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R. F. FRYE ET AL

TOY

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Fig. 4

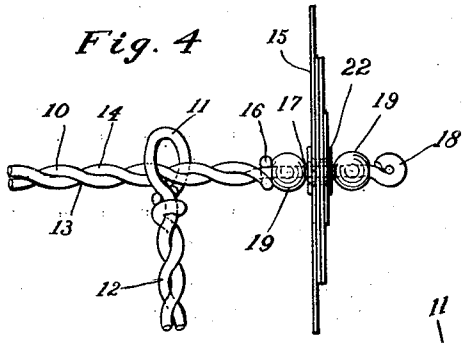
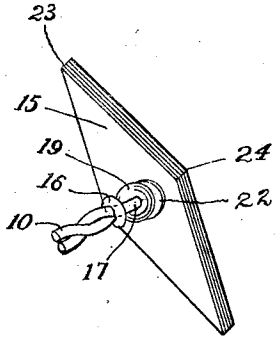


Fig. 1

Fig. 2

Fig. 3



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TOY.

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This invention relates to toys or amusement devices, and more especially to that class whereby a reciprocatory movement of one element over the surface of the other produces a vibratory movement of the latter which is thereby converted into a rotary movement of a delicate body, such as a disk or wheel pivoted thereon, as for example, one made of cardboard, celluloid or other light but durable material.

One object of this invention is to provide a simple and practicable device affording several different modes of operation for very positively and almost instantly changing the direction of rotation of the revoluble body, or of causing its oscillation, if the latter function is desired. These operations afford much amusement and interest, as well as having certain educational features for children in observing the relation between the vibratory movements and the resulting rotation of the body in the different directions dependent on the several modes of operating the manually-actuated element.

Another object of our invention is to provide a toy of this class which will not only have an arrangement of corrugations or notches upon one of the elements upon which the other is to be reciprocated, different from those heretofore afforded, but which embodies a totally different method of operation in its use and control, as well as a device made of quite different materials from those that have been heretofore thought feasible, and requiring a wholly different mode of manufacture.

A further object of our invention is the provision of twisted elements about each other thereby forming not only a very desirable and durable mechanical toy which affords amusement without the annoyance so common among many toys, of very early fracture and total dismantling, but which by our peculiar construction affords spiral grooves on the surface of one of the longitudinal elements and which makes possible equally effective operation of the toy by reciprocatory contact of the other element over any arc of its surface. This feature will be found very valuable.

A still further object of our construction is the provision of an enclosing looped end of one straight element adapted to be held in one hand, for reciprocation in contacting engagement with another elongated element held by the other, to which arrangement the twisted material which we use for the straight elements very readily lends itself.

With these and other objects in view we will now describe our invention in greater detail, it consisting in the novel construction and combination of parts herein disclosed and pointed out in the appended claims.

Referring to the accompanying drawings forming a part of this specification, similar characters of reference indicating corresponding parts throughout the several views,—

Figure 1 is a perspective view of the toy showing the parts as they are held in the hands while operating them;

Figure 2 is a plan view of the star wheel which may be rotatably mounted on one of the parts;

Figure 3 is a perspective of the wheel parts which we may use, as shown in one mode of assembly on their pivot, and

Figure 4 is a plan view of the assembled parts showing another position of the loop on the pivot element for causing a changed direction of rotation of the wheel.

Our invention consists of an elongated element 10 enclosed by the loop 11 of a second elongated element 12 so that the reciprocation of the latter along the surface of the member 10 is easily and readily effected. It is to be noted that both the parts 10 and 12 are constructed of twisted strands of suitable material which may be metal, as of wire for example, and that the twisted strands of part 10 provide a series of notches or grooves 13 and protuberances 14 over which loop 11 may be moved, and a vibratory movement thereby imparted to 10 which causes rotation of a wheel 15, as will be understood.

To provide a very practical pivot for the sections of the wheel 15, one end of the strands forming the part 10, for it is quite expedient to make this part of a single continuous length, is coiled about the other at 16 forming a stop or abutment, the other end extending beyond in a straight, axial pivot section 17, and ending in a recoil or eye 18. Between these ends 16 and 18 the wheel 15 is mounted for rotation on said section 17. Hollow balls or beads 19 threaded on 17 serve as anti-friction bearings.

Approximately midway between the ends

of 10, the strands may be formed into a suitable handle part for supporting the toy, as for example, by coiling concentrically one about the other forming the coil 20, as shown in Fig. 1. Other forms may be used by appropriate manipulation of the strands at this point.

The shorter end of the strand forming part 12 is coiled as in the other part 10, and has been designated by the same numeral 16. The longer strand end of this part, however, is bent into the relatively open loop 11 whose operation will be described later. A loop 21 forms a handle for this member as in the other part 10.

Various constructions may be used for the wheel 15, but we prefer a plurality of thin sections—four shown here, each quadrangular in shape having sharply pointed opposite ends 23 but rather narrow at its mid-length with obtuse angles 24 at the latter apexes, so that when all sections are placed in alinement, they appear as in Fig. 3, while when separated and independently rotated, they will present the star appearance of Figs. 1 and 2. All these sections are mounted on a suitable common bearing 22 of some hardened material which rotates as a unit with the sections and upon the pivot 17. There is sufficient binding force in the part 22 to hold the sections in the relative position desired. Folded as in Fig. 3, or separated as in Fig. 2.

