United States Patent

[11] **3,624,691**

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[54] **REALISTIC TOY FIGURE**
2 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **46/162,** 46/151
[51] **Int. Cl.** **A63h 3/36**
[50] **Field of Search** 46/156, 162, 160

[56] **References Cited**

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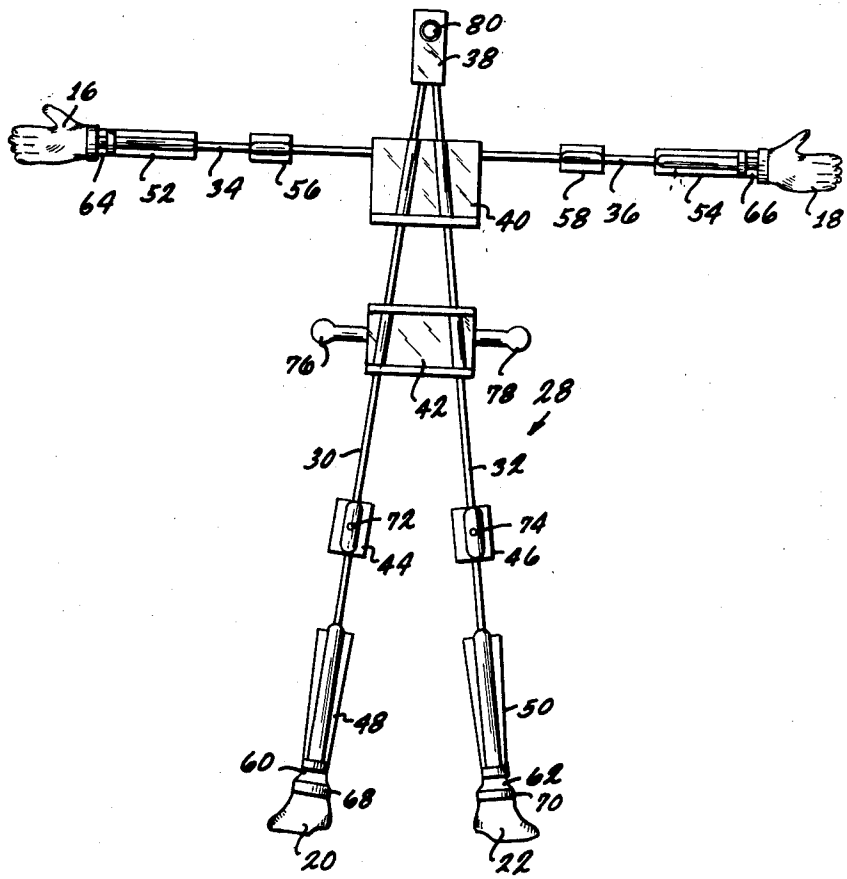
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ABSTRACT: A toy figure with an armature which includes bendable wires and flesh-colored plastic molded over hand and foot areas of the wires. The armature is covered with a soft plastic in a form representing the figure of an aquanaut covered with a rubber swimsuit at all regions except the hands and feet. A separate face member of a material which can be easily painted, is inserted into the head part of the figure. The armature has bracing portions molded over certain parts of the wire, which locate the armature in the mold where it is covered with plastic representing the swimsuit.



