No. 630,652. Patented Aug. 8, 1899.

D. A. A. BUCK.

KALEIDOSCOPE.

(Application filed Feb. 7, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

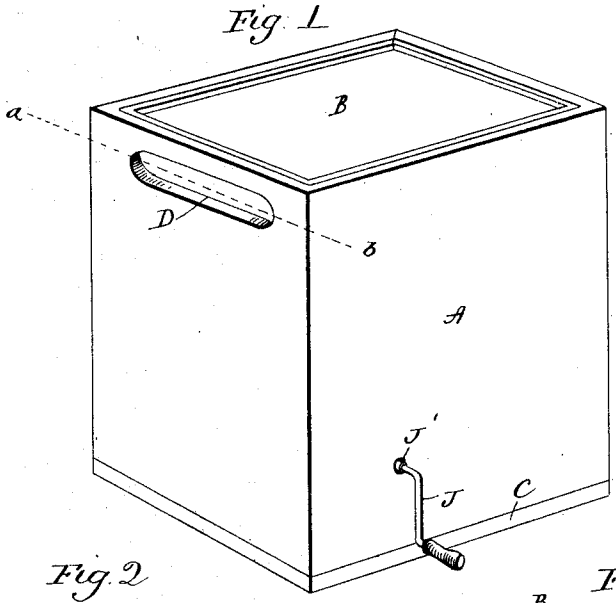


Fig. 2

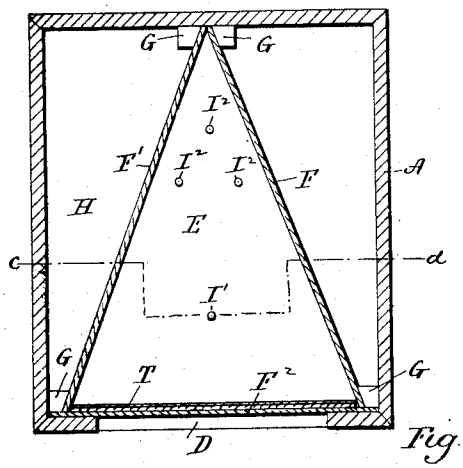


Fig. 3

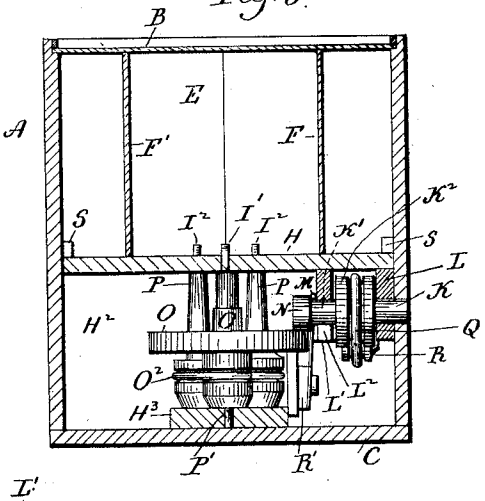
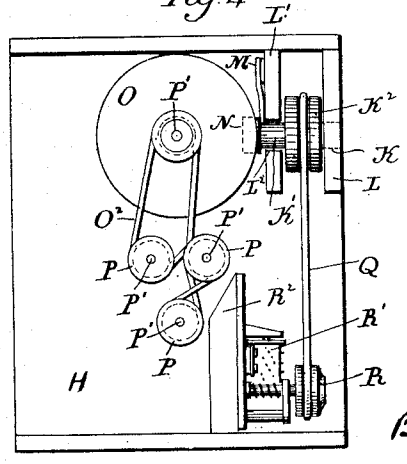


Fig. 4



Witnesses
J. H. Shumway
Lillian D. Kelley.

Daniel A. A. Buck,
Inventor.
By attys. Earle & Seymour

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 5

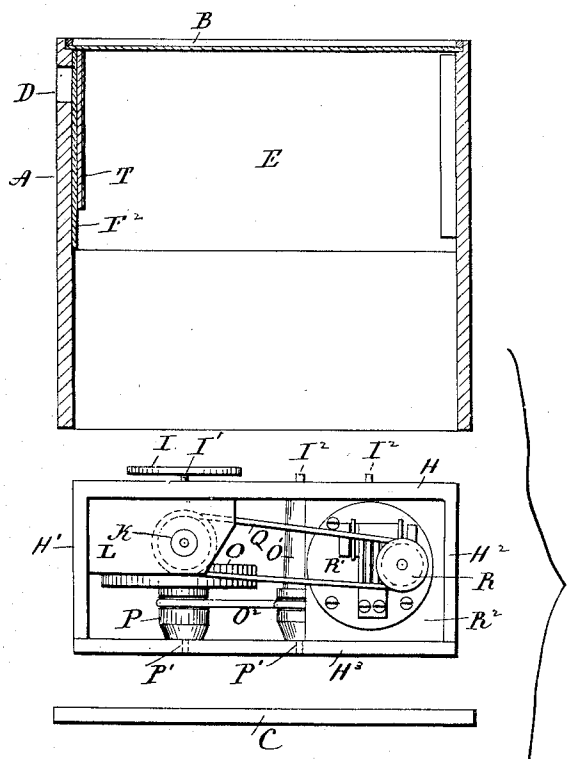
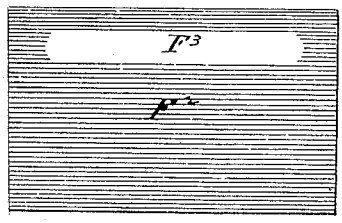


