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None

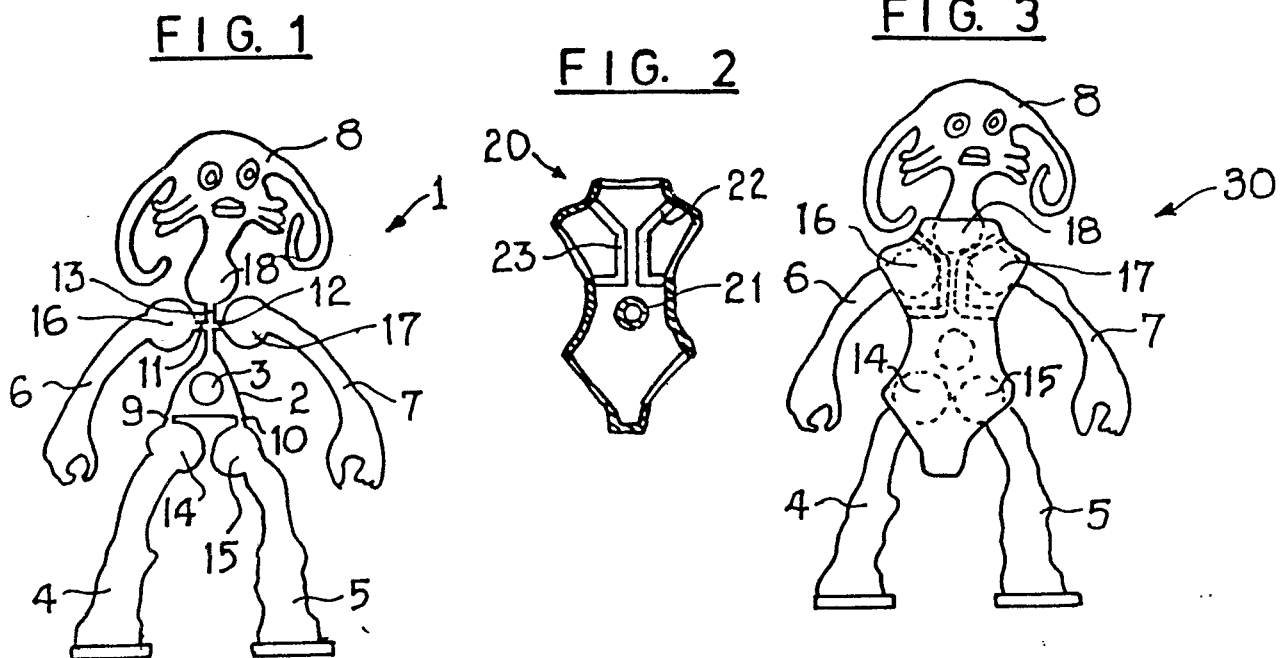
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(54) **Manufacture of an article, e.g. a toy article having a movable part**

(57) The manufacture of an article, e.g. a toy article (1), comprises moulding an element having a carrier (2) and a number of components (4-8) each provided with a joint portion (14-18), the joint portions (14-18) being joined to the carrier (2) by means of easily breakable connections (9-13). Part of the moulded element is enclosed by casing parts (20) to encase at least part of the carrier (2) and enclose the joint portions (14-18) in bearings defined by the casing parts. The components (4-8) are finally moved to fracture the connections (9-13) and provide the article with movable parts journalled in the bearings.