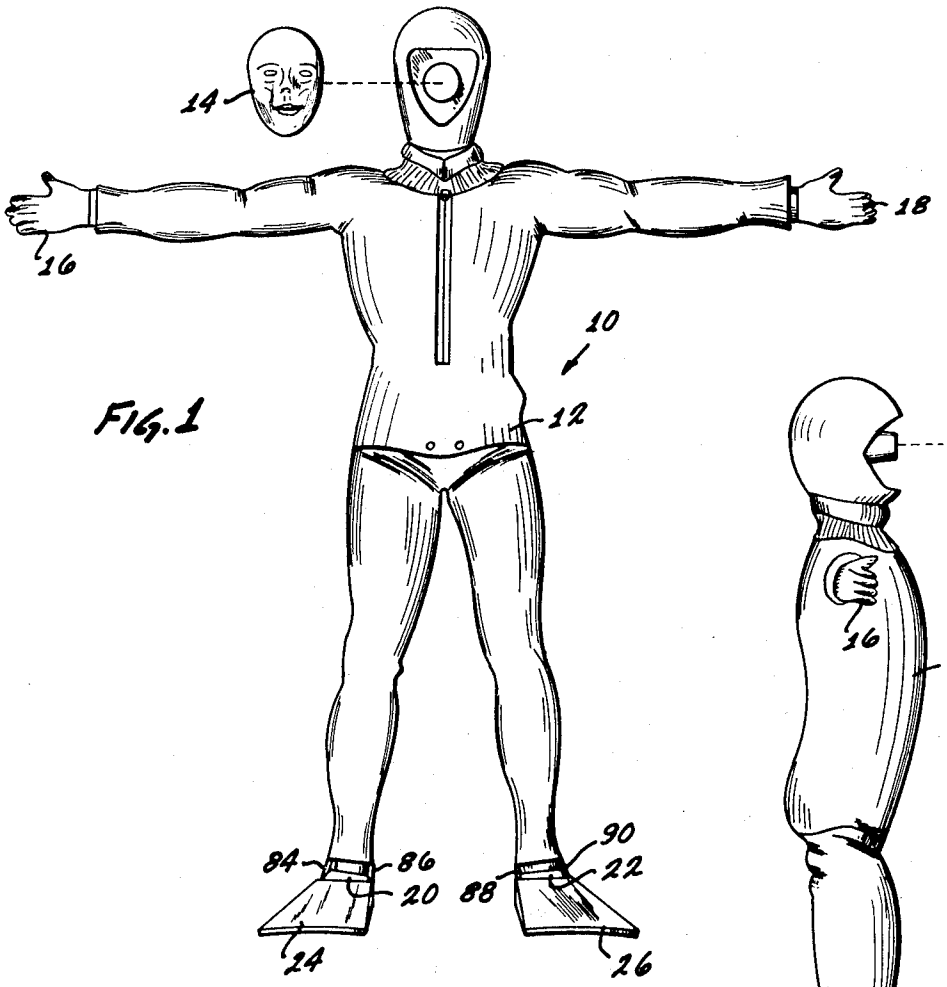


FIG. 1

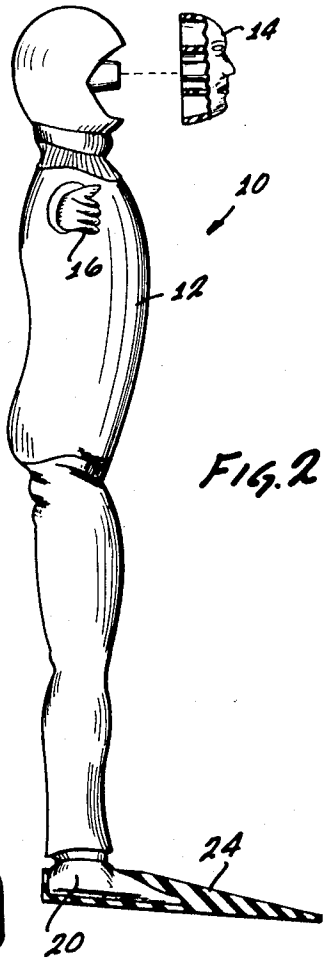


FIG. 2

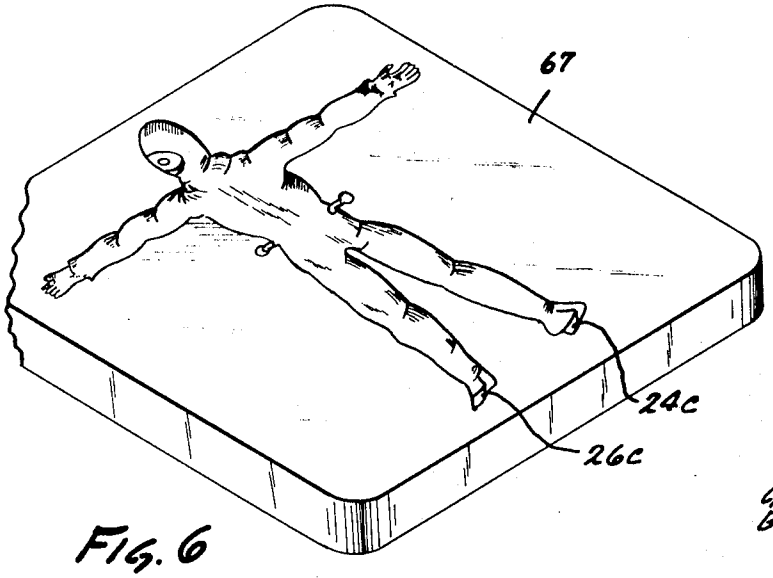


