(No Model.)

3 Sheets—Sheet 1.

W. REEVES.

KALEIDOSCOPE.

No. 593,405. Patented Nov. 9, 1897.

Fig. 1.

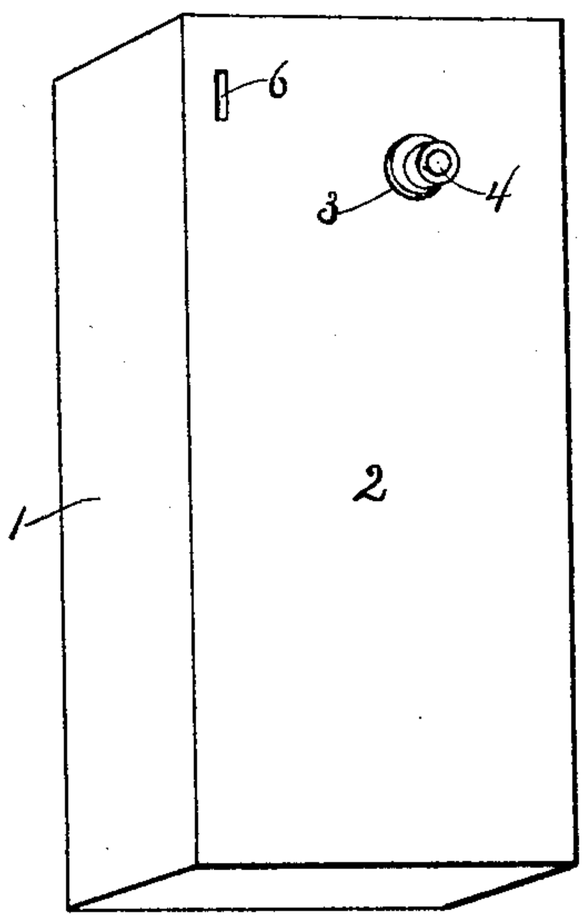


Fig. 2.

