

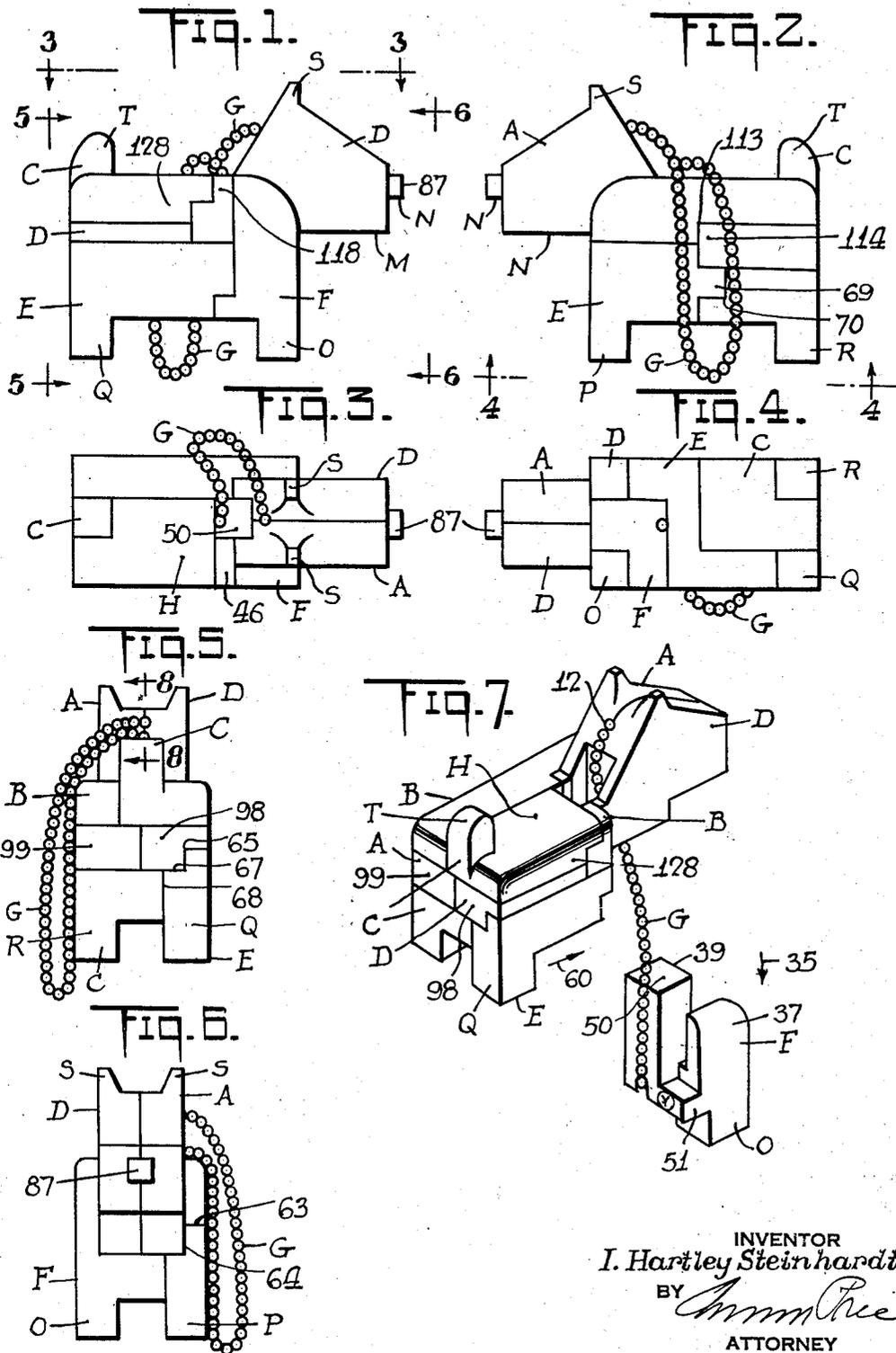
Sept. 8, 1953

I. H. STEINHARDT
PUZZLE AND CARRIER DEVICE

2,651,522

Filed April 9, 1947

3 Sheets-Sheet 1



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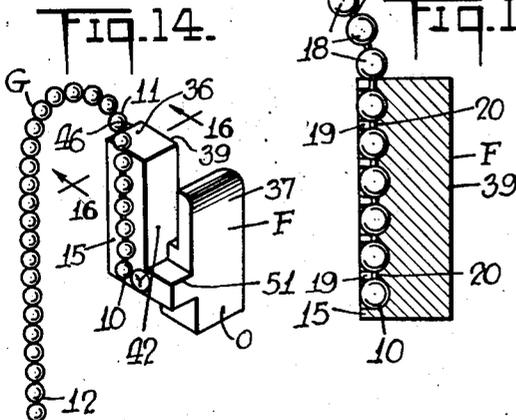
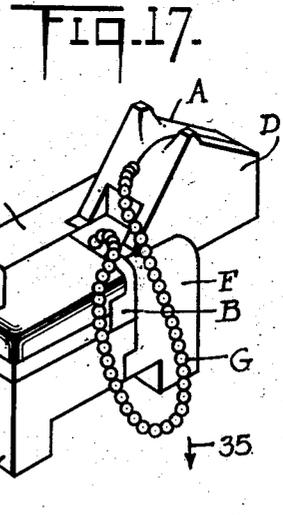
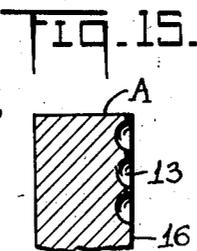