The part 10 is normally held in one hand while the part 12 is reciprocated over the surface of 10 by movement of the other hand, though of course part 10 with its pivoted wheel may be reciprocated relative to part 12 with like result. It is to be noted that the twisted strand structure of part 10 provides an uneven surface thereon, and that this character of surface is presented at whatever angle to its axis the reciprocating member is applied thereon. Pressure may be applied by 12 in any direction to such wheel-carrying member when movement is applied thereto, and the same result is attained whatever direction is chosen. And the looped structure 11 provides that such choice of pressure may be made effective because the latter is a closed loop.

It is of great interest that various directions of applying such pressure of 11 upon 10 when relative movement is caused between the two parts, effect a positive change in the direction of rotation of the wheel. Here it will be noticed that, as seen in Fig. 1, the upper part of the loop 11 pressed obliquely against the upper surface of 10 will cause the wheel 15 to rotate counterclockwise, while the reverse arrangement of the loop, as seen in Fig. 4, will at the same time reverse the rotation of 15 to clockwise direction. Further observation of the operation of the device shows that the pulling force exerted on the part 12 away from the element 10 will rotate the wheel in a different direction from that when a pushing force is exerted by 12 and 21. Further, it is noted that when the loop 11 is held in a vertical position against 10 with the latter in substantially horizontal position, the wheel will rotate in one direction when the loop 11 is pushed downward upon 10, and in an opposite direction when thrust upwardly thereagainst. All of these conditions are matter of great interest and amusement; and the structure essential therefor embodies the feature of durability in constant use, as the two parts 10 and 12 are normally connected together so that they can hardly be disconnected, though the loose looping of 11 upon the part 10 permits folding one closely parallel to the other for packing purposes.

It has been emphasized that the wheel part 15 may be formed in a plurality of sections and that these sections may be formed of uniform shape, so that they may be all folded in alinement, as in Fig. 3. We have also found that a very pleasing result is obtained by making the various sections, in this case illustrated as four, of different colors, and this arrangement is contemplated.

It is to be noted that the part 10 as shown, may be used in connection with any other reciprocating element, and such generic view of the invention is intended. Also, such part 10 may be used with a loop 11 though the latter be mounted upon some other form of handle than that shown. We believe that this form of actuator illustrated will, however, be found most advantageous. In some instances it may be desired to use the form of part 10 including the pivot part 17 and the twisted part, without making the strand integral, and without forming the strands into a handle loop 20 as shown in Fig. 1; and this modification is contemplated and believed to fall well within the purview of the invention as described, illustrated and claimed.

Other changes may suggest themselves to the user, and while the drawings illustrate what we regard as the preferred form of embodiment of our invention, it is specified that the invention is not to be limited thereto, but that various changes may be made without departing from the scope of the improvement as set forth in the claims hereto appended.

Having described our invention, what we claim and desire to secure by Letters Patent is:—

1. A toy comprising an elongated member having a series of spiral grooves over the major portion of its surface, the remainder of its length being axially straight to provide a pivot thereon, a rotatably mounted

member on said pivot, and means for vibrating said elongated member including a loop loosely engaging the latter and adapted to be reciprocated thereover.

2. A toy comprising an elongated element including wire strands twisted round each other, the end of one strand coiled about another to form a loop, one strand end extending longitudinally beyond said loop and itself ending in a loop, a rotary member pivoted on the longer strand between said loops, and bearing balls threaded on said longer strand on either side of the rotary member.

3. A toy comprising two elongated elements each formed of twisted strands of unequal length, one of said elements including a loop integral with one of its strands for loosely enclosing the other element, and a pivoted member mounted on the latter whereby reciprocation of the looped element along the surface will vibrate the other and thereby rotate said pivoted member.

4. A toy comprising an elongated member formed by strands twisted about one another to provide an uneven surface thereon, the end of one strand coiled about the other to form a loop, one strand end extending longitudinally beyond said loop and itself ending in a loop, a rotary member pivoted on the longer strand between said loops, and means adapted to be reciprocated along said surface of said elongated member to vibrate the latter.

5. A toy comprising an elongated element formed of twisted wire strands thus providing an uneven surface thereon, said strands being integral and continuous, coiled concentrically about each other to form a handle part at their mid-length, and one of the strand ends extended beyond the other to provide an axial pivot, a wheel of thin material rotatably mounted on said pivot, and means manually actuated for reciprocation along the said uneven surface to vibrate the wire element and thereby rotate the wheel.

6. A toy comprising an elongated member formed by wire strands twisted each about the other to provide an uneven surface, the end of one strand being coiled about the other to form a transverse loop, the longer strand extending longitudinally beyond said loop and itself terminating in a loop, a rotatable body pivoted on the longer strand between said loops, and means including a loop loosely enclosing said wire member adapted to be reciprocated along said surface to vibrate said member and thereby rotate the said body.

In testimony whereof we hereunto affix our signatures.

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FRANK H. CHATTERTON.