Sept. 5, 1950 E. R. BIGGS 2,521,331

MARBLE CAGE PUSH TOY

Filed Oct. 31, 1947 2 Sheets-Sheet 1

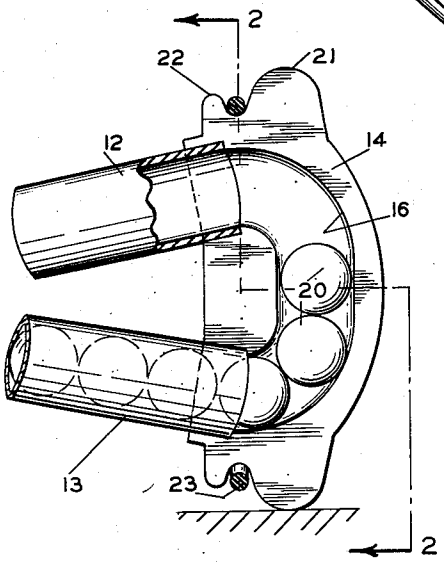


fig 3

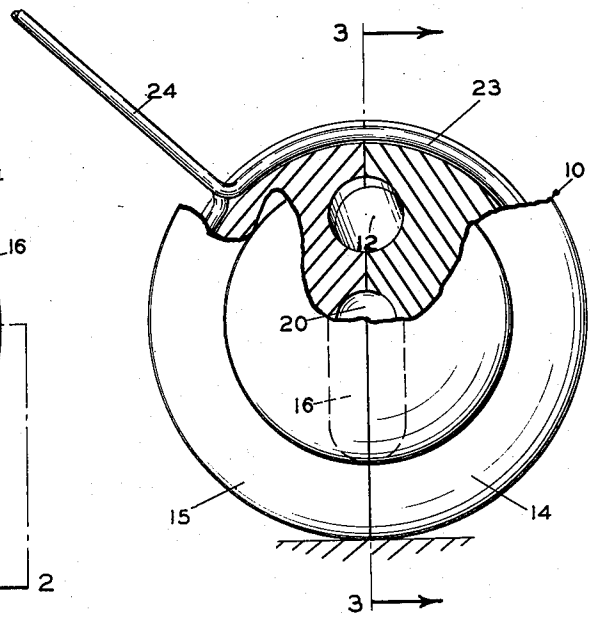
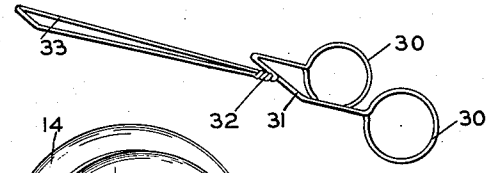


fig 2

fig 4



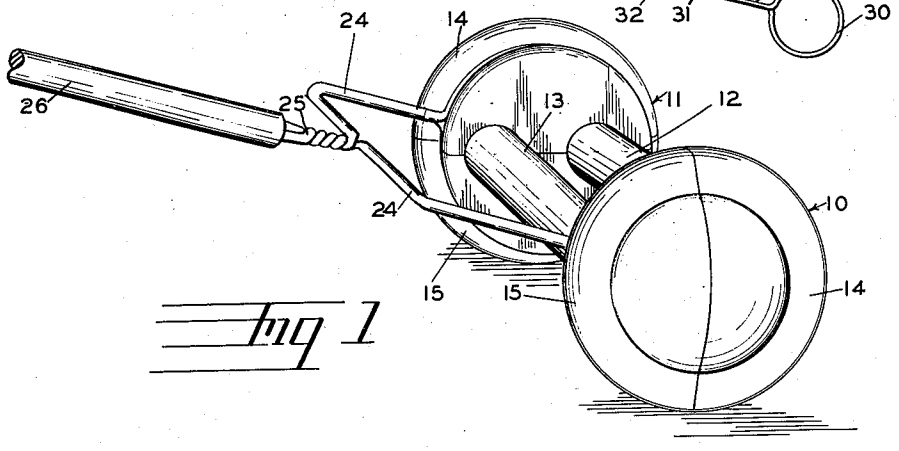


fig 1

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MARBLE CAGE PUSH TOY

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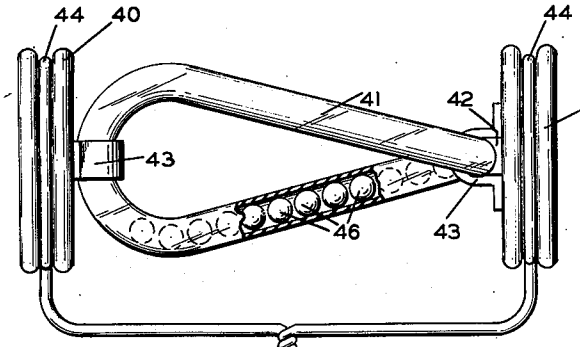


