

(Model.)

V. M. FARR.
Kaleidoscope.

No. 243,537.

Patented June 28, 1881.

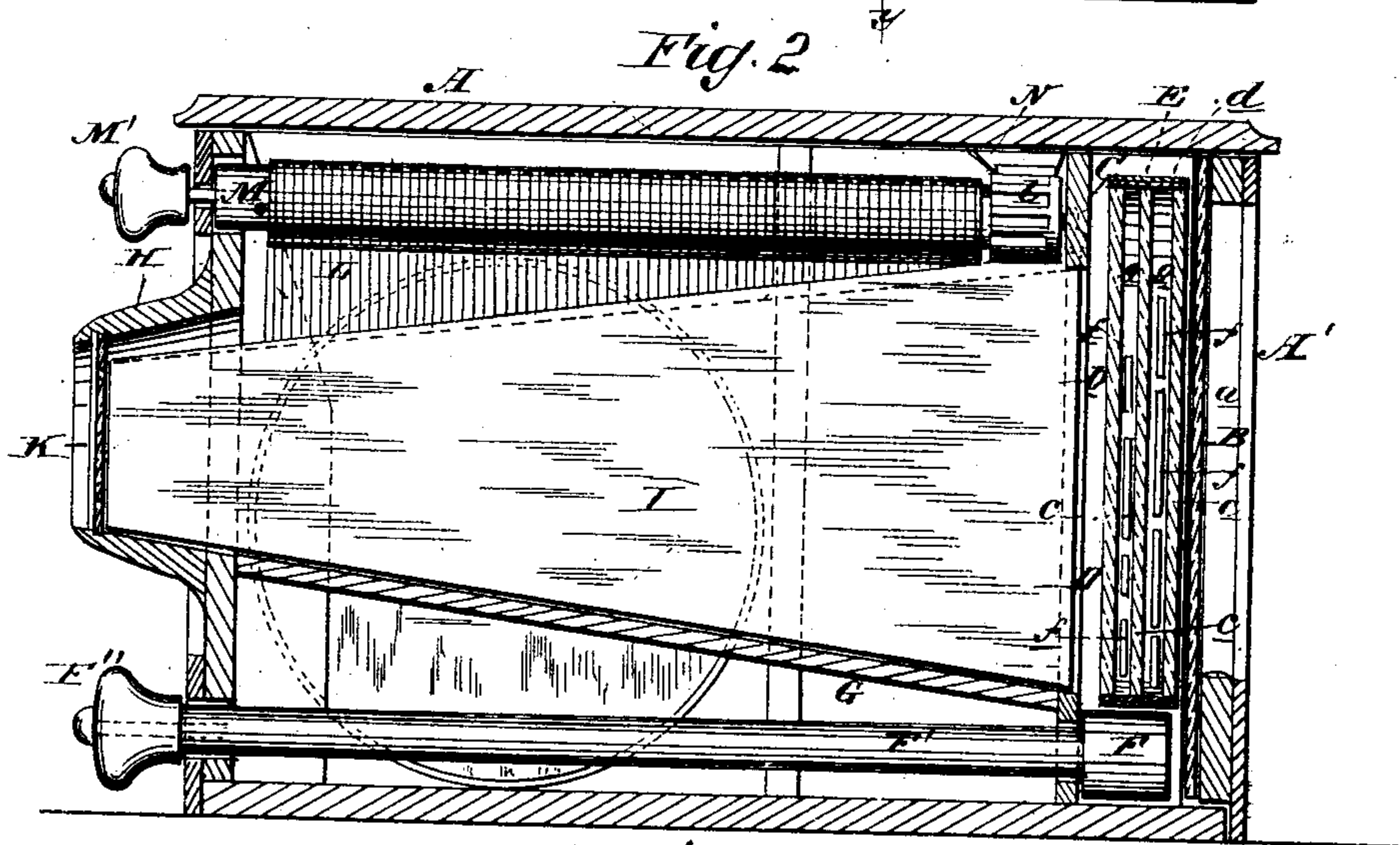