Fig. 6



Witnesses.
J. K. Shumway.
Lillian D. Kelsey.

Daniel A. A. Buck.
Inventor.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DANIEL A. A. BUCK, OF NEW HAVEN, CONNECTICUT.

KALEIDOSCOPE.

SPECIFICATION forming part of Letters Patent No. 630,652, dated August 8, 1899.

Application filed February 7, 1898. Serial No. 669,327. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. A. BUCK, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Kaleidoscopic Toys; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of a toy constructed in accordance with my invention; Fig. 2, a view of the toy in horizontal section on the line *a b* of Fig. 1; Fig. 3, a view of the toy on the line *c d* of Fig. 2; Fig. 4, a detached view of the removable puppet-actuating apparatus with the lower plate thereof removed; Fig. 5, a view showing the box in central longitudinal section, the puppet-actuating mechanism removed from the box and shown in side elevation, and an edge view of the bottom of the box, which is detached, the said box, apparatus, and box-bottom being arranged in the order of their assemblance; Fig. 6, a detached view of the end mirror F^2, containing the sight-opening F^3.

My invention relates to an improvement in that class of toys which are based upon the principles of the kaleidoscope and which therefore may with propriety be called "kaleidoscopic" toys, the object being to produce a toy of simple construction and durable arrangement by means of which a few puppets or figures may be apparently multiplied and caused to pass through a series of hippodromic evolutions.

With these ends in view my invention consists in a kaleidoscopic toy having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In carrying out my invention I employ a rectangular box or case A, having a ground-glass top B and a removable bottom C, the front end of the box being provided near its upper edge with a long sight-opening D, adapted in length to permit the triangular performing-chamber E of the box to be looked into with both eyes at the same time. The said chamber of the box is formed by three mirrors F, F′, and F^2, arranged to form the said triangular chamber, the base of which is placed, so to speak, against the front end of the box, the mirrors F and F′ corresponding in length and pitch and the mirror F^2 being shorter. Vertical retaining-strips G, located within the upper portion of the box and secured to the inner faces thereof, are arranged for holding the mirrors in place. However, these strips may be replaced by any suitable holding means. A portion of the silver reflecting-surface applied to the mirror F^2 is removed, as shown in Fig. 6, so as to leave the clear-glass sight-opening F^3, the said sight-opening F^3 conforming in shape to the sight-opening D, formed in the front side of the box.

Within the lower portion of the box I locate a removable apparatus comprising a platform or stage H, above which the movable puppets are supported and below which is located the mechanism which sets them in motion. The said platform H constitutes the top of a box-like frame, also comprising front and rear pieces H′ and H^2 and a narrow longitudinally-arranged bottom plate H^3. The number of puppets or figures and their arrangement will be varied according to the particular character of the mimic scene which it is desired to present. No figures are herein shown; but for mounting some of them I have provided a revolving disk I, which is located near the wide forward end of the performing-chamber E and which itself is attached at a point close above the upper face of the platform H to the upwardly-projecting screw-threaded end of a pivot I′. Three pivots I^2, located in triangular arrangement and having their upper ends threaded and projecting above the upper face of the platform, are provided for the attachment of the single figures, such as men or women or animals. The rotation of these pivots may be effected in a variety of ways. As herein shown it is done by a series of frictionally-driven parts, whereby I avoid the expense of gears and their liability to breakage and derangement. The said parts are driven by a removable crank-handle J, which passes through a suitable opening J′, formed in one side of the box, and threads into the outer trunnion of the two trunnions K K′ of a grooved sheave-like driving-wheel K^2, arranged in a vertical plane.

