

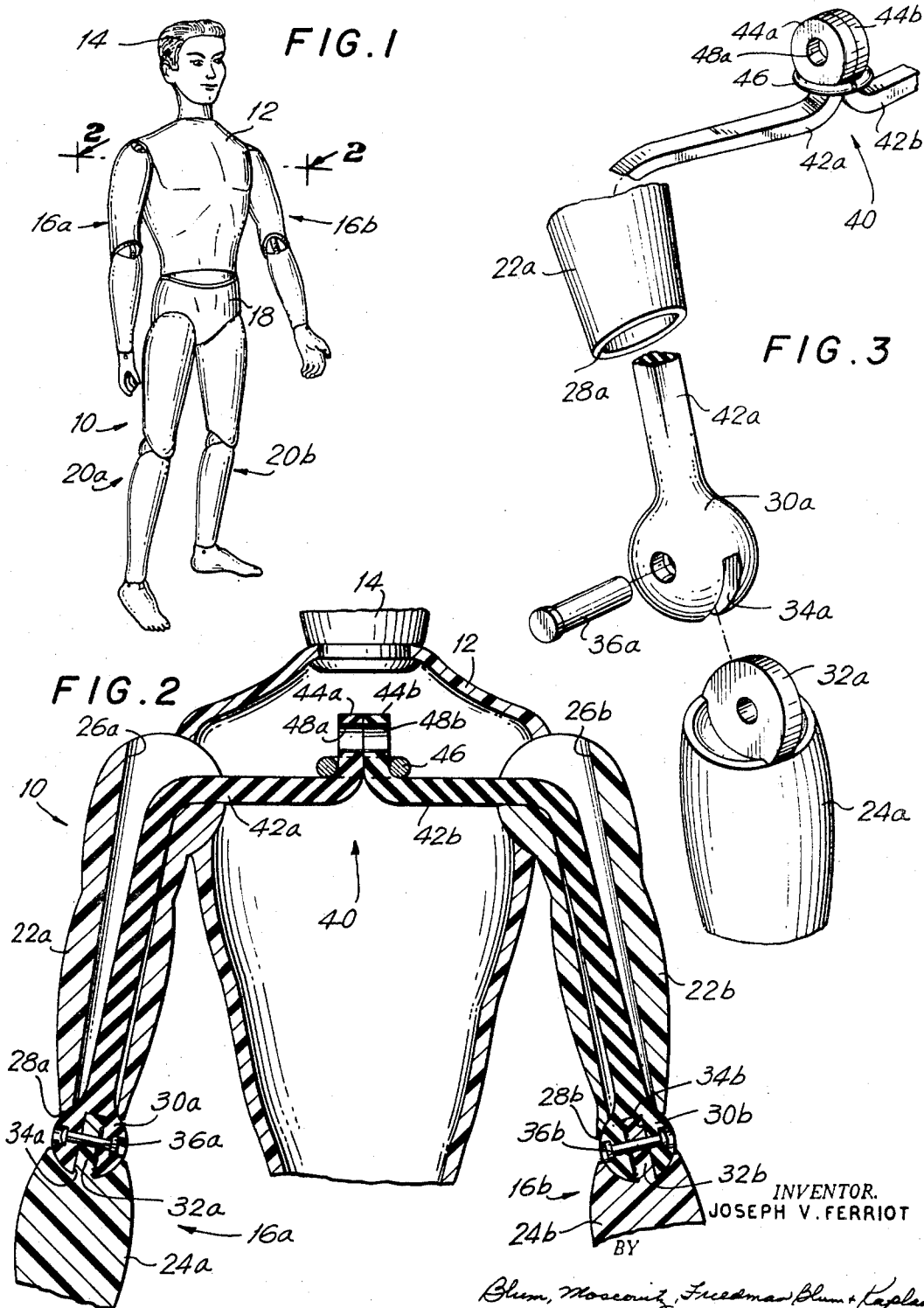
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TOY FIGURE

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TOY FIGURE

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8 Claims

ABSTRACT OF THE DISCLOSURE

A toy figure simulating a human being and having limb-simulating members such as an upper arm member and a lower arm member. The upper arm member is formed with a bore passing longitudinally therethrough and this upper arm member has at its lower end an end surface directed toward the lower arm member and situated at one end of the bore of the upper arm member. An elastomeric joint member, which in cross section is larger than the cross section of the bore of the upper arm member, slidably engages the latter at its end surface and is situated between the upper and lower arm members. An elastomeric means is integral with and extends from the joint member into the bore of the upper arm member and urges the joint member against the end surface at the lower end of the upper arm member for elastically maintaining the joint member in engagement with this end surface while permitting the joint member to move in all directions with respect to this end surface.

BACKGROUND OF THE INVENTION

The invention relates to toy figures such as dolls which simulate human beings.

In toy figures of this general type, particular problems are encountered in the assembly of such components as limb-simulating members not only with respect to each other but with respect to body-simulating members to which the limb members must be connected, and in addition problems are encountered at the joints between these members. Up to the present time relatively complex expensive structures have been required not only for the joints between limb members and body members but also with respect to the assembly of such components. Thus, not only is it required that the upper and lower limb members of a given limb-simulating assembly be movable one with respect to the other, but in addition they must be retained assembled with respect to each other, and of course the upper limb member must be movable with respect to a body member and must also be maintained assembled therewith. These problems encountered with respect to the assembly of the components and the maintenance of a jointed connection therebetween have resulted up to the present time in relatively complex expensive constructions. Moreover, even with all of the undesirable complications involved in the known constructions, the desired range of movement for the limb-simulating members cannot be reliably achieved, with the result that the known structures provide only limited possibilities in the movement of the various components of the toy figure.