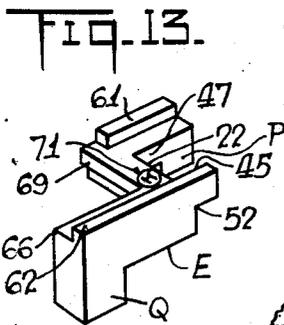
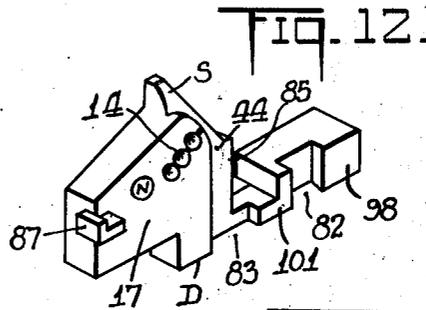
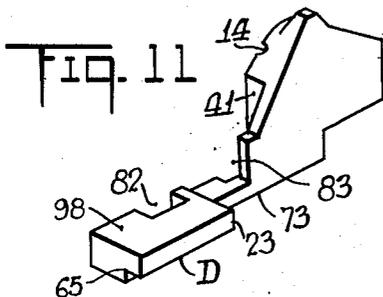
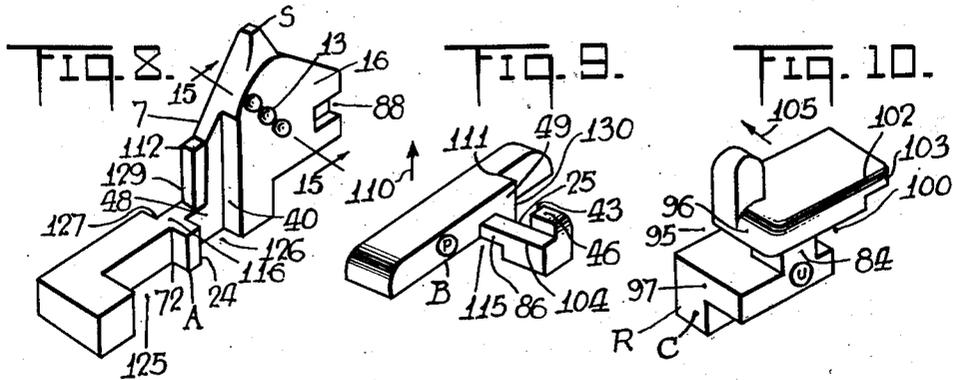
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I. H. STEINHARDT
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3 Sheets-Sheet 2