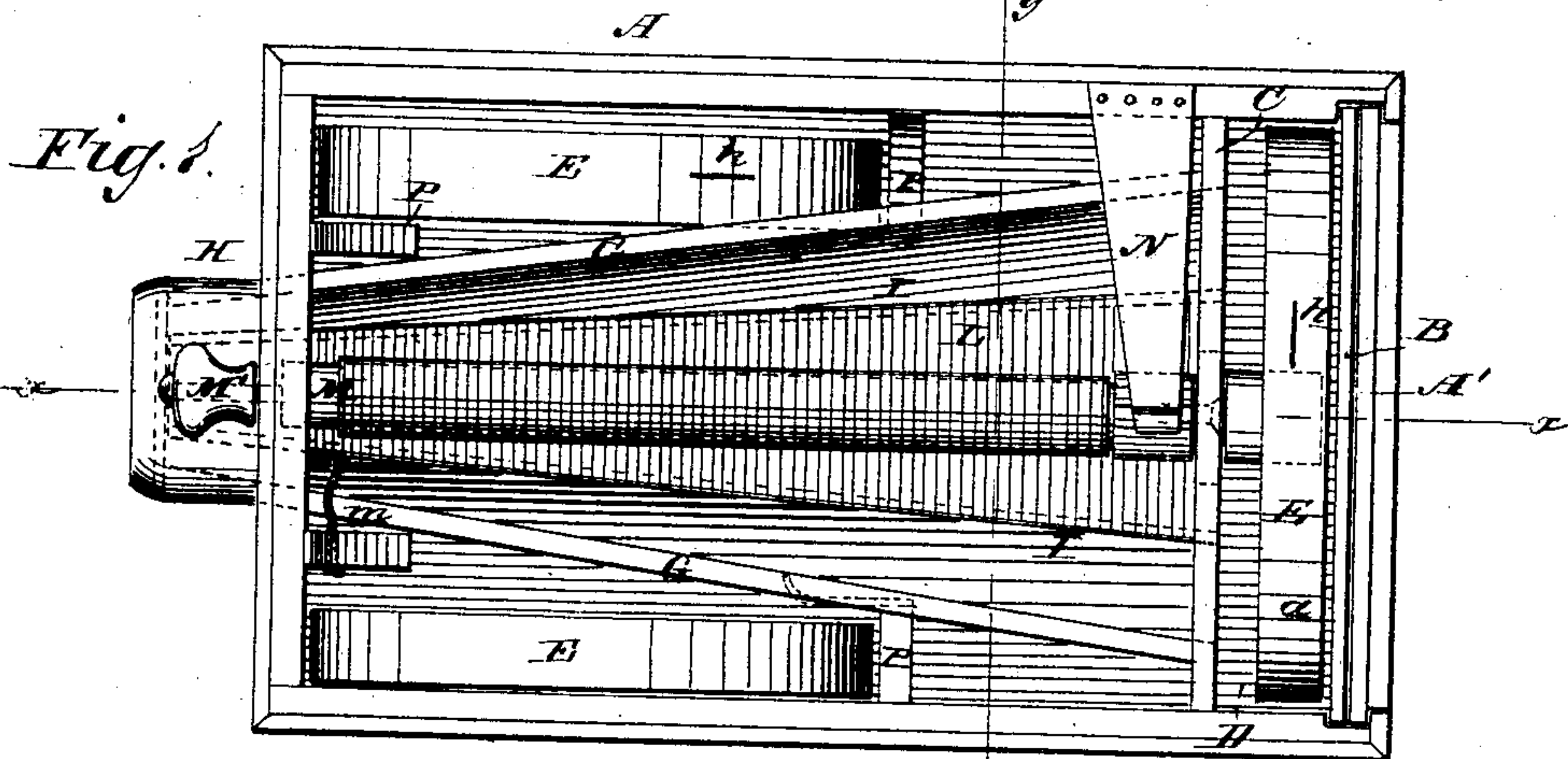
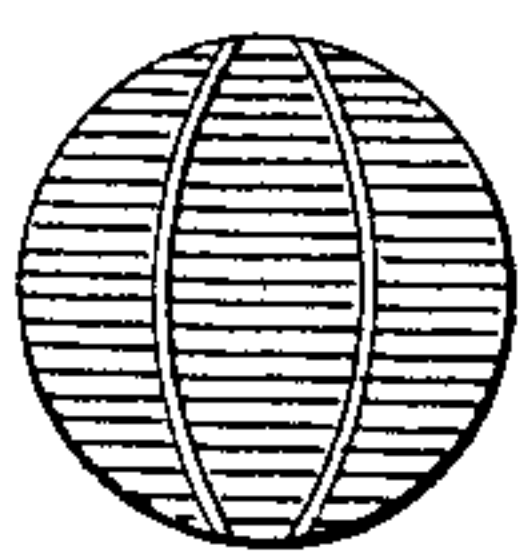
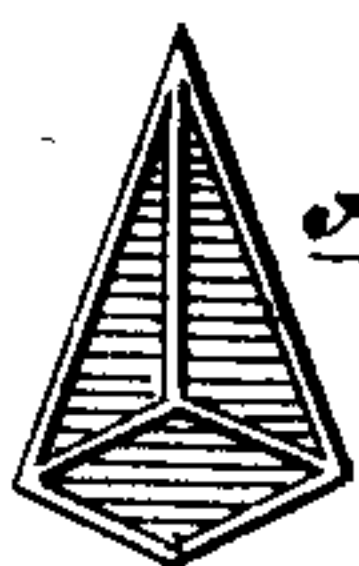