Fig. 5

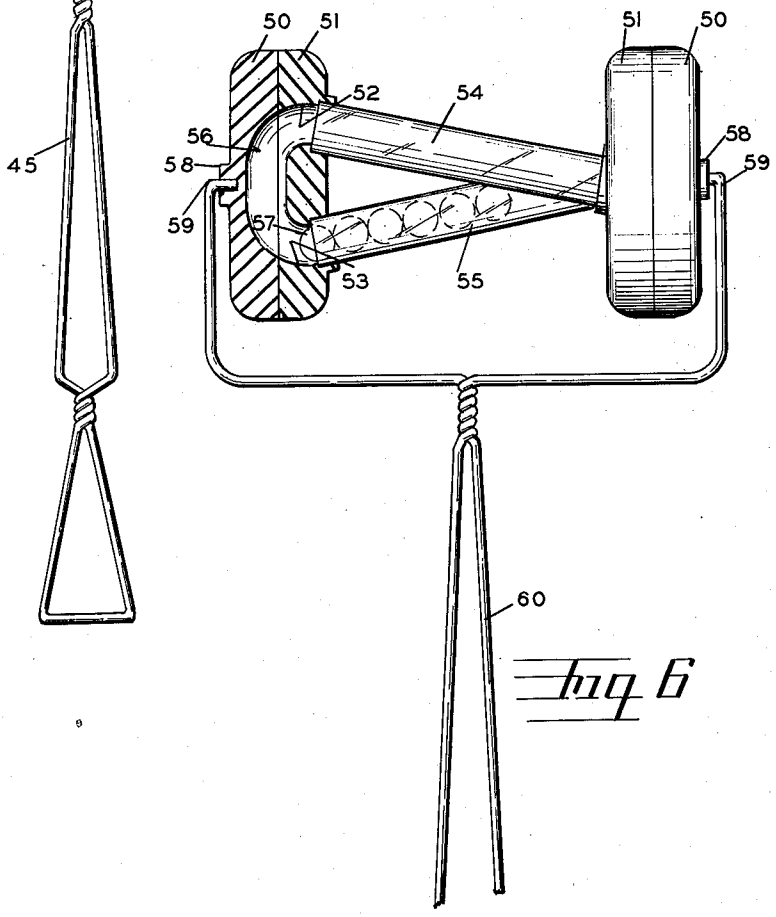


Fig. 6

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MARBLE CAGE PUSH TOY

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5 Claims. (Cl. 46—114)

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My present invention comprises a toy for the amusement of infants and younger children. It is a psychological principle of toys for children of certain ages that the toy should be of a character which may be propelled, which is colorful, exhibits considerable movement of parts and produces a rattle or corresponding noises. The principal object of the present invention is to provide a toy which exhibits all of the foregoing characteristics.

A further object of the present invention is to provide a toy of the character set forth above which may be manufactured of rugged parts, formed of readily obtainable materials which are easily fabricated into the shapes required, and which may be assembled with a minimum of labor and expense.

The foregoing objects and advantages, as well as others, will be readily apparent from inspection and study of the following specification taken in connection with the accompanying drawings wherein several preferred forms of the invention are set forth, while the particular features of novelty will be more distinctly pointed out in the appended claims. In the specification and drawings, like numerals refer to like parts throughout.

In the drawing,

Fig. 1 is a view in perspective of a preferred embodiment of the invention, the handle thereof being broken away in order to permit showing the pertinent details on larger scale.

Fig. 2 is a side view, on a larger scale, of the major portion of the toy comprising a wheel, with part of the wheel broken away substantially along the line 2—2 of Fig. 3.

Fig. 3 is a partial sectional view taken substantially along line 3—3 of Fig. 2.

Fig. 4 is a view in perspective, on a smaller scale, showing a modified form of handle.

Fig. 5 is a plan view of a modified form of the invention; and

Fig. 6 is a plan view, partly broken away, of a further modification of the invention.