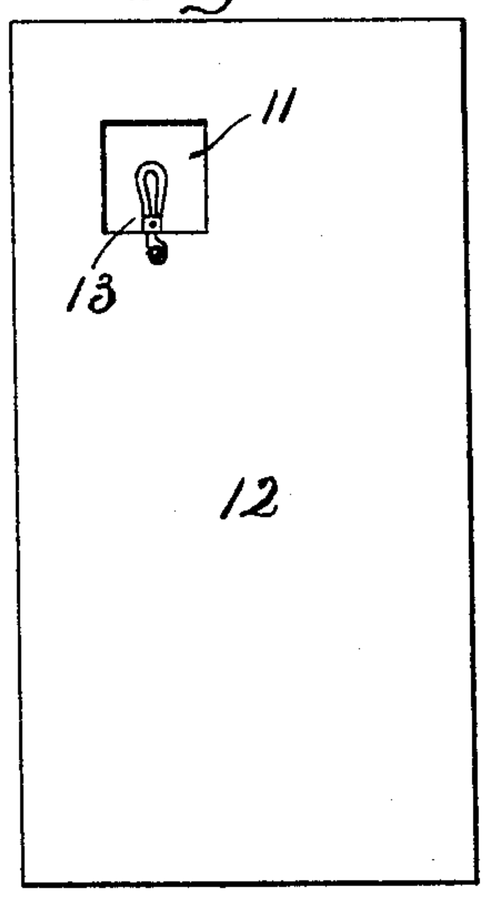
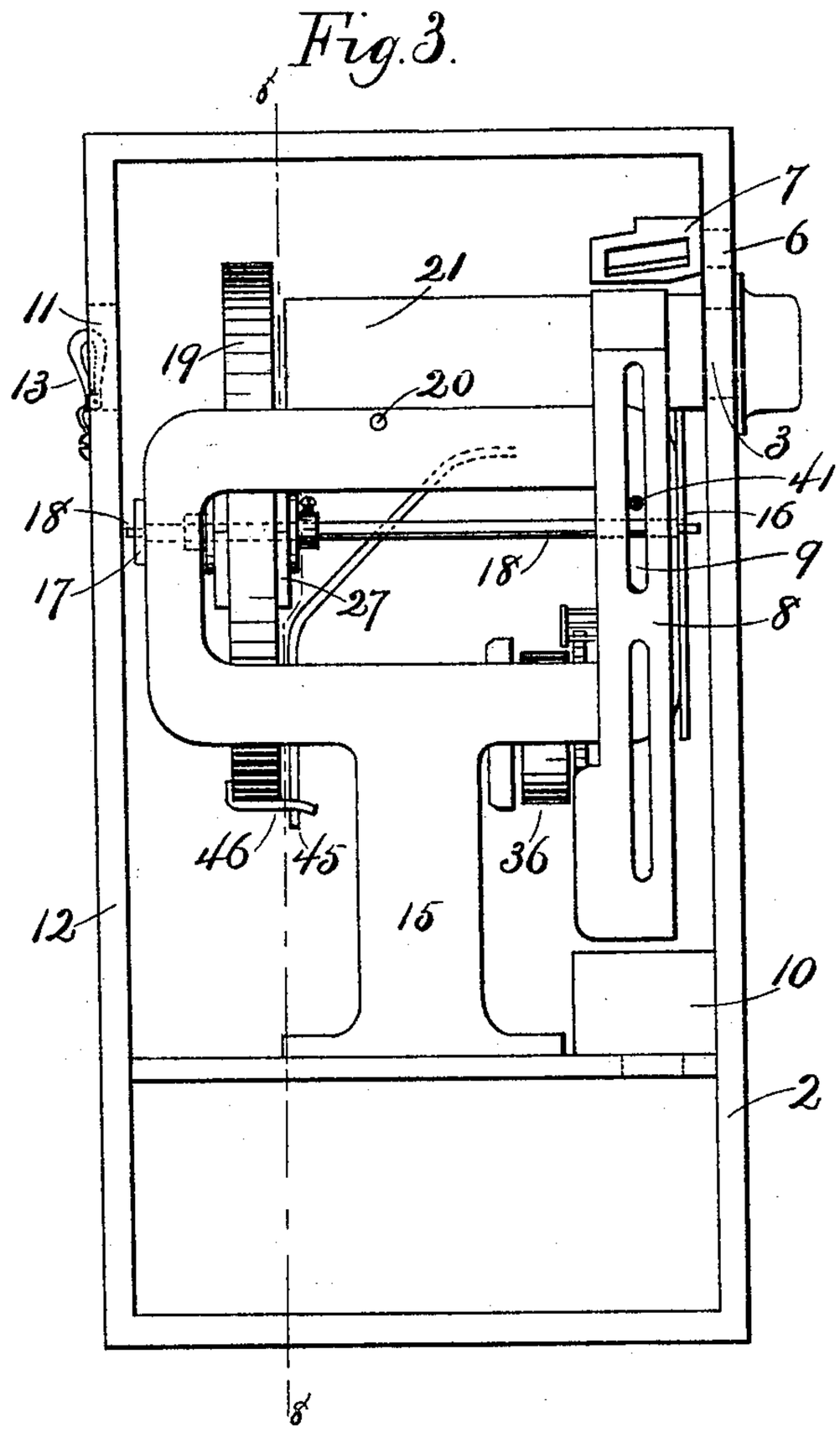


Fig. 3.



WITNESSES:

J. F. Coleman

G. W. Adams

INVENTOR

William Reeve

BY

T. R. Kinsman & Fisher

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

W. REEVES.

KALEIDOSCOPE.

No. 593,405. Patented Nov. 9, 1897.

Fig. 4.

