radial shaft carried by the commutator support, a gear on the shaft to mesh with the rack face, a second gear on the shaft, a second shaft carried by the commu-

tator support, a worm on the last named shaft meshing with the second named gear, a wheel upon the last named shaft, an element carried by the support and arranged to rotate the wheel upon rotation of the commutator carrier, and means for rotating the main shaft.

4. In a device of the class described, a support, a light element and a commutator element revoluble thereon, means for causing differentiated rotation of the said light and commutator elements in a common direction, electrical illuminating elements carried by the light element, contact elements on said light element connected respectively to certain of the illuminating elements, commutator units carried by the commutator element and operative under operation of the light and commutator elements to respectively engage certain contact elements and make and break a circuit through the illuminating elements, and means for making a circuit through the illuminating elements and commutator element.

5. In a device of the class described, a

commutator element and a brush carrying element relatively revoluble upon a common axis, the commutator element having a multiplicity of variously spaced commutator units, a plurality of brush units carried by the brush carrying element and adapted for engagement individually with certain of the commutator units upon relative rotation of the commutator element and brush carrying element, a multiplicity of electrical devices carried by one of the revoluble elements and electrical connections between respective units on such element and certain of the electrical devices, means for rotating the revoluble elements differentially in a common direction, and means for connecting the commutator and electrical devices in series with an electrical source.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY S. STRONG.

Witnesses:

L. L. ATTISH,
FRED. O. MOYE.