Fig. 4



WITNESSES:

F. McArthur
C. Sedgwick

Fig. 3

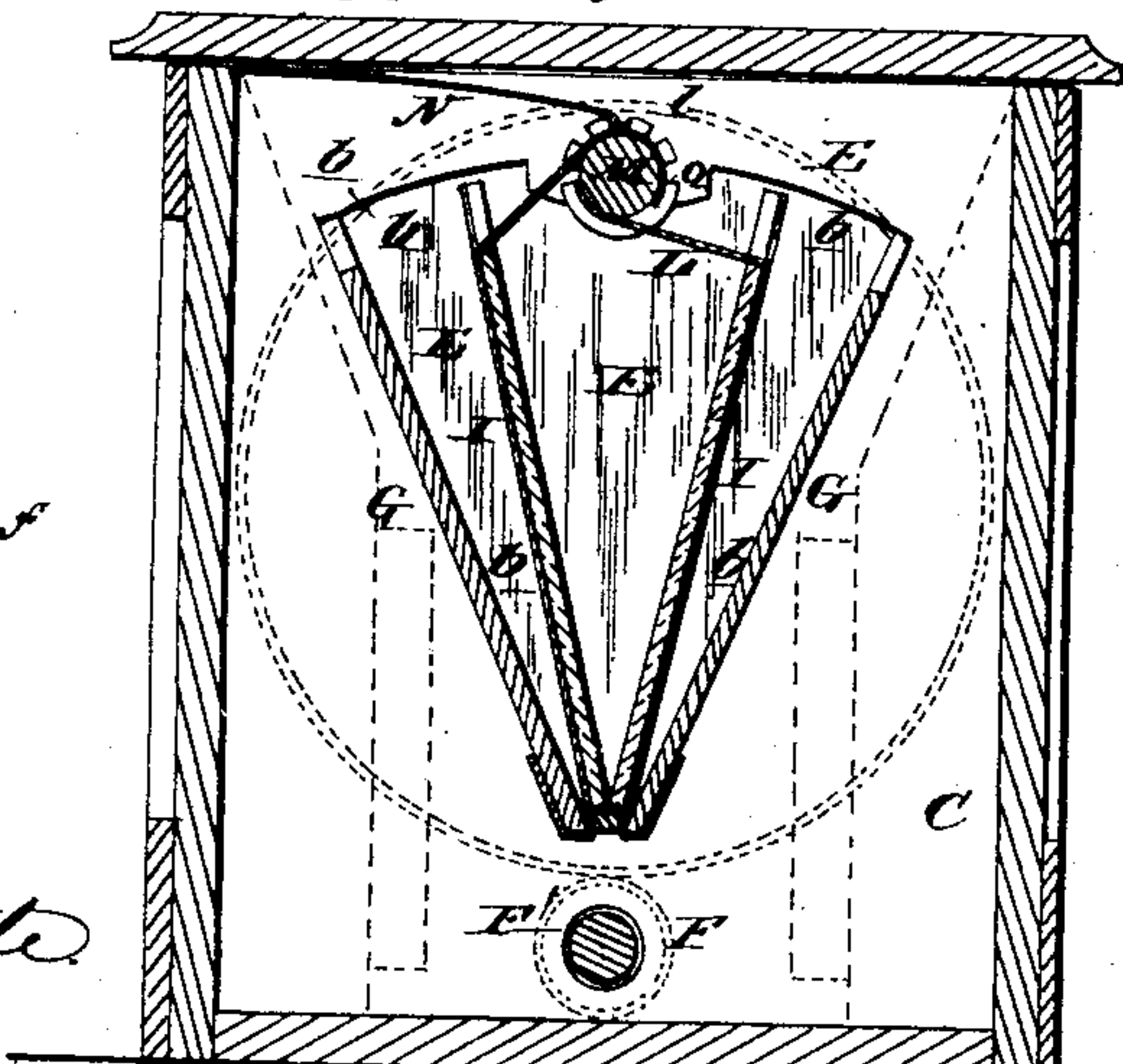
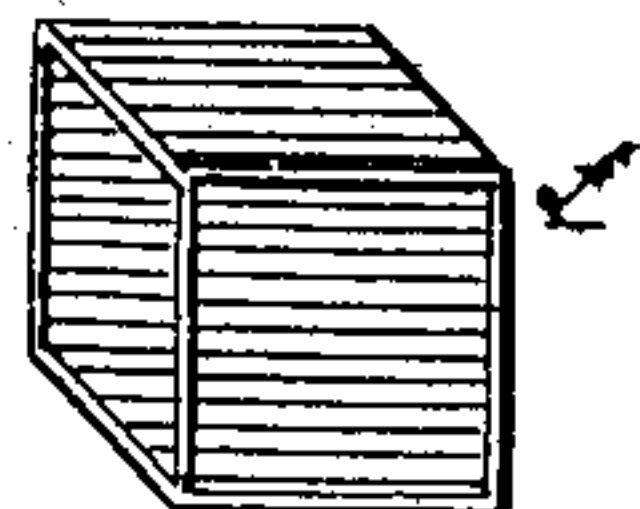
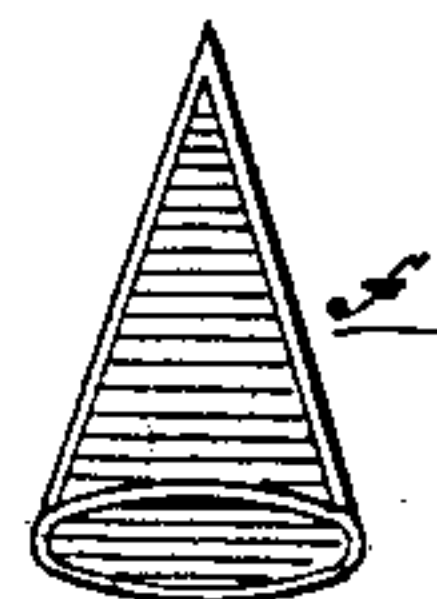