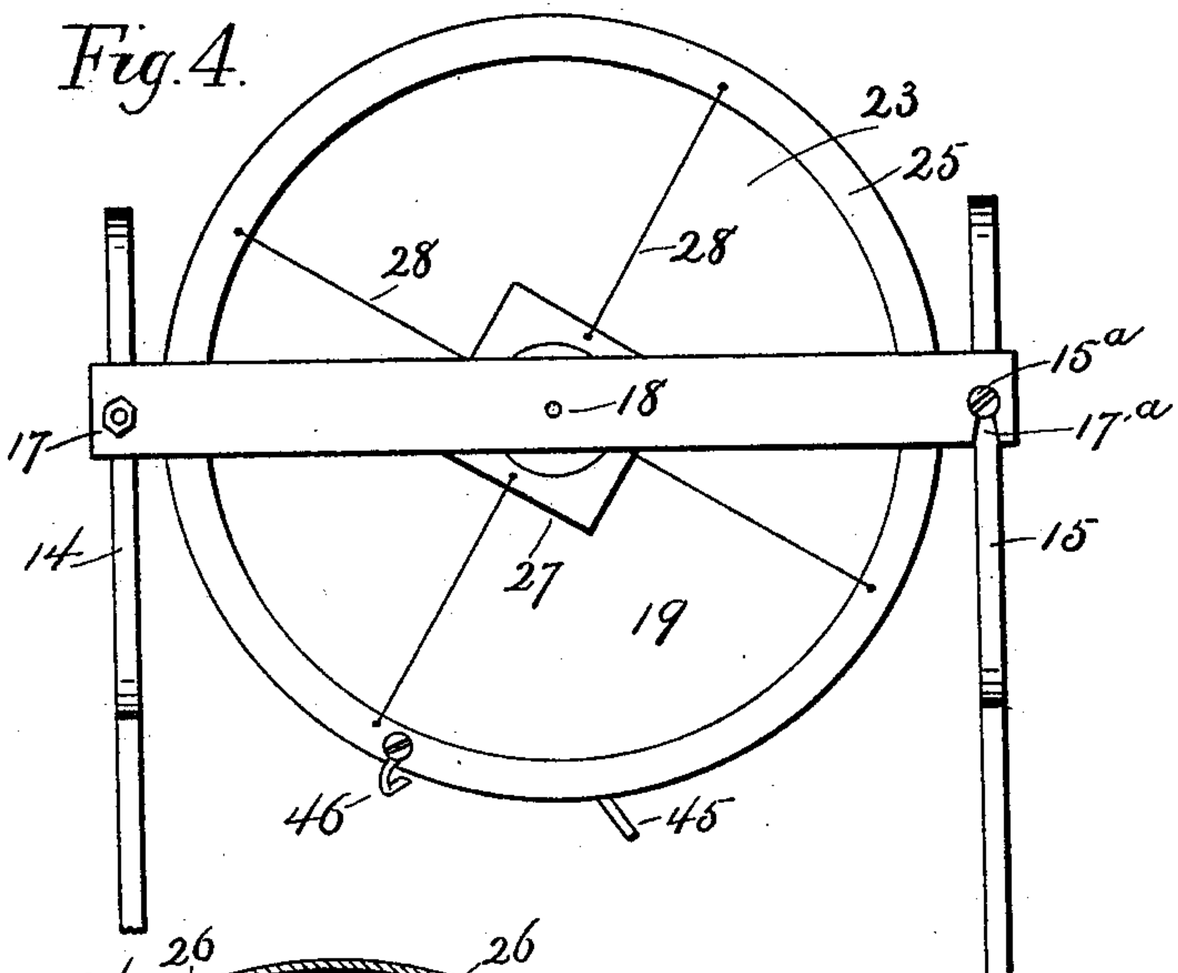


Fig. 5.

