

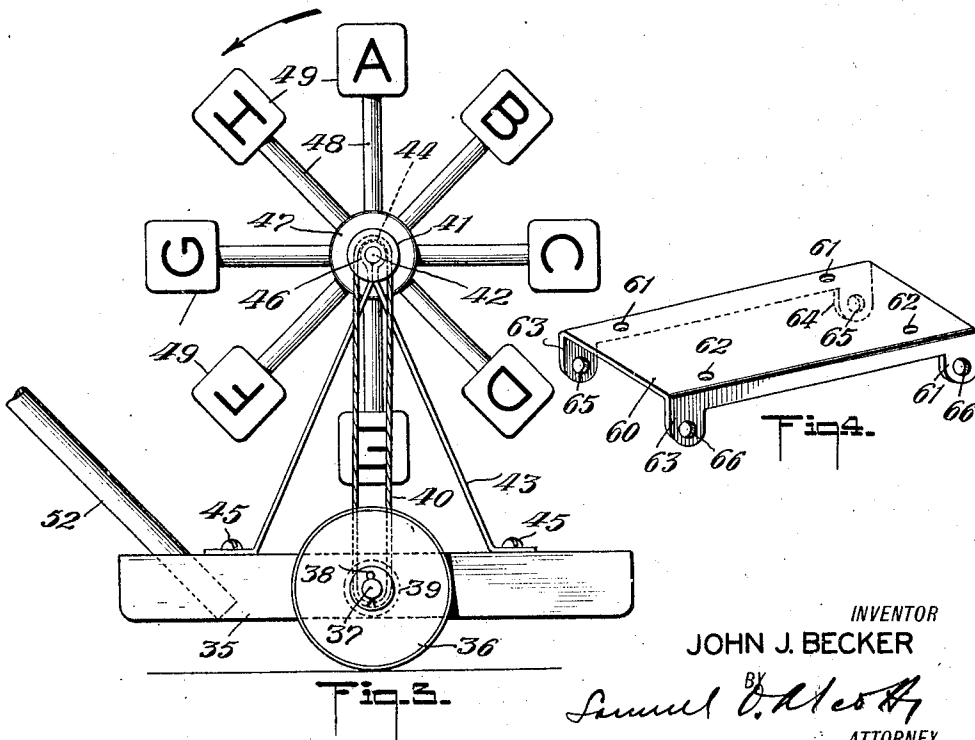
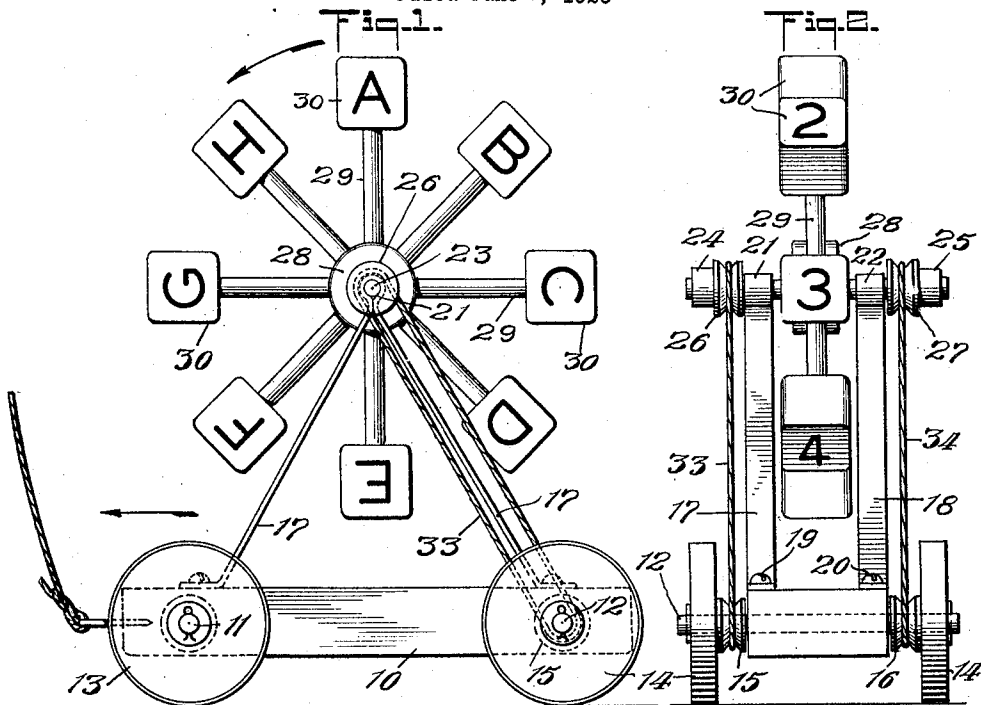
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MECHANICAL TOY