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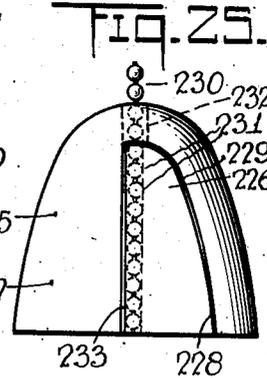
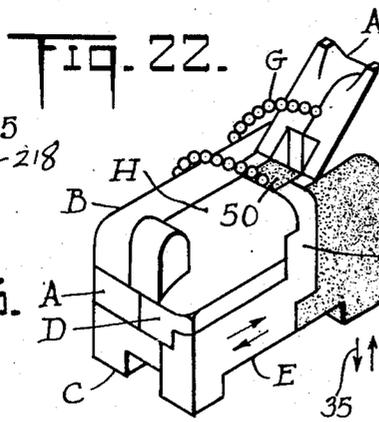
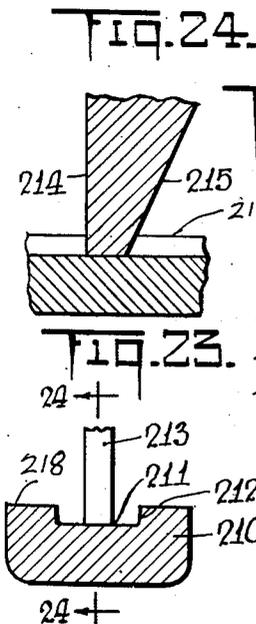
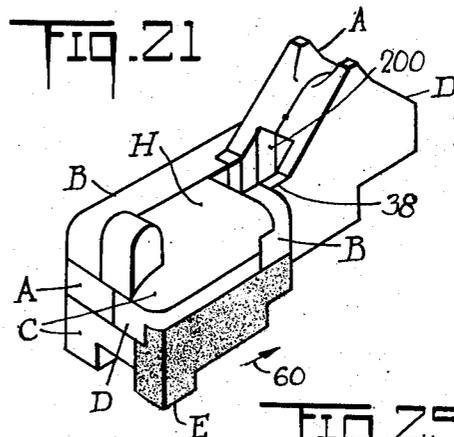
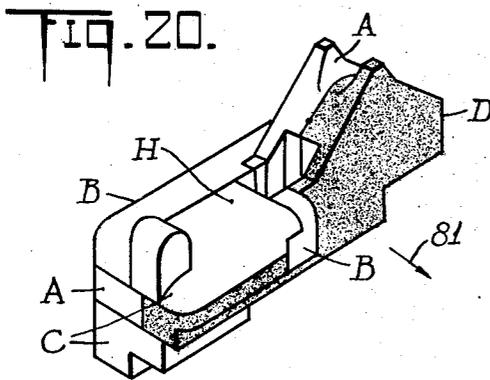
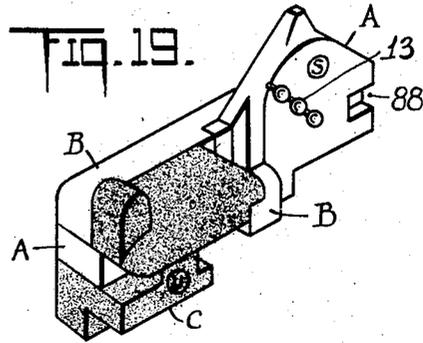
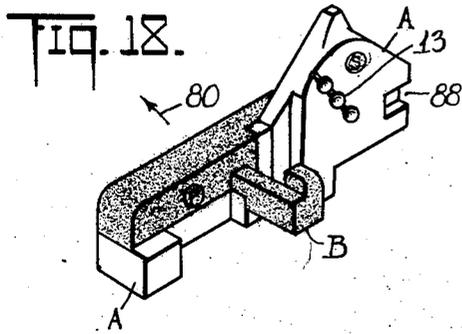
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PUZZLE AND CARRIER DEVICE

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3 Sheets-Sheet 3



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PUZZLE AND CARRIER DEVICE

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2 Claims. (Cl. 273—160)

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The present invention relates to a puzzle and carrier device and it particularly relates to a novel animal puzzle and carrier device, which may be utilized as a key chain or in other connections where chains are employed.

It is among the objects of the present invention to provide a novel chain carrier in which one or both ends of the chain may be readily mounted by engagement of interfitting or interlocking block elements.