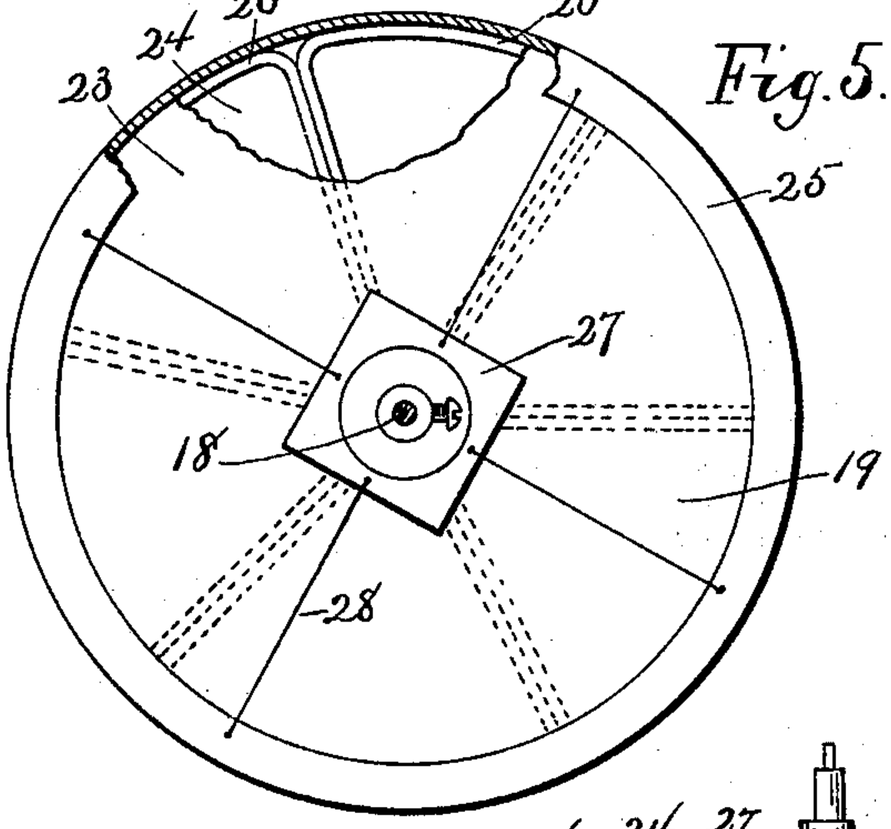


Fig. 7.

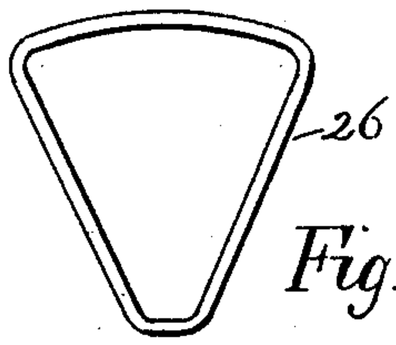
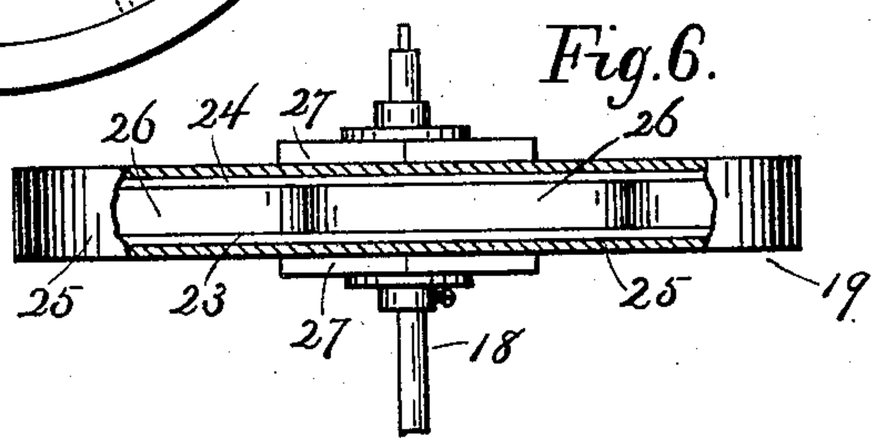


Fig. 6.



WITNESSES:

J. L. Coleman

E. W. Adams

INVENTOR

William Reeves

BY

Robinson & Fisher.

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 3.

W. REEVES.

KALEIDOSCOPE.

No. 593,405. Patented Nov. 9, 1897.

Fig. 8.

