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TOY BEAD CHAIN

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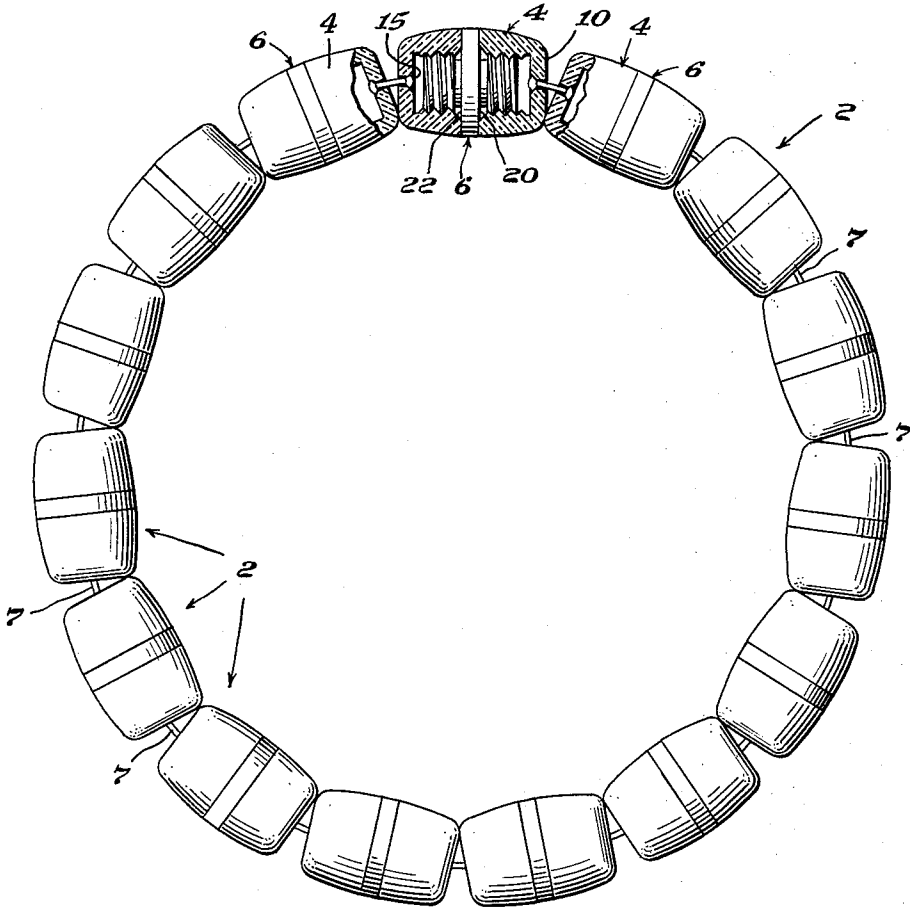


Fig. 1

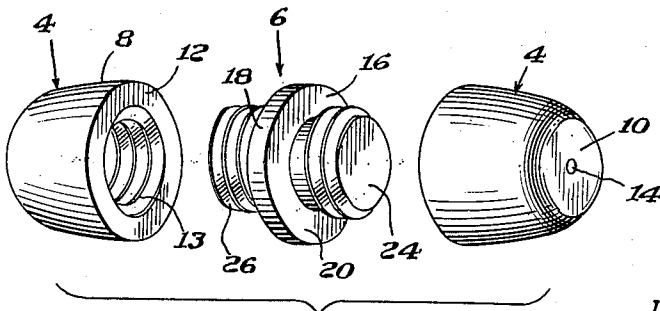


Fig. 2

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TOY BEAD CHAIN

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7 Claims. (Cl. 46-17)

1 The present invention relates to a toy and more particularly to an educational toy for children which may be assembled and disassembled by the child to provide development of the motor abilities of the child.

It is an object of the invention to provide a toy which will interest and amuse small children and which at the same time will serve to develop their fine and gross motor abilities. A further object is to provide a toy of this character which is clean and sanitary and may be easily washed or sterilized. A further object is to provide such a toy which is harmless, free from sharp or easily breakable parts and incapable of being swallowed. An additional object is to provide such a toy so designed that it may be easily manufactured from inexpensive materials and sold at low cost.

In accordance with the invention the toy comprises a plurality of pairs of articulated hollow cup-shaped members each of which is internally threaded and is connected to the other hollow member of the pair for free rotational movement about the axes of the threads. A plurality of coupling elements for connecting the pairs of hollow members is provided. Each coupling element is provided with oppositely extending threaded projections for reception of threaded hollow members of different pairs, so that two pairs of hollow members may be connected together by threading a member of one pair on to one threaded projection of the coupling element and threading a hollow member of the other pair on to the other threaded projection of the coupling element. Thus the pairs of articulated hollow members may be connected in series to form a string and, when the string is sufficiently long, its end may be joined to form a circular ring or necklace. Any hollow member may be assembled on either end of any coupling element.

The different parts of the toy may be made in different colors so that the child may arrange them to form color patterns and thus will receive training in color perception and recognition. The hollow members and coupling elements can be assembled and disassembled by small children of ages at which this kind of play is extremely interesting and amusing. These operations, involving prehension and relatively fine motor activity, are valuable in promoting the mental growth and development of children of such ages.