Referring to Figs. 1, 2, and 3, the invention comprises a pair of coaxially disposed, spaced wheels 10 and 11, the wheels being held in the relationship shown by a pair of tubes 12 and 13. As seen in Figs. 2 and 3, each of the wheels preferably comprises complementary halves 14 and 15, the halves being formed as if a solid wheel were sawed in half along a diametrical plane extending through the axis of revolution. The two halves are preferably joined by adhering the two together along the plane surfaces by a suitable adhesive, the character of the adhesive depending upon the material from which the wheels are formed. The material may comprise a plastic, in which case the adhesive may comprise a solvent for the plastic. The wheels may be formed of wood or other suitable material which may be joined together by numerous adhesives. It is also conceivable that wheels may be formed of metals, in which case the two halves might be jointed together by adhesives, by soldering, welding, brazing, or in any other suitable fashion.

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Figs. 2 and 3 illustrate the reason for forming the wheels of complementary halves. Each half is provided with a groove such as groove 16, the complementary half being formed with a similar groove which will complement the groove 16 to form a continuous passageway extending through the wheel when the halves are joined, the passageway being in the form of a return bend, in the ends of which the ends of tubes 12 and 13 may be mounted and adhered to the wheel by adhesive or otherwise.

It will be apparent from inspection of Figs. 1, 2, and 3 that the tubes 12 and 13 are angularly disposed with respect to each other and to the common axis of the wheels. The arrangement is preferably such that the return passage in wheel 10 will be vertically disposed when the return passage in wheel 11 is horizontally disposed. Thus, when the tube 12 is inclined downwardly toward wheel 11, tube 13 is inclined downwardly toward wheel 10. When the wheels revolve, each tube will continuously change its angle of inclination and direction of inclination, being momentarily, at times, horizontally disposed.

The tubes 12 and 13 are preferably formed of a transparent material such as a clear plastic in order that a plurality of spherical objects 20 disposed in the continuous passageway formed by the tubes and the return passage may be seen therein. The spherical objects are preferably of slightly lesser diameter than the internal diameters of the tubes and return bends so that the spherical objects may roll therethrough when the portion of the continuous passage in which they are located is at an inclination to the horizontal. The spherical objects are preferably sufficient in number so that, when aligned in contact with each other, only one of the tubes and one of the return bends will be filled thereby. Thus, when the toy is propelled along a ground surface and the wheels revolved by contact therewith, the spherical objects will be continuously passing from one tube to the other through the

wheels. The spherical objects preferably comprise variously colored marbles or "agates", but any other suitable material may be utilized.

In order that the toy may be propelled along a ground surface, it is preferably provided with a handle which is journaled upon the wheels. As seen more clearly in Fig. 3, the wheels comprise a major periphery 21 adapted to engage the ground surface and an inner annular periphery 22 of lesser diameter separated from the major periphery by an annnlar groove adapted to receive a wire loop 23. The loop 23 thus journaled on each wheel is provided with an extension 24, the two extensions being shaped to form a bail and twisted together to form a rearwardly projecting handle portion 25 which may be suitably affixed in the end of an elongated wooden handle 26. The rings 23 are preferably loosely fitted into the grooves in the wheels so that a minimum of friction exists between the wheels and the handle.

In Fig. 4, I have illustrated a modification wherein rings 30 adapted to be journaled upon wheels as set forth in respect to Fig. 1 are provided on the ends of a continuous length of wire, the intermediate portion of the wire being bent to form a bail 31, twisted together at 32, and extended to form an elongated wire handle 33.

In Fig. 5, I have illustrated a modification embodying the principles of the invention in which a continuous raceway is provided by mounting a closed, twisted loop of transparent material upon the inner surfaces of the wheels. The raceway member 41 may comprise a continuous length of plastic tubing which may be formed into a closed loop by softening the plastic and adhering the ends together while twisting the loop so that one return bend is disposed at right angles to the other return bend. The raceway member 41 may be mounted upon the wheels by providing the inner surfaces thereof with bosses 42 adapted to embrace a portion of the tube, and clamp members 43 adapted to embrace the adjacent surfaces of the tube, the clamp members 43 being adhered to the inner surfaces of the wheels. A further modification is illustrated in that the wheels in this case may be formed as solid wheels since the return bends are now externally disposed. The wheels may have any suitable shape, those illustrated having central, peripheral grooves adapted to be embraced by loops 44 at the ends of a wire handle 45 which is suitably twisted to form a rigid, elongated handle. In this modification, the tube is partially filled, prior to joining the ends thereof, by a plurality of colored marbles 46 or the like in order that the toy may have all of the characteristics of the first modification.