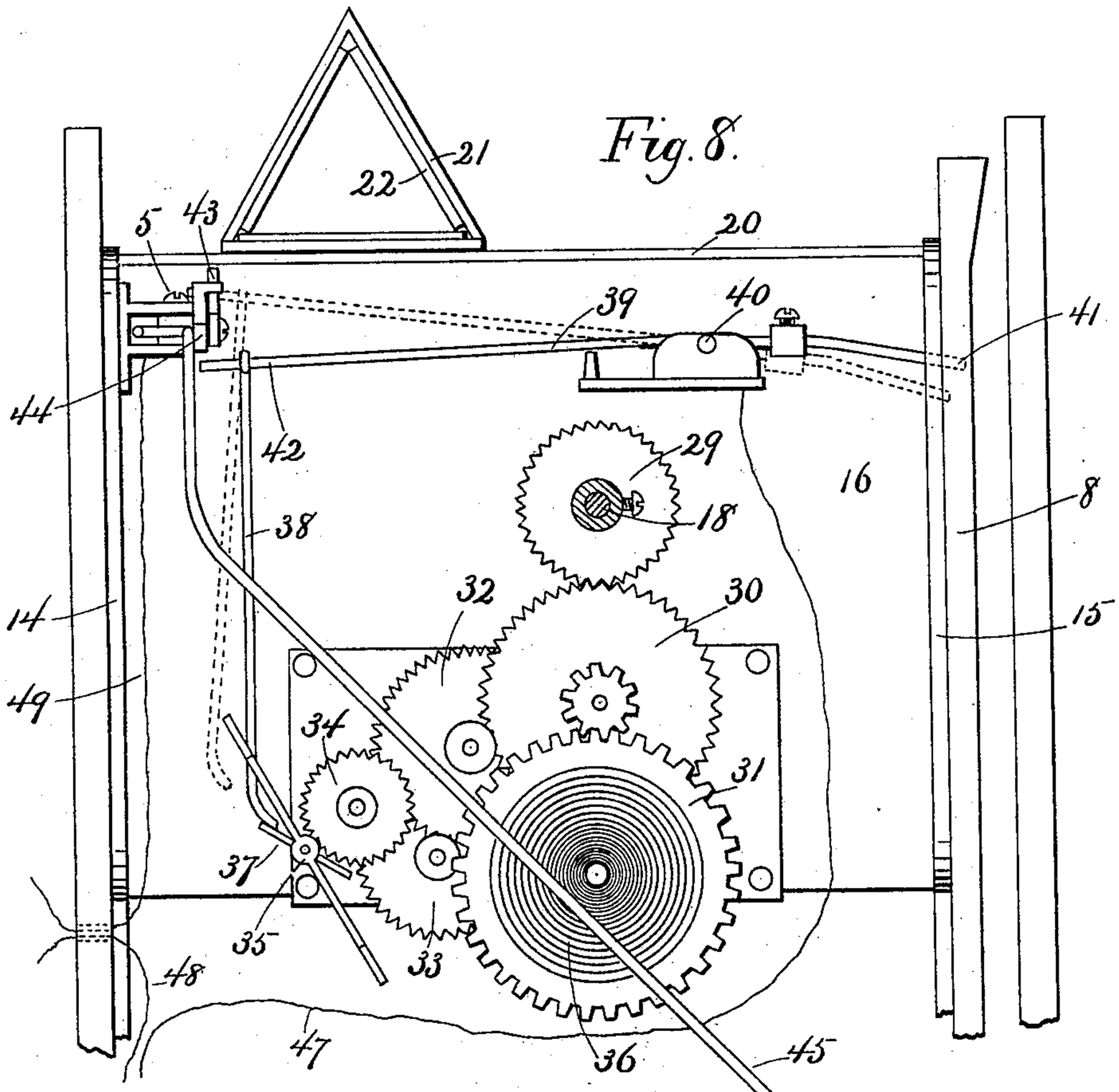
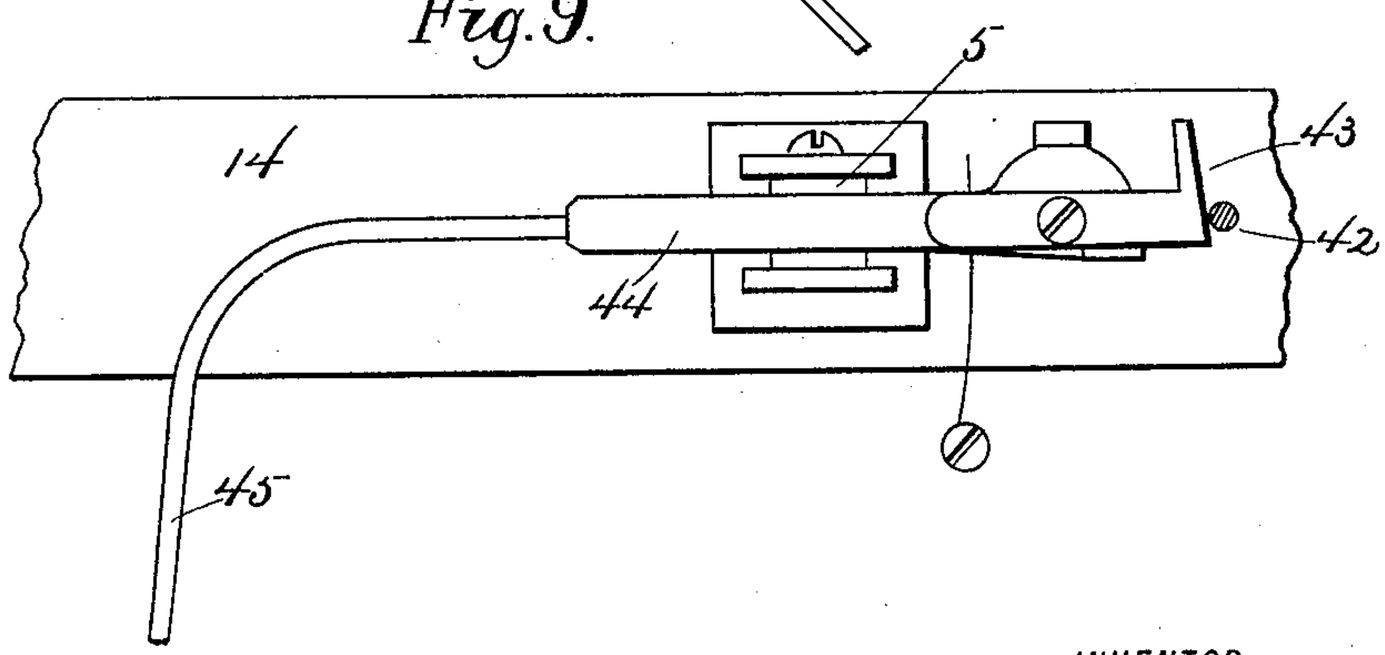