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FIG. 1

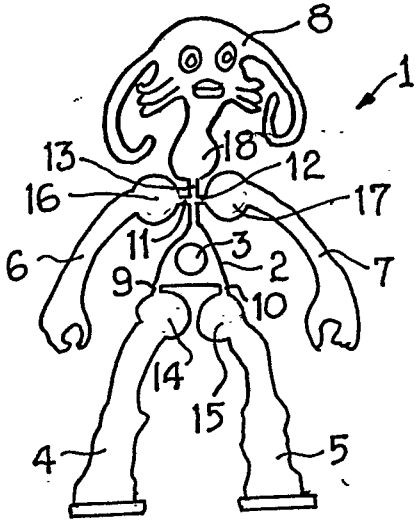


FIG. 2

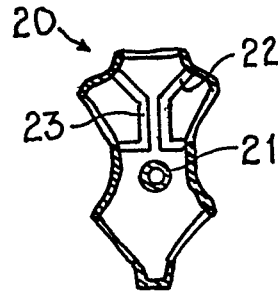


FIG. 3

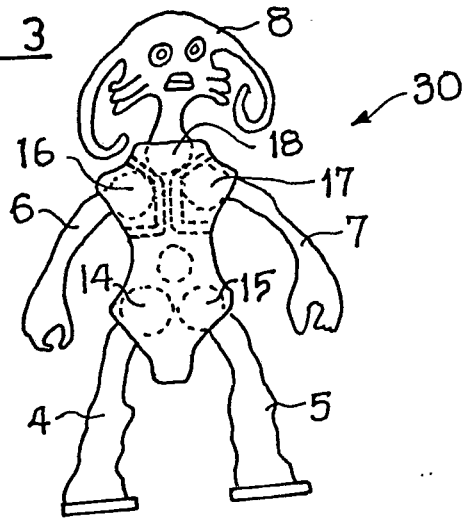


FIG. 4

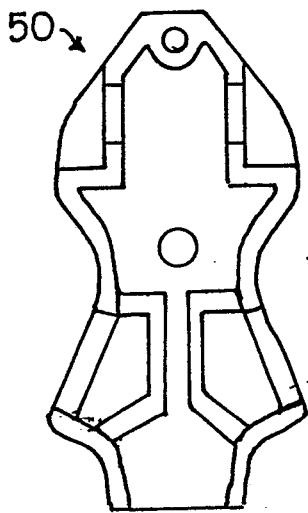
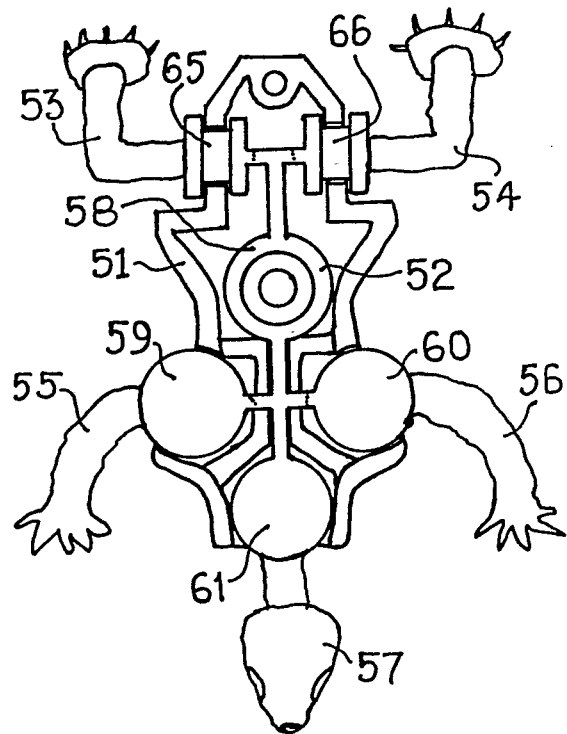


FIG. 5



SPECIFICATION

Manufacture of an article, e.g. a toy article, having a movable part

5 This invention relates to a method of manufacturing an article having at least one movable part and in particular, but not exclusively, relates to the manufacture of a toy article, e.g. a figure or figurine. The invention also relates to an article when manufactured by such a method.

10 It is well known in the moulding art to mould an integral tree-like assembly consisting of a central carrier and a plurality of components each connected to the central carrier via easily breakable connecting pieces. When it is desired to use one of the components, a component is broken off the central carrier by fracturing the connection piece. Examples of such known tree-like assemblies are wall fixing plugs fixed to a central carrier and model construction kits in which various parts of the model are attached to a central sprue assembly. In each of these known assemblies the central carrier merely serves as a holder for the various components attached thereto and is intended to be discarded when all the components have been disconnected therefrom.