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# UNITED STATES PATENT OFFICE.

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## MECHANICAL TOY.

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My invention relates to mechanical toys, and more particularly to that class of toys in which a travelling carriage member, in its movement, carries and actuates a rotor or rotatable member comprising a series of radial arms carrying substantially flat-sided block-like elements, adapted when rotated to diffuse a variety of colors and be a source of amusement and when at rest to be a source of education and instruction for children and others.

Some of the objects of my invention are, to produce a toy of this type which is of simple and durable construction, of comparatively few parts, of pleasing and artistic appearance.

Another object is, to provide a toy of this type which when actuated, will produce an optical effect resembling a blended ring or rings of color or colors, or other desired color formations.

Another object is, to produce a toy of this character of such construction that it may conveniently be assembled for use, disassembled for repair or transportation in containers, and effectively supported for travelling movement.

Another object is, to produce a toy in which, when the rotor or rotatable member is actuated, it shall simulate or suggest the appearance of a so-called Ferris wheel, when the rotor rotates.

Another object is, to produce a toy in which a travelling carriage is provided with rotatable wheels or rollers, which are in turn provided with spools or pulley devices that are adapted to be connected by a belt or belts to spools or pulley devices, carried by a rotor or rotatable member, mounted on said carriage, and thereby actuate and rotate the latter in correspondence with the movement of the travelling carriage and the rotation of its supporting wheels.

Another object is, to provide a device of this type which shall be of such weight and construction that when the travelling carriage is moved along a suitable surface, the wheels of said carriage will be rotated by friction with said surface and will, by connecting means, cause a simultaneous rotation of the rotor.

Another object is, to provide a device of this type, in which the travelling carriage may be in the form of a four wheel carriage, or may be of the two wheel cart type.

My invention consists in the particular construction, combination, organization and arrangement of parts, shown in the accompanying drawings, described in the specification, and more particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1, is a side elevation of one form of embodiment of my invention, showing the rotor or rotatable element arranged to move in a vertical plane.

Fig. 2 is an end elevation of the invention shown in Fig. 1, illustrating more clearly the means for transmitting rotary movement from the carriage wheels to the rotor.

Fig. 3 is a modification of the type of device shown in Figs. 1 and 2, illustrating the base supporting the rotor as carried by a pair of wheels substantially as a cart and having an extending rod or guide piece to direct the carriage and cause it to travel.

Fig. 4 is a perspective view of a one piece type of metal base, for the travelling carriage, designed to support the rotor in a vertical plane, the axles and movable parts of the apparatus being removed therefrom.

Referring more particularly to the drawings, in which like numerals of reference indicate corresponding parts, my device comprises a base 10, provided near each end with axles 11 and 12, which extend through the base 10, from side to side. Wheels 13 and 14 are rotatably mounted on the axles 11 and 12 and are held from displacement therefrom by nuts, cotter-pins or other suitable fastening means. The wheels 13 and 14 serve as supports upon which the base 10 may travel over any suitable surface, when it is pulled, pushed or otherwise propelled. Each of the opposite wheels, at either end of the base 10, are provided with a grooved pulley or spool 15 and 16. These pulleys 15 and 16 are attached to their respectively adjacent wheels, or are formed as a part thereof, and are arranged to rotate by and with the rotation of the wheels, and with the travelling movement of the carriage.