Fig. 9.



WITNESSES:

F. J. Coleman

G. W. Adams

INVENTOR

William Reeves

BY

Robinson & Fisher

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM REEVES, OF NEW HAVEN, CONNECTICUT.

KALEIDOSCOPE.

SPECIFICATION forming part of Letters Patent No. 593,405, dated November 9, 1897.

Application filed February 24, 1897. Serial No. 624,798. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM REEVES, of the city and county of New Haven, in the State of Connecticut, have invented a new and useful Improvement in Kaleidoscopes, which is fully set forth and described in the following specification, taken in connection with the drawings which form a part thereof, and in which—

Figure 1 represents a perspective view of the casing for my invention; Fig. 2, a rear elevation of the same; Fig. 3, a side elevation with the casing removed; Fig. 4, a similar rear elevation; Fig. 5, a detail rear view of the disk, and Fig. 6 a top view of the same, both partly broken away; Fig. 7, a detail view of one of the sectional sectors or cells of the disk; Fig. 8, a vertical section on line 8 8 of Fig. 3; and Fig. 9, a detail view of the trip-lever, the coin-controlled lever being shown in section.

In all figures similar numerals of reference represent like parts.

This invention relates to kaleidoscopic or optical instruments creating and exhibiting by reflection a variety of beautiful colors and symmetrical forms from translucent substances contained in them; and it consists in the construction of a compound disk for the kaleidoscope formed of a series of sections or cells adapted to come successively into range of the eye of the spectator and also of clock mechanism for rotating the disk under control of a coin deposited in a slot or chute, together with minor improvements fully set forth hereinafter.

To this end my invention consists of a casing 1, in the front 2 of which is an aperture 3, having therein the lens 4. A slot 6 is also formed in the front 2, adapted for the reception of the coin, communicating with an inclined chute 7, the mouth of which is over the upper end of a vertical chute 8, with slotted sides 9. Beneath the vertical chute 8 is a coin-box 10 for the reception of the coin. On the same horizontal plane with the aperture 3 in the front 2 is a ground-glass window 11 in the rear 12 of the casing for the admission of light from an electric light 13, the connection for which will be described hereinafter.