Fig. 5



INVENTOR:

V. M. Farr

ATTORNEYS.

UNITED STATES PATENT OFFICE.

VALENTINE M. FARR, OF OSKALOOSA, IOWA.

KALEIDOSCOPE.

SPECIFICATION forming part of Letters Patent No. 243,537, dated June 28, 1881.

Application filed October 7, 1880. (Model.)

To all whom it may concern:

Be it known that I, VALENTINE M. FARR, of Oskaloosa, in the county of Mahaska and State of Iowa, have invented a new and Improved Kaleidoscope, of which the following is a specification.

The objects of this invention are to provide a kaleidoscope in which the angles of the reflectors and of the figures produced may be varied at will and held fixed in any desired position without turning the instrument, and to design and arrange the bits of glass or other material whose change in position give rise to the figures of the kaleidoscope so that when viewed through the kaleidoscope-tube they shall present varying tints, shades, and compounds of color, and a greatly increased number and variety of figures.

Figure 1 is a plan of the kaleidoscope with the top of the case removed. Fig. 2 is a sectional side elevation of the same on line *x x*, Fig. 1. Fig. 3 is a sectional end elevation on line *y y*, Fig. 1. Figs. 4 and 5 illustrate some of the objects represented.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the case of the kaleidoscope, which may be of any desired shape or size.

B is the ground glass, set vertically in grooves in one end of the case A, against the inner face of the end plate, A', which is provided with a triangular opening, *a*. A little in rear of the end plate, A', is a parallel vertical partition, C, provided with a corresponding triangular opening, *b*, and between the plate A' and partition C is the pocket D, for the reception of the object-wheels E.

An object-wheel, E, is constructed of two or more circular plates of glass, *e*, held apart and parallel with each other by a peripheral strip or hoop, *d*, of cloth, wood, or other suitable material, so as to form one or more chambers, *g*, for containing the bits of glass *f*, or other material, that are designed to produce the figures of the kaleidoscope, and any of said bits of glass *f* may be removed or others be introduced into the chambers *g*, for the purpose of further varying the figures formed, through a slit or slits *h* made in the periphery of said wheel E. When in place in the case A the

object-wheel E rests on the friction disk or wheel F, that is secured on an end of the rod F', which is extended longitudinally through the case A, along the bottom thereof, and has a knob or handle, F'', on its outer end for convenience of turning, so that by rotating said rod F' the object-wheel E is made to revolve. I do not confine myself to this precise device for revolving the object-wheels E, as it is obvious that this may be accomplished in other ways—for instance, the rod F' may be extended only partly through the case A, and be provided with a gear-wheel to gear into corresponding wheel on the end of a rod that shall be introduced through the side of the case A, whereby said object-wheel E may be revolved.