Another object is to provide a novel puzzle construction in which a series of interfitting or interlocking elements may be successively or in sequence or in subassemblies fitted together to form an animal, such as a dog, the assembly and disassembly of which may constitute a puzzle.

A further object is to construct a novel key chain in which the ends of the chain are held in a puzzle device substantially assured against disengagement except upon solving of or disassembly of the puzzle.

Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

In accomplishing the above objects it has been found most satisfactory to form a plurality of successively or sequentially interlocking or interengaging body members which when all finally fitted together will form a familiar shape, such as an animal or dog. The blocks are preferably fitted into one another in different directions and then are finally locked in position by a final element which may take the form of a wedge or yoke.

The final element itself, or the final element and/or other elements may have recesses to engage the end or ends of a chain which recesses are closed or locked by contact with adjoining interfitting or interengaging elements.

In one embodiment the dog is composed of at least two side body elements which may, if desired, engage one end of the chain and also a yoke element serving as a final locking element adjacent the front end of the animal. Said yoke element may engage one or both ends of the chain and hold the chain in position. The two body elements may be assembled with one or more elements forming the tail or legs or shoul-

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ders of the completed animals. Normally one of the side body elements forms the base element and the other elements are successively mounted thereon and on the resultant subassemblies by sliding movement from the top, side, rear or front until the final assemblage is obtained.

The invention also consists in certain new and original features of construction and combination of parts hereinafter set forth and claimed and as to its other objects, features and advantages, the mode of operation and manner of its organization, these, inter alia, may be better understood by referring to the following description considered in connection with the accompanying drawings forming a part thereof in which:

Fig. 1 is a side right elevational view upon a somewhat enlarged scale of the assemblage, showing a dog with a chain;

Fig. 2 is a left hand side elevational view on the opposite side from Fig. 1;

Fig. 3 is a top plan view from the line 3—3 of Fig. 1;

Fig. 4 is a bottom plan view from the line 4—4 of Fig. 2;

Fig. 5 is a rear elevational view from the line 5—5 of Fig. 1;

Fig. 6 is a front elevational view from the line 6—6 of Fig. 1;

Fig. 7 is a top perspective view of the assemblage with the final yoke locking element removed from the assemblage;

Fig. 8 is a top perspective view of the left hand body or base element;

Fig. 9 is a top perspective view of the next element to be assembled, namely left back element;

Fig. 10 is a top perspective view of the right back-tail-left rear leg element;

Fig. 11 is a top perspective view of the right body element from its right outside face;

Fig. 12 is a top perspective view of the inside face of the right body element;

Fig. 13 is a top perspective view of the front left leg-right rear leg element;

Fig. 14 is a top plan view of the final yoke or right front leg-shoulder element receiving the end of the chain fitted into the chain recess therein;

Fig. 15 is a fragmentary transverse sectional view upon the line 15—15 of Fig. 8 upon an enlarged scale as compared to Fig. 8 showing the chain receiving recess;

Fig. 16 is a fragmentary transverse sectional view upon the line 16—16 of Fig. 14 and upon an

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enlarged scale as compared to Fig. 14 showing the chain receiving recess;

Fig. 17 is a top perspective view of the complete assemblage with the chain in position;

Figs. 18 to 22 are top perspective views showing the assembling of the successive or sequential elements of Figs. 8 to 14, the last piece to be assembled being stippled in each instance and arrows indicating the direction of insertion in assembly and removal in disassembly;

Figs. 23 and 24 illustrate a method of molding or casting the individual elements of the dog or other puzzle, Fig. 23 being a front fragmentary elevational view and Fig. 24 being a side fragmentary elevational view of Fig. 23; and

Fig. 25 illustrates in side elevational view, the retainer principle applied to the end of a ball chain, as may be used for an electric light chain, zipper or slide fastener pull chain and so forth.

As shown best in Figs. 8 to 14, the animal, which in this instance is a dog, is made up of the left body element A, the left back element B, the right back-left rear leg-tail element C, the right body element D, the left front-right rear leg element E and the right front leg element F.

In a typical construction these are preferably molded of differently colored plastic materials, and for example, may respectively be formed of green, orange, red, white, blue and yellow colored plastic materials.