Supports or standards 17 and 18 are detachably mounted opposite each other upon the carriage base, near the opposite longitudinal edges thereof, and are held in proper position by means of screws, bolts or other fastening means 19 and 20. These standards 17 and 18 are preferably of metal, so that they may be readily given the desired forma-

tion, and may be arranged to operably support therebetween, a rotatable member. These standards 17 and 18 may each be formed in a single piece and each comprises  
 5 a pair of legs spreading apart from their upper extremities where they terminate in substantially cylindrical enlarged portions 21 and 22. These portions 21 and 22 are arranged opposite, and in alinement with each  
 10 other, and provide means by, and in which a supporting shaft or axle 23, for carrying a rotor is adapted to be rotatably held.

The shaft 23 extends transversely, above and across the base of the carriage, is seated  
 15 in the enlargements 21 and 22, extends therethrough and is provided with threaded portions at its opposite ends. Nuts, or other suitable fastening means 24 and 25, are carried on the threaded end portions of the  
 20 shaft 23 so disposed that grooved pulleys or spools 26 and 27 may be mounted on the shaft 23, in non-rotatable relation therewith, between each standard 21 and 22, and the fastening means 24 and 25.

25 The spools or pulleys 26 and 27 may be readily adjusted with respect to the standards 21 and 22 by the loosening or tightening of the nuts or fastening means 24 and 25 on the shaft 23, so that said shaft may be  
 30 held in the desired operative relation to the standards 21 and 22, and may at the same time be easily rotated.

Mounted between the standards 21 and 22, in fixed relation to the shaft 23, rotating  
 35 therewith and being rotated thereby is a hub-member 28 of a rotor or rotatable element. This member 28 is disposed so as to rotate in a substantially vertical plane when the shaft 23 is actuated and caused to rotate.  
 40 The hub-member 28 is provided with a series of outwardly extending, radially disposed, arms or spokes 29, which are fixed to the hub-member. At or near the outer end of each of said spokes 29 there is fixed an enlarged  
 45 substantially flat-sided block-like member 30. The spools or pulleys 15 and 16 are connected with the spools or pulleys 26 and 27 respectively, by means of endless belts or straps 33 and 34 in such a manner that the  
 50 rotation of the wheels 13 and 14, and the consequent rotation of the pulleys 15 and 16 produced by the travel of the carriage on a suitable surface, will be transmitted to and actuate the pulleys 26 and 27 and thereby  
 55 effect the rotation of the shaft 23, the corresponding rotation of the hub 28, of the rotatable member, and the movement of the radial arms 29 and the block-like members 30.

It will be obvious, that any substantial  
 60 forward or backward or continued traveling movement of the carriage will result in a rotation of the wheels 13 and 14, the rotation of the driving pulleys 15 and 16, and that this rotation, by means of the belts 33  
 65 and 34, will be transmitted to the driven

pulleys 26 and 27, and that the shaft 23 and the rotor will likewise and correspondingly rotate.

It will be seen that the rotor is caused to rotate synchronously, with, and in corre-  
 70 spondence to the forward or backward traveling movement of the carriage. When the carriage is moved forwardly, as indicated by the arrow in Fig. 1, the rotor will rotate in the direction indicated by the arrow in that  
 75 figure. When the carriage is moved backwardly, or in a direction reverse to that indicated by the arrow in Fig. 1, the rotor will rotate in a direction the reverse of that indicated by the arrow in Fig. 1. This rota-  
 80 tion is directly caused by the travelling movement of the carriage, producing thereby the rotation of the carriage supporting wheel 13 and 14, the consequent rotation of the  
 85 pulleys 15 and 16, and the transmission of that rotation through and by the belts 33 and 34 to the driven pulleys 26 and 27.

For efficient operation of my device, to produce the desired rotation of the rotor and other parts of the apparatus above referred  
 90 to, it is desirable to construct the device with a base and parts assembled thereon of such weight that a proper frictional contact of the carriage wheels will be made with  
 95 the surface upon which they travel; it being understood that the operation of my apparatus is due primarily to friction, produced by and during the travelling movement.