FIG. 6

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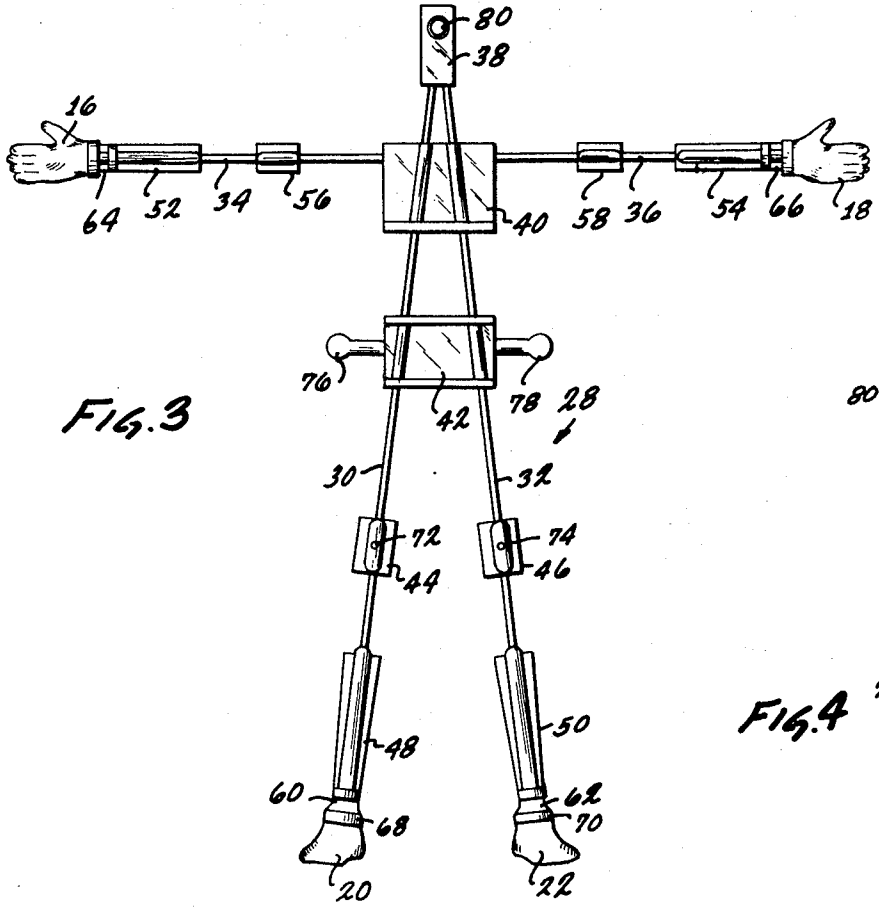