These elements may be joined together to form the assembled animal, as shown in Figs. 1 to 6 and Figs. 17 to 22 with the key chain G, shown as of the ball type, engaged in recesses 10 in the flat inside face 15 of element F at one end 11 and in recesses 13 and 14 on the inside flat containing faces 16 and 17 of the body elements A and D respectively. The recesses are sufficiently deep to receive the entire balls 18 of the chain G as shown in Fig. 14. The balls 18 (see Fig. 16) are correctly positioned by the intervening webs 19, the recesses 20 therebetween receiving the stems 21 connecting the balls 18. The flat faces 22, 23, 24 and 25 of elements E, D, A and B respectively (see Figs. 8 to 14) will contact the flat face 15 of element F to hold the balls 18 in place.

The recesses 13 and 14 are only sufficiently deep to receive $\frac{1}{2}$ the balls 18 so that the balls will be engaged by both elements A and D. The depths of recesses 13 and 14 are sufficient to completely receive the balls 18 and permit faces 16 and 17 to contact in the final assembly.

The chain G may take other forms and shapes than shown, and the recesses 10, 13 and 14 may be placed in other elements than A, D and F in order to achieve the desired result of having the chain G assembled in the device with the assembly of the elements A to F.

In respect to the elements A to F and describing them in disassembly order from F to A respectively, the element F of Fig. 14 may be withdrawn in direction 35 (see Figs. 7 and 17). The upward extensions 36 and 37 of Fig. 14 respectively carry the end 10 of the chain G and form the exterior right shoulder of the assembly. Between the extensions 36 and 37 is embraced the element D. The post 36 at its front face 39 contacts and closely fits against the face 41 of the body element D. The right side face 42 of the post 36 closely contacts the faces 43 and 45 of the elements B and E. The left side face 46 of the post 36 contacts the faces 47, 48 and 49 of the elements E, A and B respectively.

The top face 50 projects through and forms part

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of the back H of the animal assembly (see Fig. 22). The step 51 of the element F fits into the recess 52 of the element E forming a final assembly lock.

The element E slides out in the direction 60 (see Figs. 7 and 21) and it has the offset right and left sliding engagement ribs 61 and 62. The engagement 61 fits into the recess between the face 53 of the element B and the face 64 of the element A (see Fig. 6), while the rib 62 fits into the recess 65 in the element D. The corner 66 fits into the recess formed by the faces 67 and 68 of elements D and E respectively (see Fig. 5). The locking key 69 (see Fig. 2) fits into a recess 70 in the element C. The bridge 71 fits against the bottom faces 72 and 73 of the elements A and D (see Figs. 8 and 11).

At this stage of disassembly, the elements C and D may be successively separated by movement in direction 81 of Fig. 20 from the subassembly of elements A and B.

Referring to Figs. 11 and 20, the element D may first be removed in the direction 81 from the assembled combination of elements A, B and C. The element D as shown in Fig. 11 has vertical recesses 82 and 83 for receiving the posts 84 of element C and 87 of element F. It also has the recess 85 for receiving the bridge 86 of the element B (see Fig. 9). The nose projection 87 acts as an assembly key to fit into the recess 88 in the element A (see Fig. 8).

The element C then may next be removed in direction 81 (see Figs. 19 and 20). The element C has the recess 89 between the bridge 84 and the tail and leg sections 96 and 97 which receives the end projections 98 of the element D (see Figs. 5 and 12) and 99 of element A. The recess 100 forward of the element C receives the inward extension 101 of the element D (see Fig. 12). The recess 102 below the ledge 103 receives the corner edge 104 of the element B.

In respect to element B of Fig. 9, the element B may be removed from element A in the direction 110. The recess 111 receives the tongue 112 of the element A, while the corner recess 113 receives the corner projection 114 of the element A (see also Fig. 2). The recess 115 receives the section 116 of the element A.

The element A of Fig. 18 has recesses 125 and 126 and 127 which respectively receive the bridge 84 of the element C, the post 36 of element F and the corner 128 of element C. The corner recess 129 of element A receives the corner projection 130 of the element B of Fig. 9.