In Fig. 3, is shown a modified form of  
 100 my invention, which differs from that shown in Fig. 1 and 2, in the arrangement of the means for supporting the base of the carriage and for causing it to travel. In the  
 105 modification in Fig. 3, the base 35 is supported by but one pair of wheels 36, which are rotatably mounted on an axle 37, extending through the base 35, and projecting therefrom, on either side thereof. The shaft  
 110 or axle 37 is disposed transversely of said base at a point substantially midway the opposite ends of said base. The wheels 36 are held upon the axle 37, on either side of  
 115 said base 35, by cotter-pins 38 or any other suitably fastening means, so that they will retain their desired operative position, and rotate when the base and members carried  
 120 thereon are caused to travel. Between each of the wheels 36, fixed thereto, adapted to rotate therewith, and adjacent the longitudinal  
 125 sides of the base 35, I provide pulleys 39, substantially identical with the pulleys 15 and 16, illustrated in Figs. 1 and 2. These pulleys 39 carry belts 40, which  
 130 operate similarly to the belts 33 and 34 in Figs. 1 and 2 and transmit the rotary motion of the pulleys 39 to pulleys 41, non-rotatably mounted on a transverse shaft 42, mounted on supporting standards 43, substantially  
 135 similar to corresponding parts shown in

Figs. 1 and 2, and described in connection therewith. Nuts 44, or other suitable fastening means, are carried on the opposite ends of the transverse shaft 42, to hold the shaft and pulleys thereon in operative, adjusted position in relation to the supporting frame 43. The supporting frame 43 is substantially identical to the supporting frame, composed of the members 17 and 18, shown and described in Figs. 1 and 2, and is detachably mounted upon the base 35, by screws 45 or other suitable fastening means. As in the embodiment shown in Figs. 1 and 2, the transverse shaft 42 is supported by bearings 46, that are substantially oppositely disposed enlargements of the standards 43, at the upper extremities of said standards. These bearings receive the shaft 42, and carry it in rotatable operative relation thereto, substantially as, and in the manner illustrated in Figs. 1 and 2.

Midway between the standards 43, the hub 47 of the rotor is mounted in fixed relation to, and on the shaft 42 and is adapted to rotate therewith in all respects substantially similarly to the rotor and arrangement illustrated in Figs. 1 and 2. This hub 47 is likewise provided with a series of radially disposed arms or spokes 48, which move in a substantially vertical plane with the rotation of the shaft and hub of the rotor.

At the outer end of each said arms or spokes 48, there is provided an enlarged substantially flat-sided block-like member or weight 49, in all respects substantially similar to the corresponding elements illustrated in Figs. 1 and 2. The base 35 of the travelling carriage is, at or near one end, provided with a guiding arm or handle 52, which may be attached to the base, by screws, pins or other suitable fastening means, or may be inserted into a suitable opening or socket in the base, or at the side thereof, so that said rod or handle may be in fixed relation to the base, and may serve as a means by which the carrying member or cart-like element may be propelled and guided.

It will be obvious that the modification shown in Fig. 3 is substantially similar in all respects to the embodiment shown in Figs. 1 and 2, except that the carriage or carrying member is in the nature of a two wheel cart, guided and propelled by means of a handle or rod, projecting from the base. In the embodiment illustrated in Fig. 3, the rotor element rotates in correspondence with, and in consequence of and in correspondence with the traveling movement of the cart or carriage.

In the preceding described figures of my drawings, I have indicated that the base portion of my invention may be constructed of a block of wood or other suitable material, but it is to be understood that I do not confine myself to the use of these ma-

terials for that purpose or for the construction of any part of my invention.

In order that a desirable manner of forming this base member of other materials than wood may be illustrated, I have shown in Fig. 4 one form of metal base, adaptable for use with the type of invention illustrated in Figs. 1 and 2.

Referring to Fig. 4, the base member comprises a top portion or plate 60 of suitable shape, provided with perforations 61 and 62 suitably arranged to receive means to hold the upright supporting standards 17 and 18 in fixed, operative relation thereon. Near the opposite ends of the plate 60 are provided downwardly extending lugs 63 and 64, which are similarly placed in alignment with each other on the opposite lateral sides of the plate or base member, in such a manner that axles upon which the base member is carried, would register through openings 65 and 66 arranged in said lugs, in such a manner as to serve as a means to operably carry wheels upon which the base may travel.