FIG. 3

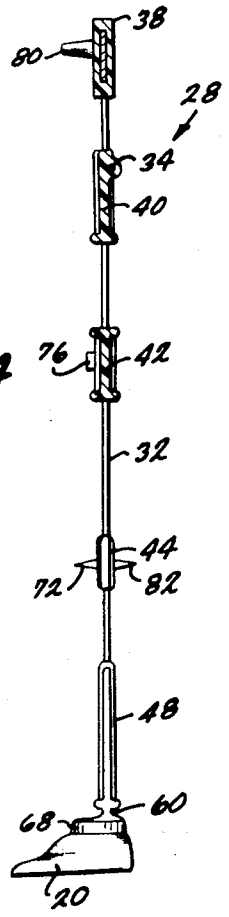


FIG. 4

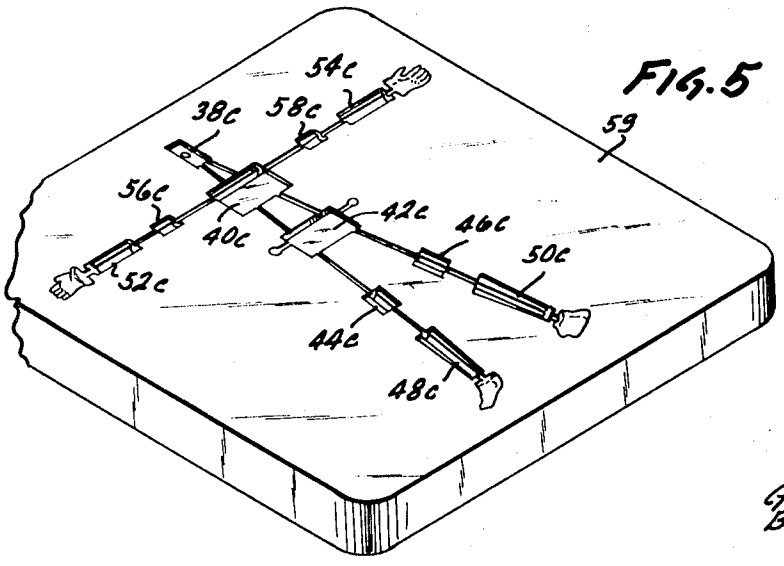


FIG. 5

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REALISTIC TOY FIGURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to toy figures and methods of forming them.

2. Description of the Prior Art

Bendable figures can be constructed using a soft wire armature and a flexible covering material formed in the shape of a person. In forming such a figure, the armature must be accurately located in the mold. This requires that several parts of the armature contact the mold, resulting in these parts of the armature lying at the surface of the finished figure. It is desirable, that these parts not be easily noticeable on the figure.

In some types of figures, accessories are preferably provided which can be removed and reinstalled on the figure. For example, a figure representing a skindiver is preferably provided with fins that can be placed on his feet or taken off. While such fins could be molded separately, this would result in substantial added cost.

OBJECTS AND SUMMARY OF THE INVENTION

An object of the present invention is to provide a bendable figure and method for forming it, which produces a realistic and attractive figure at low cost.

Another object is to provide an economical aquanaut figure of realistic appearance with removable fins.

In accordance with one embodiment of the present invention, a toy figure is provided which includes an armature constructed of soft wires covered at certain regions with flesh-colored polypropylene plastic material. The flesh-colored material is formed to represent hands and feet and to provide bracing portions for locating the armature in a mold. After the armature is constructed, it is covered with vinyl material which provides the appearance of a skindiver with fins on his feet. A face portion constructed of flesh-colored vinyl material which has been painted, can be inserted into the head portion of the molded suit and cemented in place to complete the figure.