In assemblage, the element B is first fitted onto the element A as shown in Fig. 18, and the other elements C, D, E and F are successively fitted into position as indicated by the stippled elements. Each element will lock itself by its projections and recesses keying themselves to the recesses and projections of the preceding or following elements and by the final insertion of the yoke shaped wedge element F.

The chain G is shown of the ball type, but may also be of the chain type or of other constructions and the ends of the chain G may be attached to one element instead of two or three as shown. The interlocking puzzle block may also be used for other chains than key chains.

As a guide to assemblage, a name such as "Spunky" may be applied to the individual elements A to F by placing a single letter on each piece preferably on a surface to be concealed by the assembly. For example "S" may be applied to element A (see Figs. 18 and 19), "F" may be ap-

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plied to element B (see Figs. 9 and 18), "U" may be applied to element C (see Figs. 10 and 19), "N" may be applied to element D (see Fig. 12), "K" may be applied to element E (see Fig. 13), and "Y" may be applied to the element F (see Fig. 14). The letters are shown on invisible faces of the elements A to F and may be at the top of knock-out pins used in the molding operation. By following the sequence of the letters it is possible to assemble the various elements in order as indicated in Figs. 18 to 22.

In Figs. 23 and 24 is shown diagrammatically, the manner of molding the individual elements A to F to enable close fit without interference from the gate or inlet, where the thermoplastic resin, such as cellulose acetate, styrene or methyl methacrylate is supplied. The pieces A to F on their inside faces are provided with grooves or recesses 212 of any desired shape below the adjoining surface which contacts another piece. The gate or entrance of resin to the recess of the mold is at this depressed point. The integral gate 213 with the straight edge 214 and inclined edge 215 will feed the bottom 211 of the recess 212 directly, and when broken off will eliminate the need for burnishing or cleaning the pieces since the break will be below the contacting inside face 218 and will be in a recessed portion 212. This method of thermoplastic molding may be broadly applied to assure close fit of plastic molded pieces and avoid need of laboriously cleaning pieces after final molding.

In Fig. 25 is shown a one piece chain retainer generally useful to lamp pull chains, slide fastener pull chains and so forth. The main element 225 has a conical outside face 227 with a recess receiving the insert 226. The insert 226 has the recess 233 receiving the chain end 230 which passes through the opening 232. The recess 233 extends along the axis of the structure of Fig. 25 and has a plurality of pockets 231 to receive the balls of the chain 230 as shown in Figs. 8, 12, 14, 15 and 16. If desired other engaging means may be provided in the adjacent faces 228 and 229 to keep the element 226 lodged in the recess 229 in the element 225.

As many changes could be made in the above puzzle and carrier device and many widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A puzzle assemblage comprising a plurality of six interlocking molded plastic parts each

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forming part of the structure, each of said parts having a sliding connection in respect to each of said other parts and each of said parts being mounted in sequence upon preceding assembled parts by a sliding movement, said parts being assembled in a predetermined sequence to form an object having a curved exterior, and each of said parts having projections and recesses, which take the form of inwardly and oppositely projecting leg members with separating grooves, said leg members and said grooves being of rectangular cross section and said legs and grooves on one side of each of said parts fitting into and engaging correspondingly shaped recesses and legs on the previously assembled parts, at least two of said parts having a plurality of recesses on an inside face thereof, and a chain the end of which is received in said recesses and which is locked in position by said inside face being contacted against an inside face of another of said parts.

2. A puzzle assemblage comprising a plurality of six interlocking molded plastic parts each forming part of the structure, each of said parts having a sliding connection in respect to each of said other parts and each of said parts being mounted in sequence upon preceding assembled parts by a sliding movement, said parts being assembled in a predetermined sequence to form an object having a curved exterior, and each of said parts having projections and recesses, which take the form of inwardly and oppositely projecting leg members with separating grooves, said leg members and said grooves being of rectangular cross section and said legs and grooves on one side of each of said parts fitting into and engaging correspondingly shaped recesses and legs on the previously assembled parts, at least two of said parts having a plurality of recesses on an inside face thereof, and a chain the end of which is received in said recesses and which is locked in position by said inside face being contacted against an inside face of another of said parts, the inside faces of each of said parts being provided with grooves covered by an adjacent part which grooves carry the gates which may then be broken off below the contacting inside faces of said parts.

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