It will be understood that my rotor may be formed in a single piece of wood, metal or other suitable material, or may be made up of elements, assembled in the desired operative relation. It will be understood that the block-like members 30, 49, upon the outer ends of the spokes of the rotor may be of any desired size or substantially flat-sided formation, and that they need not be of cubical shape, and that by so illustrating them I have arbitrarily chosen that particular flat-side form. It is also to be noted that the speed with which the rotor moves may be regulated at the will of the operator by the speed of movement of the carriage and by the relative sizes of the driving and driven pulleys.

It is contemplated that the block-like members may be colored of a uniform color or that each may be given a different color or shade. Likewise, the color of the spokes may be varied or combined, as desired, and it is also obvious that the hub of the rotor, as well as the driving wheels, and even the body of the carriage may be colored to suit the taste, or to effect the desired optical impression.

It will be seen therefore that if a certain well-known combination and proportion of colors is arranged and distributed upon the rotor the rotation of the rotor at the required speed will blend the colors, so that the optical illusion of the vision of white would be created. It is also apparent that at different speeds different optical impressions would be brought about. It is also apparent that almost any desired impression of various combinations of substantially concentric shapes would be created by the proper arrangement of colors upon the rotor element and causing that element to rotate.

I have illustrated my block-like members as being of solid formation, but it is to be understood that they may be hollow if desired, and may if desired be made of celluloid, glass or any other material that will produce the effect of transparency, translucency or opaqueness.

I may, if desired, cover these blocks with material having a high reflective power, disposed either evenly or irregularly and thereby produce a unique, flashing, flickering or wavering light effect when light is thrown upon the rotor in the course of its rotation. It is understood that this may be artificial or natural light, and that such an effect may be produced indoors or otherwise.

Letters, figures, pictures, arbitrary or conventional designs or other suitable decorations may be embossed, printed, painted or otherwise suitably arranged upon one or more of the faces of the block-like members of the rotor to give these portions of the rotor the characteristic appearance desired when the rotor is rotated and to have educational value to children or others when the rotor is at rest.

It will be seen from the above, that I have produced a device with many desirable advantages and results, that is of comparatively few parts, and of simple construction, is of cheap manufacturing cost, may be so dissembled that it may be readily packed for shipment or transportation, and so that repairs thereto may be readily and conveniently made, which operates as the result of the travelling movement of the carrying member in combination with friction produced by the weight of the carrying and carried parts, that is useful and of value as an educational device and as an instrument of amusement, and which has other advantages and results that may be apparent.

Although I have thus described my inven-

tion in detail and specifically illustrated it in the accompanying drawings, I do not wish to be limited to the particular form of embodiment shown, nor by the terms of description defining it, except as the state of the art and appended claims may require, for it is obvious, that various modifications may be made in the combination, organization, and arrangement of parts of my invention without departing from the spirit and scope thereof.

What I claim as new and desire to secure by Letters Patent is:

1. In a mechanical toy, a carriage including a base, an axle and wheels on the axle, brackets secured to and rising from said base, a shaft journaled in the brackets, a rotor fixedly secured to said shaft and including a series of radially disposed arms having enlargements at their outer ends and said enlargements being cubical in shape presenting flat faces having educational characters thereon, such as letters and numerals, and means whereby to rotate the rotor when the carriage is rolled over a surface.

2. In a mechanical toy, a wheeled carriage, shaft supporting means on the carriage, a shaft journaled on the shaft supporting means, a rotor fixed to the shaft to rotate with the latter and including a hub and a series of radially disposed arms provided with cubical enlargements at their outer ends presenting flat faces having educational characters thereon, and means to rotate the shaft and rotor, the rotor hub and arms and the cubical enlargements being differently colored so that as the rotor is rotated there is presented a peculiar color scheme resembling concentric designs of different color.

Signed at the borough of Brooklyn in the county of Kings and State of New York this 24th day of May A. D. 1926.

JOHN JACOB BECKER.