Within the casing 1 are two skeleton supports 14 and 15, mounted on the bottom and united by the transverse lateral plates 16 and 17. The chute 8 is secured to the plate 16, and extending between the two plates and having bearings in both is an axle 18, on which, near the rear, is mounted the disk 19 of the kaleidoscope. The plate 17 is pivoted to the support 14 and has a notch 17^a for engagement with a lug 15^a on support 15, so that the axle 18 may be easily removed. Supported on the plate 16 and a transverse rod 20, extending between the skeleton supports 14 and 15, is a tube 21, (shown triangular in cross-section,) having on the three sides of the interior mirrors or reflecting-surfaces 22, each inclined toward the others at an angle. The axis of the tube is on a horizontal line between the centers of the lens 4 and window 11.

The disk 19 is formed of two plates 23 and 24 of glass, (each of said plates may be formed of sections, if desired,) over the peripheries of which is fitted a metallic rim 25. The space between the two plates 23 and 24 forms the cell or cells for the various translucent substances, which are placed therein to make the combinations of color and design, and only a small portion of the disk is adapted to be in range of the eye—*i. e.*, between the end of the tube 21 and window 11—at a time. The space between the plates of glass 23 and 24 is divided into sections formed by strips of metal 26, bent, as shown in Fig. 7, substantially in the form of sectors of a circle, the strips of metal 26 being of sufficient width to fit between the plates of glass 23 and 24, Fig. 6. On the outside of the plates 23 and 24 are cores or blocks of metal 27, Figs. 5 and 6, adjustably mounted on the axle 18 to hold the parts of the disk together. Wires 28 may unite the rim 25 and blocks 27 to strengthen the disk 19, within the cells of which may be placed various substances to form the different combinations, each sector or cell holding a different combination or device from the others, so that not only are the designs in each cell changing upon the rotation of the disk, but the different cells follow each other in succession into the range of vision of the spectator looking through the tube 21. Moreover, each cell may contain an entirely different class of substances from the others—as, for example, one may contain substances all of one color, another all of one design, &c.

The means for rotating the disk 19 and controlling the same by the coin falling in the chute 8 is as follows: A gear 29 on the axle 18 meshes with a gear 30 of a clock mechanism secured to plate 16 and composed of gears 31, 32, 33, 34, and 35, the gear 31 being connected with the spring 36 and the gear 35 with the fly-wheel 37. This clock mechanism constantly tends to rotate the axle 18, on which is mounted disk 19, but the mechanism may be checked by a rod 38, depending from one end 42 of a coin-controlled lever 39, which is pivoted at 40 to plate 16 to swing in a vertical plane. The other end 41 of lever 39 extends through the lateral slots 9 of chute 8 and is adapted to be depressed upon the fall of the coin. When lever 39 is in its normal position, rod 38 engages with its lower end the fly-wheel 37, checking the clock mechanism, but when end 41 of lever 39 is depressed the other end 42 is raised and with it the depending rod 38, thereby releasing fly-wheel 37 and permitting the clock mechanism to rotate disk 19. The end 42 of lever 39 is held in its raised position (shown in dotted lines, Fig. 8) by a trip 43, pivoted on a tripping-lever 44, itself pivoted at 5 to skeleton support 14 to swing horizontally. The other end 45 of tripping-lever 44 is curved downward, as shown in Figs. 3 and 8, and is adapted to be engaged by a lug 46 on disk 19. When lug 46 so engages the end 45 of lever 44, upon the further rotation of disk 19 lever 44 is turned on its pivot and withdraws trip 43 from contact with the end 42 of lever 39, allowing lever 39 to assume its normal position. At the same time lever 44 may be forced outward into its original position by means of a wire spring, one end of which may be secured to the front of support 14 and with its free end bearing against the rear of said lever. Therefore upon the fall of the coin in the chute 8 and the consequent swinging of coin-controlled lever 39 on its pivot the depending rod 38 is raised from engagement with fly-wheel 37 and the disk revolved by the clock mechanism. The end 42 of lever 39 is held in its raised position by trip 43 until the disk 19 has been rotated, when the lug 46, coming in contact with the end 45 of lever 44, swings it on its pivot to release trip 43 from lever 39 and permit rod 38 to fall into engagement with fly-wheel 37 and stop the clock mechanism and consequent revolution of the disk 19 until another coin is inserted in the slot.

