T. J. W. ROBERTSON.

Toy-Chromatropes.

No. 165,123. Patented June 29, 1875.

Fig. 1.

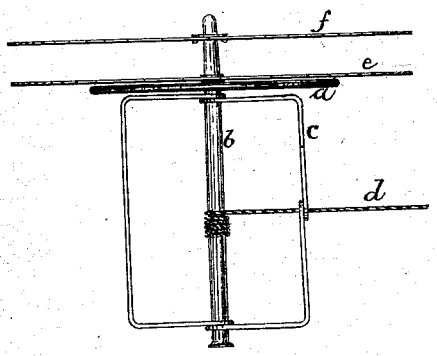

Fig. 2.

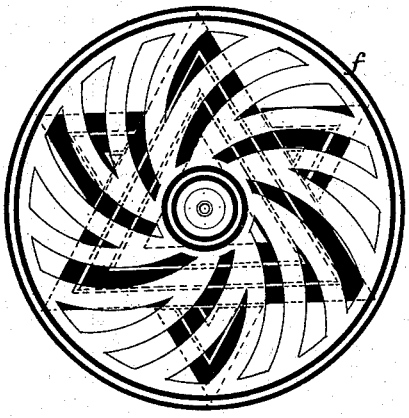

Fig. 3.

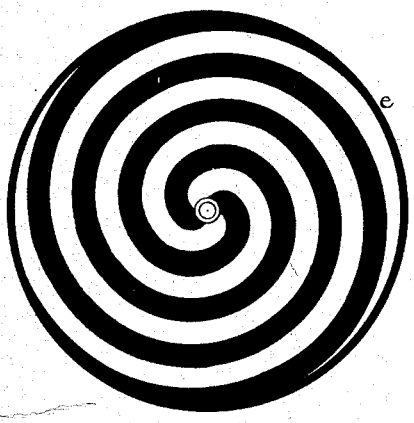

Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS J. W. ROBERTSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN TOY CHROMATROPES.

Specification forming part of Letters Patent No. **165,123**, dated June 29, 1875; application filed April 27, 1875.

To all whom it may concern:

Be it known that I, THOMAS J. W. ROBERTSON, of the city of Washington and District of Columbia, have invented a new and useful Improvement in Chromatropes; and do hereby declare that the following is a full, true, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a side view of my invention; Fig. 2, a plan, and Figs. 3 and 4 obverse and reverse views of a disk revolving loosely on the spindle *b*.

This invention consists in a new style of chromatrope, forming a beautiful toy, by which an infinite variety of changes of colors may be produced in the most rapid succession.

To accomplish this I mount a disk, *a*, upon a spindle, *b*, which runs in bearings formed in the handle *c*, so that a rotary motion in opposite directions may be given to said disk *a*, by first winding up and then alternately pulling and loosening the string or cord *d*, thereby causing the latter to unwind and wind up in opposite directions, in succession, upon the spindle *b*, and in this manner produce a rapid alternate rotary motion of the spindle and disk. Above the latter I place a second disk, *e*, loosely upon the spindle, which disk may have upon it any suitable arrangement of colors; but when it is intended that said loose disk shall be used alone upon the spindle I prefer that the colors shall be arranged in a series of volutes, as shown in Fig. 3, but without limiting myself to this particular style, as many other arrangements of colors will be found to give very beautiful effects, so long as the colors are not laid on in concentric curves or rings, as this arrangement will produce but a very slight change when only a single disk is used. On the reverse side of the disk a star or double triangle may be made, as shown in Fig. 4, which will be found to give the most beautiful effects when running beneath the skeleton chromatropic disk *f*, especially when said disk *f* is fast on the spindle *b*. To produce the best effect the disk *f* should be darkened on the upper side; but colors of various kinds may be used on the opposite side to produce another change when desired by reversing the position of said disk *f*.

Instead of the system of coloring shown in Figs. 3 and 4, many other styles of designs may be adopted to suit the taste of the manufacturer or the public; but I have found those referred to show the prettiest display and change of colors of any that I have tried so far. A very handsome effect may be produced by using in lieu of the disk *e* one or more star, scalloped, triangular, or other regular or irregular shaped pieces, each being of one color, but differing from the others. These pieces may be employed beneath a skeleton disk or above it, and with or without the loose disk *e*, a very pleasing effect being produced in either way. If the driving-disk *a* be of some light color, and the star or other shaped pieces here referred to be of various dark shades, by using one or more of these pieces the effect will be nearly the same as if the colors were printed or painted on the disk *e*, but varied somewhat by the shifting of one piece over the other; and hence these pieces may be considered as an equivalent for the loose disk *e*, when used in combination with the skeleton chromatropic disk *f*.

I am aware that various toys have been made in which loose disks are used to produce changes of colors. Such I do not claim; but

What I desire to secure by Letters Patent is—

1. The combination of a spindle or disk, having a device by which it may be continuously revolved alternately in opposite directions, with a skeleton chromatropic disk and a loose disk or disks suitably colored and arranged to revolve independently of said skeleton chromatropic disk, substantially as set forth.

2. In combination with a skeleton chromatropic disk, having a device to give it a positive alternating revolving motion, a colored loose disk, card, or plate, arranged to revolve independently of the skeleton disk, substantially as set forth.

3. The combination of the disk *a*, firmly secured to spindle *b*, loose handle *c*, cord *d*, and the colored loose disk *e*, substantially as described.

4. The combination of the subject-matter of the last claim with a skeleton chromatropic disk arranged to be secured to spindle *b* and move therewith, substantially as set forth.

T. J. W. ROBERTSON.

Witnesses:

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