The trunnion K of the said wheel has bearing in a bracket L, depending from the platform H, while the trunnion K′ has a bearing in a bracket L′, also depending from the platform H and formed with a vertically-arranged downwardly-opening slot L^2, receiving the trunnion and permitting it to be moved downward by the action of a spring M, secured to the inner face of the bracket L′ and exerting a constant effort to force the trunnion K′ downward, so as to force the rubber friction-band N, mounted upon its extreme rear end, down upon the upper face of the large horizontally-arranged driven wheel O, mounted upon a heavy spindle O′, of which the pivot I′ constitutes the upper support. At a point below the friction-disk O its spindle O′ is enlarged and grooved for the reception of a friction-belt O^2, which communicates the rotation of the spindle to the spindles P P P, the lower ends of which are grooved for the reception of the said belt and the upper ends of which are supported by means of the upwardly-projecting threaded pivots I^2 I^2 I^2 before mentioned. The lower ends of the spindles O′ and P P P are provided with wire pivots P′ P′ P′, having bearing in the plate H^3, before mentioned. It will be understood that when the grooved wheel K^2 is rotated by means of the handle J it will act through the friction-band N upon the inner end of its trunnion K′ to rotate the driven wheel L and the spindle O′ thereof and in turn rotate the spindles P through the friction-belt O^2. The rotation of these spindles sets the puppets or figures in motion, as above described. As herein shown, a friction-belt Q, running over the wheel K^2, drives a grooved wheel R, which is employed for the actuation of a music-box mechanism, the respective parts of which are collectively designated by R′ and which are secured to an upright block R^2, interposed between the platform H and the bed-plate H^3.

When the removable apparatus just above described is introduced into the box, its inward movement thereinto is limited by the engagement of its platform H with two horizontally-arranged strips S S, secured to the sides of the box in the plane of the lower edges of the mirrors F, F′, and F^2. When the removable bottom D is applied to the box, it engages with the lower face of the bed-plate H^3 and holds the said apparatus snugly within the box, from which it may be readily removed for attention or repair or for changing the puppets by simply removing the cover D, which will preferably be secured in place by screws. Instead of employing the mirror F^2 for the purpose of multiplying the reflections of the figures or puppets I may employ a removable card or plate T, adapted in size to be slipped in front of the mirror F^2 and between the extreme rear ends of the mirrors F and F′, the said card or plate being so narrow that its upper edge will fall below the lower edge of the sight-opening D. This card or plate will contain figures or other objects designed to be multiplied by reflection in the mirrors F and F^2. Thus if the puppets are designed to imitate the figures in a circus-ring I may apply to the plate T the photograph of a tier of people as seen in a circus-ring. Then when the performing-chamber is looked into through the sight-opening D there will be seen tier after tier of spectators watching the performance of the figures within the ring.

It is apparent from the suggestions which have been made of modifications and of others which may obviously be made, that some changes from the construction herein shown and described may be made, and I therefore do not limit myself to the exact construction herein set forth, but hold myself at liberty to make such alterations as fairly fall within the spirit and scope of my invention.

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

1. In a kaleidoscopic toy, the combination with a box or case of mirrors located in the upper portion thereof to form a triangular performing-chamber the interior of which is viewed through a sight-opening formed in one end of the box, and an independently-organized hippodromic apparatus, removably located within the lower portion of the box, and comprising a platform, a plurality of puppets or figures supported above the said platform at different points thereon, and actuating means located below the platform and connected with the figures or puppets for independently operating the same.

2. In a kaleidoscopic toy, the combination with a box or case, of mirrors located in the upper portion thereof and arranged to form a triangular performing-chamber the interior of which is viewed through a sight-opening formed in one end of the box, and an independently-organized hippodromic apparatus located within the lower portion of the box, and comprising a platform and a bottom plate which are connected together so as to form a space between them, puppets or figures supported above the said platform at different points thereon, friction-wheels and spindles located in the said space and mounted in the said platform and bottom plate, and friction-belts for driving the said wheels and spindles with which the figures or puppets are connected through openings in the platform and by which they are independently operated.

3. In a kaleidoscopic toy, the combination with a box or case, of mirrors arranged within the upper portion thereof to form a triangular performing-chamber the base of which coincides with the front end of the box, which is formed near its upper edge with a long sight-opening through which the interior of the chamber may be viewed, a removable plate adapted to be set within the performing-chamber against the short mirror just mentioned, and bearing a pictorial representation which will be multiplied by the reflection of

the other mirror, and an independently-organized hippodromic apparatus removably located within the lower portion of the box or case, and comprising a platform, puppets or figures supported above the said platform at different points thereon and rising into the performing-chamber the mirrors of which multiply them by reflection, and also comprising means located below the platform but connected with the said puppets or figures through openings formed therein for actuating the said puppets or figures in independent operation.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

DANIEL A. A. BUCK.

Witnesses:
GEORGE D. SEYMOUR,
FRED. C. EARLE.