The bracing portions of the armature are constructed to enable accurate placement of the armature in the mold where the final vinyl covering is molded over it. However, the bracing portions of the armature are constructed so that they are not apparent in the finished figure. To accomplish this, bracing portions of the armature at the knees of the figure are pointed so that there is very little area near the outside of the completed figure. Even the pointed area is generally flashed over by a thin layer of the vinyl covering material. The armature also has a pair of bracing portions at the sides of the figure which are large enough to enable easy attachment to the mold. These side portions are attached to the rest of the armature by a narrow region so that the ends can be cut off to leave only a narrow cross section armature portion at the surface of the doll. The fins which are molded over the doll's feet are connected to the rest of the covering by only a thin cross-sectional area, so that this area can be broken the first time the fins are removed, either during manufacture or by a child who plays with the figure. The molding of the fins over the feet assures a good fit and reduces the cost of forming the fins.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a front elevation view, partially exploded, showing a figure constructed in accordance with the present invention;

FIGURE 2 is a side elevation view, partly exploded, of the toy figure of FIG. 1;

FIG. 3 is a front elevation view of a complete armature which is in the toy figure of FIG. 1;

FIG. 4 is a side elevation view of the armature of FIG. 3; and

FIGS. 5 and 6 are perspective views of the bottom dies of molds for forming the armature of FIG. 3 and the outer covering disposed about the armature, respectively.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIG. 1, the toy FIG. 10 is formed with an outer covering 12 representing the suit of an aquanaut or skindiver, this outer covering being of a non-flesh-colored material, such as bright red. The figure also has a face portion 14, a pair of hands 16, 18, and a pair of feet 20, 22 all of which are flesh colored. A pair of fins 24, 26, which are constructed of the same material as the outer covering 12, are formed over the feet but can be removed and reinstalled thereon. The figure is constructed so that it can bend at the neck, shoulders, elbows, hands, waist, thighs, knees, and ankles.

FIG. 3 illustrates an armature 28 which is within the FIG. 10, the only addition to the armature 28 which is required being the covering 12 and the face member 14. The armature 28 includes a pair of bendable wires 30, 32 extending from the head to the foot, and a pair of arm wires 34, 36 extending from each hand to the body. The two body wires 30, 32 are held together by a head brace 38, chest brace 40, abdomen brace 42, knee braces 44, 46, and lower leg braces 48 and 50. Each of the arm wires has a hand brace 52, 54 and an upper arm brace 56, 58 and the inner ends of the wires are attached to the chest brace 40. The 11 bracing members strengthen the final toy figure and aid in locating the armature within the covering mold, while enabling bending of the figure to many realistic orientations.

In order to enable pivoting of the "20, 22 of the doll, which are part of the lower leg bracing members 48, 50, these members are provided with thin web sections at 60 and 62 at the ankles. The narrow web sections allow up-and-down pivoting of the feet 20, 22 while preventing twisting of them which could loosen them from the wires 30, 32. In a similar manner, the hands 16, 18 which are part of the lower arm bracing members 52, 54, have narrow web sections 64, 66 which enable bending of the arm. The narrow web sections at the feet and hands serve as 'living hinges" which hold the hands and feet to the rest of the doll while enabling them to pivot about one axis.

The armature is free of bracing members between the head member 38 and chest member 40 to enable the head to pivot up and down, the lateral separation of the two wires 30, 32 preventing head twisting. The space between the lower hand members 52, 54, and their respective elbow braces 56, 58 enable the doll to bend at the elbows. In a similar manner, the doll's lower legs can bend at the knees. The absence of a bracing portion between the elbow-bracing members and chest-bracing member 40 enables the bare wire therealong to bend about two axes so that the doll can raise and lower his arms to the side and move them forward and backward. Similarly, the doll can move each of his entire legs forward and backward and outwardly and inwardly. The doll can also bend at the waist. All of these movements are possible because the outer covering material is very flexible.

The doll is constructed by first forming the armature 28. This is accomplished by laying the four wires 30, 32, 34 and 36 in the lower die of an armature mold with 11 cavities that define the 11 bracing members. FIG. 5 illustrates a lower die 59 with 11 cavity portions 38C–58C corresponding to the 11 braces 38–58. The upper die of the mold is then closed over the four wires to close the 11 cavities, and the material which is to form the 11 bracing members is injected through 11 die openings to form the 11 bracing members. It is generally desirable to use a flesh-colored polypropylene material to form the 11 bracing members, this material being relatively hard so that the hands and feet retain their shape and the wires are held firmly in place. Although this material is hard, it is flexible enough so that a web section at the wrists and ankles can easily bend and serve as a living hinge.