An illustrative embodiment of the invention is shown in the accompanying drawing, wherein,

Fig. 1 is an elevation, partly broken away, of a completely assembled toy; and,

2 Fig. 2 is an exploded view of one of the beads composing the toy of Fig. 1.

Referring to the drawing, the completely assembled toy, as shown in Fig. 1, comprises in appearance a plurality of individual beads **2**, **2** joined together in a string in the form of a ring. Each bead is formed of three separable parts, as shown in Fig. 2, comprising two hollow cup-shaped members **4**, **4** and an intermediate coupling element **6**. The separate members forming a single bead are readily separable and are intended to be taken apart and put together again by the child in the normal use of the toy.

The adjacent hollow members **4** of adjacent beads are permanently connected together to form a plurality of pairs of articulated hollow members by cords **7**.

The hollow members and the coupling elements may be made of wood, metal or any other suitable material. I prefer to form these parts of a self-colored, synthetic resin molding composition of a thermoplastic type, such as plasticized cellulose nitrate, cellulose acetate, methacrylate resin molding compositions such as methyl methacrylate, ethyl methacrylate, or mixtures thereof, the vinyl resins including polyvinyl chloride, polyvinyl acetate, copolymers of vinyl chloride, and vinyl acetate, etc. The hollow members and coupling elements preferably are made of different colors.

Referring to Fig. 2 each hollow cup-shaped member **4** is formed from a curved cylindrical or frusto-conical side wall **8** and a substantially flat end wall **10**. The side wall **8** terminates in a flat end face **12** surrounding the open end of the hollow member. The side wall **8** preferably decreases in diameter gradually from the end face **12** to its juncture with the end wall **10** and merges smoothly into the end wall. Internal threads **13** are formed inside the side wall **8** for some distance inwardly of the end face **12**. The end wall **10** is provided with an aperture **14** extending completely therethrough and having a flaring inner end, as shown at **15** in Fig. 1.

Each coupling element **6** comprises a central disc **16** which may have a cylindrical outer face **18** and flat end faces **20** and **22**. Extending from each of the faces **20** and **22** are bosses **24** and **26** respectively, of a suitable size to be received within the hollow members **4**. The bosses **24** and **26** are externally threaded with a thread of a form and pitch appropriate to cooperate with the internal threads **13** of the hollow members **4**.

The bosses **24** and **26** are of such a length that when a hollow member **4** is threaded thereon the

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flat end face 12 of the hollow member comes up tight against the face 20 or 22 of the coupling element before the end of the boss strikes the end wall 10 of the hollow member 4. The diameter of disc 16 may be approximately the same as the maximum diameter of the hollow member so that when hollow members 4 are threaded on to both bosses of a coupling element 6 the external face 18 of the disc 16 will lie in continuation of the outside surfaces of the wide walls 8 of the hollow members, thus providing a smooth, continuous, and gracefully curved external surface on the complete bead 2.

The flexible cords 7 connecting the two hollow members 4 forming a pair pass freely through the aperture 14 of each hollow member and are provided with an enlargement, such as a knot, on each end inside a hollow member to permanently connect the hollow members of a pair.

I prefer to form the cords from a thermoplastic synthetic resin, for example, from a polyvinylidene chloride suitably plasticized. In this case the hollow members forming a pair may be joined by passing through the apertures a cord of a length slightly longer than the desired distance between the two inside surfaces of the end walls 10 of the hollow members and then upsetting the projecting ends of the cords by heat and pressure. This may be accomplished by the use of a pair of heated anvils which engage each projecting end of the cord and compress it into the flaring inner end of the adjacent aperture 14. In this may the connection between the hollow members may be made of a permanent nature without undue expense. The composition of the cord may be such with respect to the composition of the hollow member that the material of the cord will not fuse with the bottom wall of the hollow member during such molding operation. The diameter of the cord may be such that the cord may pass freely through the apertures 14 to allow relative rotation between the hollow members of a pair about the axis of the threaded portion of either hollow member. The hollow members thus can easily be threaded on to the coupling elements.

In the embodiment shown, the beads are of such a size and the cords connecting them are of such a length that when fifteen beads are assembled into a closed ring the corners of the adjacent beads just touch each other, as shown in Fig. 1.

I claim:

1. A child's educational toy consisting of a plurality of beads each adapted to be assembled and disassembled by a child and to be arranged, when assembled, into a string, each of said beads comprising a pair of hollow, open-ended cup-shaped members each having internal threads therein and an end wall with an aperture therein opposite its open end, and a coupling element for connecting said hollow members together, said coupling element comprising a pair of oppositely extending cylindrical bosses having at least their outer portions externally threaded, said bosses being of a size to be received within and threaded into said hollow members, said hollow members being joined together in pairs by flexible cords of a thermoplastic synthetic resin passing freely through the apertures of each pair and provided with permanent enlargements on their ends inside said hollow members to permanently connect said hollow members of a pair while permitting relative rotation between them about the axes of said internal threads, said cords being of a

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length to permit limited swinging movement between the hollow members of a connected pair.