15 According to the present invention, there is provided a method of manufacturing an article having at least one movable part, including moulding an element comprising a carrier and at least one component having a joint portion connected to the carrier by means of an easily breakable connection and joining together casing parts to enclose part of said moulded element so that the or each of said easily breakable connections and at least part of the carrier are encased and the joint portion of the or each component is received in a respective bearing formed by said casing parts, the or each component being movable relative to the joined together casing parts to sever the said connection(s) between the joint portion(s) and the carrier so that the or each joint portion is thereafter journalled in its respective bearing.

20 An article manufactured according to the method of the invention may be packaged and/or supplied to customers with the connections between the joint portion(s) and the carrier already severed. Alternatively, however, the article can be packaged and/or supplied without the connection(s) being severed, the eventual user of the article severing the connection(s) as a preliminary step to provide the article with its moving part(s).

25 Conveniently the said casing parts are made of plastics material and ultra-sonically welded together. Alternatively, however, the casing parts may be joined together in another manner, e.g. adhesively.

30 Typically the carrier is completely encased by the casing parts when the latter are joined

together. However this is not essential and, in the finished article, a part or parts of the carrier may be left uncovered by the casing parts.

70 In a particularly preferred embodiment of the invention only two casing parts are provided which are either hinged together (e.g. in an integral moulding) or formed as two separate components. Suitably one of such casing parts is either provided with locating means or is so shaped to locate the carrier in a correct position during the encasing step. For example one of the casing parts may be provided with a stud for insertion into an aperture of the carrier to correctly locate the said element relative to the casing part. The casing parts may be provided with co-operating fixing means (e.g. at least one co-operating stud and socket) for assisting the correct location of the casing parts prior to permanently joining them together.

80 An article manufactured according to the invention may have one or more movable parts constituted by said component(s) after severance of the latter from said carrier. The movement of the or each severed component may be rotary (in which case the or each joint portion suitably has a circular cylindrical form) or universal (in which case the or each joint portion is suitably in the form of a ball joint). In the case where there are two or more components provided, one or more of the severed components may be journalled to provide rotary motion and one or more other severed components may be journalled to provide universal motion.

90 Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

95 *Figure 1* is a plan of part of a toy figure, *Figure 2* is a sectional view through another part of the toy figure.

100 *Figure 3* is a plan of a toy article manufactured according to the present invention using the toy figure parts shown in Figs. 1 and 2, and

105 *Figures 4 and 5* shows parts of a toy creature for use in the manufacture of a different toy article according to the present invention.

110 Fig. 1 shows a part, generally designated 1, of a space toy figure moulded from plastics material. The moulded part 1 consists of a carrier 2 having a hole 3 formed therein, and appendages in the form of leg portions 4 and 5, arm portions 6 and 7 and a head portion 8 integrally connected to the carrier 2 by means of breakable connections 9-13, respectively. The breakable connections 9-13 are connected to ball-like portions 14-18, respectively, of the appendages, which ball-like portions are intended to form parts of ball-and-socket joints of the finished manufactured toy article.

115 In Fig. 2 there is shown one of a pair of

substantially similarly shaped co-operating casing parts, generally designed 20, moulded from plastics material. The casing parts are shaped to define a body or torso portion
 5 (typically clothed) of a finished toy figure. The casing part has an annular stud 21 the central aperture of which is intended to receive a peg-like stud of the other casing part (not shown) to hold the two casing parts temporarily together. The casing part 20 is also provided with internal partitions 22 and 23.

In the manufacture of a toy figure 30 (see Figure 3), the moulded part 2 is placed over the casing part 20 with the annular stud 21 projecting through the hole 3 of the carrier to accurately locate the latter relative to the casing part 20. When the moulded part 2 is correctly located, the ball-like portions 16-18 are positioned in upper chambers defined by the internal partitions 22 and 23 and the ball-like portions 14 and 15 are positioned in lower chambers beneath the annular stud 21. The other casing part (not shown) is then placed in co-operating relationship with the casing part 20 so that its peg-like stud is received in the central aperture of the annular stud 21. When the casing parts are so assembled, the carrier 2 and the breakable connections 9-13 are completely encased and the ball-like portions 14-18 are received in socket-like chambers or recesses defined by the co-operating casing parts.