Two object-wheels, E E, may, for the sake of convenience, be carried in the case A, and be held therein by the braces and springs P P, or other convenient device.

G G represent two tapering strips of wood or other suitable material for supporting the reflectors I I. The wider ends of said strips G G are secured on the partition C on either side of the triangular opening *b*, while the narrower ends of said strips are entered into the tube H against the eyeglass K, so that said strips G G form in cross-section a V-shaped support, tapering from the partition C to the eyeglass K. Resting along the inclosure thus made by the supporting-strips G G are the two reflectors I I, of the same general shape as the said strips G G, the broader ends of said reflectors I I being entered within the opening *b* of the partition C, while the narrower ends thereof are entered into the tube H, in contact with the eyeglass K. This arrangement of the reflectors I I brings the angle of reflection in a line with the eye of the observer, and the forms produced in the kaleidoscope are thereby seen more plainly. Covering the back of each of these reflectors I I is a strip of cloth, L, or other suitable material, whose lower edges extend down between the strips G G, and are secured on or about the lower edges of said strips G G, while the upper edges of these strips of cloth L are glued or otherwise secured along the rod or roller M, that extends over the reflectors I I centrally and longitudinally through the case A from its bearing in the partition C, and has

a knob or handle, M' , on its outer end, whereby it is turned, so that by turning said rod M the tops or upper edges of the reflectors $I I$ are made to approach or allowed to recede
 5 from each other, as may be desired, whereby the angles of reflection are changed and the figures reflected from the bits of glass f are varied and multiplied at will. This rod M is provided with one or more longitudinal grooves,
 10 l , on its inner end, in which the horizontal spring N engages to hold the said rod M , and thereby the reflectors $I I$, in any desired position, so that the images or figures seen in the said reflectors $I I$ may for the time be permanent. A cord, m , one end of which is secured
 15 to the rod M , while the other end is secured to the case A , prevents the reflectors $I I$ from falling too far apart by limiting the extent of the revolution of the said rod M , and the shoulders $o o$ of the end partition, C , prevent the said reflectors $I I$ from being drawn too near
 20 together.

The devices herein shown for moving and adjusting the glasses E and reflectors I are
 25 simple and effective; but I do not confine myself to them, as it is evident that other devices may be applied without departing from my invention.

With object-wheels E constructed as herein
 30 shown and described, the bits of colored glass, when viewed through the kaleidoscope-tube, are seen to intersect each other in various ways, and the different colors are made to combine as the wheels E are revolved, causing
 35 ever-varying tints and shades as some of the pieces or bits of certain colors pass in front of those of other colors, so that the eye looks through two or three colored pieces or bits at

the same time. For instance, whenever two bits of blue overlap each other in this way a
 40 deeper blue is formed, and when blue and light red or pink thus come together a shade of purple is formed. Some of the bits f , both of clear and colored glass, have different figures,
 45 such as cubes, pyramids, cones, globes, &c., marked or outlined on them with some dark or opaque lines, as shown in Figs. 4 and 5, and in the kaleidoscope these outline figures produce a pleasing variety of forms. Other pieces
 50 of clear or colored glass are checkered or striped or otherwise ornamented by tracing opaque lines upon them, so that the different pieces of colored glass appear to be beautifully figured
 55 as in the revolution of the object-wheel they are overlapped by these pieces of figured glass.

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

1. In a kaleidoscope, the object-wheel E , formed of three or more circular glass plates,
 60 e , held apart by hoop d , making two or more chambers, g , and provided with bits of glass f , of various shapes and colors, for the purpose specified.

2. In a kaleidoscope, the combination, with
 65 the adjustable reflectors $I I$, of the adjusting-cloth L and revolving rod M , substantially as herein shown, and for the purpose described.

3. In a kaleidoscope, the combination, with
 70 the reflectors $I I$, cloth L , and rod M , of the spring N , substantially as and for the purpose described.

VALENTINE M. FARR.

Witnesses:

DAVID G. WHITE,
 FRED. H. BAKER.