2. A child's educational toy consisting of a plurality of beads each adapted to be assembled and disassembled by a child and to be arranged, when assembled, into a string, each of said beads comprising a pair of hollow open-ended cup-shaped members, each having internal threads therein and an end wall with an aperture therein opposite its open end, and a coupling element for connecting said hollow members together, said coupling element comprising a central circular disc having flat opposed faces and a pair of cylindrical bosses integral with said disc and extending oppositely from said flat faces, at least the outer portions of said bosses being externally threaded, said bosses being of a size to be received within said hollow members in threaded engagement therewith, said hollow members being joined together in pairs by flexible cords passing freely through the apertures of each pair and provided with permanent enlargements on their ends inside said hollow members to permanently connect said hollow members of a pair while permitting relative rotation between them about the axes of said internal threads.

3. A child's educational toy consisting of a string of multi-part beads each adapted to be assembled and disassembled by a child, each of said beads comprising a pair of hollow open-ended cup-shaped members, each having internal threads and an end wall with an inwardly-flaring aperture therein opposite to its open end, and a coupling element for connecting said hollow members together, said coupling element comprising a central circular disc having flat opposed faces and a pair of cylindrical bosses integral with said disc and extending oppositely from said flat faces, at least the outer portions of said bosses being externally threaded, said bosses being of a size to be received within said hollow members in threaded engagement therewith, said disc being of about the same diameter as said hollow members whereby when a hollow member is threaded on to each of the bosses of a coupling element the peripheral surface of said disc lies in continuation of the external surfaces of said hollow members to provide a smooth external surface for the bead, said hollow members being permanently connected together in pairs by flexible cords of a thermoplastic synthetic resin passing freely through the apertures of each pair to permit relative rotation between said connected hollow members about the axes of said internal threads and provided with permanent enlargements on their ends received in said flared inner ends, said cords being of a length to permit limited swinging movement between the hollow members of a connected pair.

4. In a child's educational toy, a plurality of beads each adapted to be assembled and disassembled by a child and to be arranged, when assembled, into a string, each of said beads consisting of a pair of hollow open-ended cup-shaped members each having internal threads therein, an end wall with an aperture therein opposite its open end, and a smooth plane annular surface surrounding the opening in its open end, and a one-piece coupling element for connecting said hollow members together, said coupling element comprises a central circular disc having flat opposed faces and a cylindrical outer face and a pair of cylindrical bosses integral with said disc and extending oppositely from said flat faces, at least the outer portions of said bosses being

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externally threaded, said bosses being of a size to be received within said hollow members in threaded engagement therewith, with said plane annular surfaces in engagement with the flat opposed faces of said coupling element.

5. A child's educational toy consisting of a plurality of beads each adapted to be assembled and disassembled by a child and to be arranged, when assembled, into a string, each of said beads comprising a pair of hollow, open-ended cup-shaped members each having internal threads therein and an end wall with an aperture therein opposite its open end, and a coupling element for connecting said hollow members together, said coupling element comprising a central disc having a cylindrical outer face and a pair of oppositely extending cylindrical bosses integral with said disc having at least their outer portions externally threaded, said bosses being of a size to be received within and threaded into said hollow members, and a flexible cord of a thermoplastic synthetic resin passing freely through the apertures of each pair of cup-shaped members to connect said hollow members while permitting relative rotation between them about the axes of said internal threads.

6. A child's educational toy consisting of a plurality of beads each adapted to be assembled and disassembled by a child and to be arranged, when assembled, into a string, each of said beads comprising a pair of hollow open-ended cup-shaped members, each having internal threads therein and an end wall with an aperture therein opposite its open end, and a coupling element for connecting said hollow members together, said coupling elements comprising a central circular disc having flat opposed faces and a pair of cylindrical bosses integral with said disc and extending oppositely from said flat faces, at least the outer portions of said bosses being externally threaded, said bosses being of a size to be received within said hollow members in threaded engagement therewith, said hollow members being joined together by a flexible cord passing

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freely through the apertures of each pair to connect said hollow members of a pair while permitting relative rotation between them about the axes of said internal threads.

7. A child's educational toy consisting of a string of multi-part beads each adapted to be assembled and disassembled by a child, each of said beads comprising a pair of hollow open-ended cup-shaped members, each having internal threads, an end wall with an aperture therein opposite to its open end, and a flat annular surface surrounding the opening in its open end, and a coupling element for connecting said hollow members together, said coupling element comprising a central circular disc having flat opposed faces and a pair of cylindrical bosses integral with said disc and extending oppositely from said flat faces, at least the outer portions of said bosses being externally threaded, said bosses being of a size to be received within said hollow members in threaded engagement therewith, said disc being of about the same diameter as said hollow members whereby when a hollow member is threaded on to each of the bosses of a coupling element the peripheral surface of said disc lies in continuation of the external surfaces of said hollow members to provide a smooth external surface for the bead, said hollow members being connected together by a flexible cord of a thermoplastic synthetic resin passing freely through said apertures to permit relative rotation between said connected hollow members about the axes of said internal threads.

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