The casing parts are then permanently secured, e.g. ultra-sonically welded, together.
 35 As an optional final stage, the appendages 4-8 may be moved relative to the carrier 2 to sever the breakable connections 9-13, respectively. Once the connections 9-13 are severed, the ball-like portions 14-18 and the socket like chambers defined by the co-operating casing parts function as ball-and-socket joints providing the appendages with universal movement. The toy figure 30 may alternatively be sold with the breakable connections 9-13 unsevered. In this case, the eventual user of the toy figure would be required to fracture the breakable connections 9-13.

Figs. 4 and 5 show parts of an alternative toy article which may be manufactured according to the invention. In particular Fig. 4 shows a first casing part 50 and Fig. 5 shows a second casing part 51 having a moulded part 52 located thereon. By way of example, the casing parts 50 and 51, when assembled together, define a body of a creature and the part 52 defines appendages of the creature in the form of rear legs 53 and 54, front legs 55 and 56 and a head 57 which are attached to a carrier 58 by breakable connections.

The front legs 55 and 56 and the head 57 are provided with ball-like portions 59-61, respectively, for connection via the breakable connections to the carrier 58. The rear legs 53 and 54, however, are not provided with such ball-like portions but instead are pro-

vided with bobbin-like portions 65 and 66, respectively.

The casing parts 50 and 51 are then assembled together to embrace the carrier 58 and the breakable connections. After severing the breakable connections, the ball-like portions 59-61 are journalled in the co-operating casing parts 50 and 51 to provide the front legs 55 and 56 and the head 57 with universal movement whereas the bobbin-like portions 65 and 66 are journalled in the co-operating casing parts 50 and 51 to provide the rear legs 53 and 54 with rotary movement.

The method herein described facilitates the manufacture of an article having a number of movable parts. Instead of moulding each of the parts separately, the method according to the invention enables the movable parts to be moulded as an integral tree-like structure which is retained in its integral form throughout the manufacture of the article. Thus the manufacturing process is considerably simplified.

It will be appreciated that in order to provide a joint having universal motion it is not necessary for the "socket" defined by the casing parts to be part-spherical. It is only necessary for the "socket" to loosely retain the "ball" of the joint within the casing parts.

CLAIMS

1. A method of manufacturing an article having at least one movable part, including moulding an element comprising a carrier and at least one component having a joint portion connected to the carrier by means of an easily breakable connection and joining together casing parts to enclose part of said moulded element so that the or each of said easily breakable connections and at least part of the carrier are encased and the joint portion of the or each component is received in a respective bearing formed by said casing parts, the or each component being movable relative to the joined together casing parts to sever the said connection(s) between the joint portion(s) and the carrier so that the or each joint portion is thereafter journalled in its respective bearing.

2. A method according to claim 1, in which the said casing parts are made of plastics material.

3. A method according to claim 1 or 2, in which the casing parts are adhesively joined together.

4. A method according to claim 2, in which the casing parts are ultra-sonically welded together.

5. A method according to any of the preceding claims, in which the carrier is completely encased by the casing parts when the latter are joined together.

6. A method according to any of the preceding claims, in which the said moulded part is encased by only two casing parts.

7. A method according to claim 6, in which the two casing parts are hinged together.

5 8. A method according to claim 6 or 7, in which the said carrier is located in a correct position by one of the casing parts during the encasing step.

10 9. A method according to claim 8, in which the said one casing part is provided with a stud for insertion into an aperture of the carrier to locate the said element correctly relative to the casing part.

15 10. A method according to any of the preceding claims, in which the casing parts are provided with co-operating fixing means for assisting the correct location of the casing parts prior to joining them together permanently.

20 11. A method according to claim 10, in which the said fixing means comprises at least one cooperating stud and socket.

25 12. A method of manufacturing an article having at least one movable part, the method being performed substantially as hereinbefore described with reference to, and as illustrated in, Figs. 1 to 3 or Figs. 4 and 5 of the accompanying drawings.

13. An article manufactured according to any of the preceding claims.

30 14. An article manufactured according to claim 13, having one or more movable parts, the movable part or parts, when severed from the carrier, having rotary and/or universal motion.

35 15. A toy article constructed and arranged substantially as herein described with reference to, and as illustrated in, Figs. 1 to 3 or Figs. 4 and 5 of the accompanying drawings.