The connections with the electric light 13 consist of conductors 47 and 48 from a battery or other power, one, 47, passing to the pivot 40 of the coin-controlled lever 39, the other, 48, to the light 13. From the pivot 5 of lever 44 a wire 49 also extends to the light 13. The circuit is made through wire 47 to pivot 40 over the end 42 of lever 39 to trip 43 of lever 44, thence to the pivot 5 of lever 44 and to the light 13 by a wire 49, returning by wire 48 to the battery, &c. This connection is therefore continuous only so long as end 42 of lever 39 is engaged by trip 43, which is the case during the rotation of the disk 19, as before shown.

Having now described my invention, the details of which may be varied without departing from the spirit thereof, what I claim, and desire to secure by Letters Patent, is—

1. In a kaleidoscope, the combination with a stationary tube provided with reflecting-surfaces on its interior faces; of a vertical rotary disk having hollow sections for carrying translucent substances, adapted to come successively within range of said tube, upon the rotation of said disk, substantially as described.

2. In a kaleidoscope, the combination with a stationary tube provided with reflecting-surfaces on its interior faces; of a rotary disk constructed of two plates and a series of sections fitting between said plates to form hollow cells for translucent substances, said cells being adapted to come successively within range of said tube upon the rotation of said disk, substantially as described.

3. In a kaleidoscope, the combination with a stationary tube provided with reflecting-surfaces on its interior faces; of a rotary disk having hollow sections for carrying translucent substances; and mechanism for rotating said disk so that said sections will come successively within range of said tube, substantially as described.

4. In a kaleidoscope, the combination with a stationary tube provided with reflecting-surfaces on its interior faces; of a rotary disk having hollow sections for carrying translucent substances; and adapted to come successively within range of said tube upon the rotation of said disk; clock mechanism for rotating said disk; means for checking said clock mechanism; a coin-controlled lever adapted to disengage said checking means from said clock mechanism upon the fall of the coin in a chute; and a trip adapted to retain said checking means from reëngaging with said clock mechanism until the rotation of said disk is completed, substantially as described.

5. In a kaleidoscope, the combination with a casing having an aperture at one side, and a window on another side; of a tube the axis of which is on a line between said aperture and window, and which is provided with reflecting-surfaces on its interior faces; a rotary disk for carrying translucent substances between one end of said tube and said window, the axis of said tube meeting said disk at a point between the center and circumference and mechanism for rotating said disk, substantially as described.

6. In a kaleidoscope, the combination with a casing having an aperture at one side and a window on another side; a tube, the axis of which is on a line between said aperture and window, and which is provided with reflecting-surfaces on its interior faces; a disk between one end of said tube and said window formed of hollow sections for holding translucent substances and adapted upon the rota-

tion of said disk to come successively within range of said tube; clock mechanism for rotating said disk; means for engaging with and checking said clock mechanism, and disengaged therefrom upon the fall of the coin in a chute, and held from reëngagement during the rotation of said disk; an electric light, the light from which is adapted to be received through said window, and the electric connection for which forms a continuous circuit when said checking means is held from engagement with said clock mechanism, substantially as described.

7. In a kaleidoscope, the combination with skeleton supports of a stationary tube provided with reflecting-surfaces on its interior faces, mounted on said supports; a plate pivoted to one support and adapted to engage with another having bearings for a rotary axle; and a removable disk mounted on said axle and formed of sections for carrying translucent substances adapted to come successively into range with said tube, substantially as described.

In witness whereof I have hereunto set my hand, at New Haven, in the county of New Haven, State of Connecticut, this 19th day of February, 1897.

WILLIAM REEVES.

Witnesses:
GEORGE W. ROBINSON,
F. PHILIP FARNSWORTH.