In Fig. 6, I have illustrated a further modification wherein each wheel comprises a pair of complementary members 50 and 51, so formed as to provide the complementary halves of a wheel when the two members are joined by adhering the plane surfaces as shown. These wheels are formed as if a solid wheel had been cut in two along a plane normal to the axis of revolution to form outer members 50 and inner members 51. The inner members are provided with openings 52 and 53 into which extend the ends of transparent tubes 54 and 55. The outer member is provided with a groove 56 of such shape as to complete a return bend for the openings 52 and 53. A passage is thus formed through which a plurality of colored marbles or the like, indicated by the numeral 57, may pass from one tube to the other as the wheels rotate. The tubes are so positioned as to be angularly disposed with respect to each other and to the common axis of the wheels so that when one return bend is horizontal the other is vertical as in previous modifications. The outer members 50 may be provided with external central bosses 58 in which holes are provided for the reception of the inwardly directed ends 59 of a wire 60 shaped to form a handle.

In the modifications described in Figs. 1 and 6, the wheels are preferably formed of plastic materials and the complementary halves may be differently colored in order to enhance the attractiveness of the toy. Likewise, one or both of the complementary halves may be translucent or transparent in order that the colored spheres may be seen passing through the wheels. The wheels, however, may be formed of opaque materials so as to create an effect of mystery concerning the ability of marbles of certain colors to disappear from one tube and appear in the other. In all forms of the invention, it is preferred that the tubes be formed of a clear plastic having considerable strength so as to provide an indestructible toy. It is also preferred that the spherical objects be formed of material having considerable density so that, as they strike one another or drop from one section to another, a loud, rattling noise will be produced.

Having illustrated and described several embodiments which my invention may assume, it should be apparent to those skilled in the art that other modifications in arrangement and detail may be achieved. All such modifications as come within the true spirit and scope of the following claims are considered to be a part of my invention.

I claim:

1. A toy comprising a pair of coaxially disposed, spaced wheels, an elongated handle journaled on said wheels whereby the wheels may be propelled over a ground surface to be rotated by frictional engagement therewith, a pair of transparent tubes extending between said wheels, said tubes being disposed angularly to each other and to the common axis of said wheels, a plurality of spherical objects loosely disposed in said tubes, and return passageway means connecting the adjacent ends of said tubes whereby said objects may roll from one tube to the other as said wheels revolve.

2. A toy comprising a pair of coaxially disposed, spaced wheels, an elongated handle journaled on said wheels whereby the wheels may be propelled over a ground surface to be rotated by frictional engagement therewith, a transparent member mounted upon and extending between the inner surfaces of said wheels, said member having a continuous passageway therein in the shape of a twisted loop, and a plurality of marble-like objects loosely retained in series in said passageway, said objects being lesser in number than the number required to fill said passageway whereby irregular movements thereof occur as said wheels revolve.

3. A toy comprising a pair of coaxially disposed, spaced wheels, an elongated handle journaled on said wheels whereby the wheels may be propelled over a ground surface to be rotated by frictional engagement therewith, a plurality of transparent, tubular raceways extending between said wheels, and a plurality of spheres disposed in said raceways, said wheels having return passageways formed therein and con-

necting the adjacent ends of pairs of said raceways whereby said spheres may pass from one raceway to another as said wheels revolve.

4. A toy comprising a pair of coaxially disposed, spaced wheels, an elongated handle journaled on said wheels whereby the wheels may be propelled over a ground surface to be rotated by frictional engagement therewith, a pair of transparent tubes extending between said wheels, said tubes being disposed angularly to each other and to the common axis of said wheels, and a plurality of spherical objects loosely disposed in said tubes, each of said wheels having a return passageway formed therein and connecting the adjacent ends of said tubes whereby said spherical objects may roll through said wheels from one tube to the other as said wheels revolve.

5. A toy comprising a pair of coaxially disposed, spaced wheels, an elongated handle journaled on said wheels whereby the wheels may be propelled over a ground surface to be rotated by frictional engagement therewith, a pair of transparent tubes extending between said wheels, said tubes being disposed angularly to each other and to the common axis of said wheels, and a plurality of spherical objects loosely disposed in said tubes, each of said wheels having a return passageway formed therein and communicating with both of said tubes whereby said spherical objects may roll through said wheels from one tube to the other as said wheels revolve, said objects being lesser in number than the number required to fill the continuous raceway formed by said tubes and said return passageways.

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REFERENCES CITED

The following references are of record in the file of this patent:

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