After the armature, shown in FIG. 3, has been formed, it is placed in the lower die of a covering mold so that the outer covering 12 can be molded around the armature. The form of a lower die of such a mold is shown at 67 in FIG. 6. In order to accurately locate the armature in the covering mold, the armature is provided with several regions which contact the walls of the covering mold. As best shown in FIG. 3, these include the hands 16, 18 and upper regions 68, 70 of the feet, which can be readily seen in the final figure. In addition, the armature is located by the use of a pair of knee pins 72, 74 on the knee brace, a pair of side lugs 76, 78 on the abdomen brace, and a head pin 80 on the head brace. The armature is placed face down in the lower die of the covering mold so that the pins 72, 74, and 80 bear against a lower die surface. A pair of additional knee pins 82 is also provided to locate the knees with respect to the upper die. After the armature is in place, the upper die of the covering mold is lowered in place and the covering material is injected into the mold.

The covering mold 67 has a cavity which covers the entire armature, the cavity portion for the hands and ankles constructed so that no covering material lies over them to conceal them. The covering die includes cavity portions 24C and 26C which form the fins 24, 26 and four connecting regions around the doll's ankles that form connectors 84, 86, 88 and 90 that connect the leg coverings to the fins. Thus, a single injection of material into the covering mold forms the rest of the doll, except for the face portion. When the formed doll is removed from the mold, the side locating portions 76, 78 of the abdomen brace are cut off.

A vinyl material such a polyvinylchloride may be used for the covering 12. A soft material of this type flashes over the knee pins and can cover the region where the side locating members have been cut off so that they do not show at the outside of the doll. Such a material also is flexible enough to facilitate bending and to enable the doll to hold any position to which it has been bent merely by the retaining power of the soft wires in the armature.

To completely finish the doll, the face part 14 is inserted into the opening left in the head and cemented in place. While it is possible to form a face at the head-bracing member 80, such a face would then be formed of polypropylene, which is difficult to paint. Instead, a separate face part 14 is provided which is constructed of flesh-colored vinyl material whose eyes, eyebrows and lips have been painted.

The completed doll can be played with in a variety of ways. The fins 24, 26 can be removed by pulling them off so that the narrow connecting regions 84, 86, 88 and 90 of the vinyl covering material break. The fins can thereafter be repeatedly removed and reinstalled. The soft wire armature allows posing of the figure in a large variety of positions.

Thus, the invention provides a bendable toy figure of realistic appearance which can be constructed at low cost. The figure may represent an aquanaut, and the outer covering of the doll is formed integrally with the fins in a single injection-molding step. This reduces the cost of construction, assures good fit of the doll's feet in the fins, and prevents loss of the fins, at least up to the time when a child first removes the fins from the doll. Similarly constructed dolls can be formed with outer coverings representing astronauts and persons in other occupations, or even nonhuman living things.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and, consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. A toy figure comprising:

an armature including wire portions, and limb end portions of a first substantially flesh-colored material molded about said wire portions;

a flexible second covering material molded about said armature to leave areas of said limb end portions visible, said second covering material being configured to form the body of said figure;

said limb end portions comprising feet; and

said second covering material includes first portions about the legs of said figure extending down to about the ankles, second portions forming footwear over said feet, said second portions being nonadherent to said first material, and riblike portions connecting said first and second portions, whereby the footwear over the feet can be removed by breaking the riblike portions.

2. An armature for use in forming a toy figure comprising:

a pair of body wire portions extending at an acute angle from each other to form part of the neck, body and legs of said figure;

a pair of arm wire portions extending laterally from either side of said pair of body wire portions;

a chest-bracing member molded about part of said body wire portions and arm wire portions to tie them together; and

an abdomen-bracing member molded about part of said body wire portions to tie them together, said body wire portions extending through said abdomen-bracing member and said chest-bracing member.

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