SUMMARY OF THE INVENTION

It is accordingly a primary object of the present invention to provide a toy figure which will avoid the above drawbacks.

In particular, it is an object of the invention to provide a toy figure wherein the various limb components can be assembled with respect to each other in an exceedingly simple manner which will also function to provide the required range of movement of the limb members which

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simulates actual movement of the limbs of a human being.

In addition, it is an object of the invention to provide a construction of this type which will also maintain the limb members assembled with a body member and will provide the required range of movement of the limb members with respect to the body member, while at the same time maintaining the construction exceedingly simple and inexpensive as well as fully reliable and free from the possibility of defective operation.

In particular, it is an object of the invention to provide a construction of the above general type which can be very easily and quickly assembled, so that the labor costs involved in the toy figure of the invention are extremely low.

In addition, it is an object of the invention to provide a construction of the above type which is composed of an extremely small number of elements so that the cost of the components of the toy figure of the invention as well as the operations involved in the assembly thereof are also maintained at a minimum.

At the same time, it is an object of the invention to provide a construction which will fulfill the above objects without in any way sacrificing the quality of the toy figure either with respect to its appearance or with respect to its capability of movement to various positions closely simulating the movement of a human being.

In accordance with the invention, the toy figure includes upper and lower limb members arranged substantially in end-to-end relation and simulating the limb of a human being, such as an arm or a leg, the upper limb member simulating an upper arm, for example, while the lower limb member simulates a lower arm. This upper limb member is formed with a bore passing longitudinally therethrough and the upper arm member has an end surface at its lower end directed toward the lower arm member and situated at the lower end of the bore of the upper arm member. An elastomeric joint member which in cross section is larger than the cross section of the bore of the upper arm member is in slidable engagement with the end surface of the lower end of the upper arm member, and this joint member is situated between the upper and lower limb members. A means connects the lower limb member to the joint member for swinging movement relative thereto about an axis which extends transversely with respect to the upper arm member. An elastomeric means which is integral with the joint member extends therefrom into the bore of the upper limb member and urges the joint member into engagement with the end surface at the lower end of the upper limb member. In this way the elastomeric means serves not only to retain the limb members assembled, but in addition it will retain the joint member at whatever position it is moved to with respect to the end surface at the lower end of the upper limb member, so that this single elastomeric means of the invention serves to retain the components in assembled condition as well as to retain them in whatever positions they are moved to.

This elastic means extends all the way through the bore of the upper limb member into a hollow body member which slidably engages the upper limb member at an upper end thereof, and this same elastomeric means serves to maintain the upper limb member in slidable engagement at its upper end with the body member so that the same elastic means also functions to retain the upper limb member assembled with the body member as well as to retain the upper limb member in whatever position it is moved to with respect to the body member.

The toy figure includes a second upper limb member identical with the first limb member and slidably engaging the body member at a side of the latter opposed to

the first upper limb member, and a second joint member identical with the first joint member engages an end surface of the second arm member which is situated at the lower end thereof. The elastomeric means of the invention extends from the first joint member through the bore of the first upper limb member and completely through the hollow interior of the body member into the bore of the second arm member and terminates at the second joint member to which the elastomeric means is integrally connected in the same way that it is connected to the first joint member, so that through this simple construction both upper limb members are maintained assembled with the body member and will also be retained in whatever positions they are moved to with respect to the body member.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the constructions hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective illustration of one possible embodiment of a toy figure having the structure of the invention;

FIG. 2 is a fragmentary sectional elevation, taken along line 2—2 of FIG. 1 in the direction of the arrows, transversely through the toy figure and shows in sectional elevation the details of the structure of the invention; and

FIG. 3 is a fragmentary exploded perspective illustration illustrating how the components of the structure of the invention are connected to each other.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawings, there is shown in FIG. 1 a toy figure 10 simulating the appearance of a male human being. This figure 10 has an upper body member 12 which is hollow and simulates the upper torso of the figure. The body member 12 carries a head-simulating assembly 14. A pair of limb-simulating assemblies 16a and 16b, which respectively simulate the arms of the figure, are connected with the body member 12 in a manner described in detail below.

The upper body member 12 is connected in any suitable way to a lower body member 18 which in turn has connected thereto the limb-simulating assemblies 20a and 20b which respectively simulate the legs of the figure. It is to be understood that while the description below relates to the connection of the arm assemblies 16a and 16b to the body member 12, it is equally applicable to the connection of the leg assemblies 20a and 20b to the body member 18, and these leg assemblies are each provided with upper and lower limb members which can be connected to each other in the same way that the upper and lower limb members of each assembly 16a and 16b are connected to each other.

Since the limb-simulating assemblies 16a and 16b are identical, except for differences which will provide right and left hand orientation, the description below refers primarily to the assembly 16a, but the same components are indicated with the same reference numerals followed by the letter b for the assembly 16b.

Thus, the limb assembly 16a includes an upper limb member 22a and a lower limb member 24a. The upper limb member 22a is formed with a bore 26a passing longitudinally therethrough. The limb members 22a and 24a are arranged substantially in end-to-end relation, and at its lower end the upper limb member 22a has an

annular end surface 28a situated at the lower end of the bore 26a, directed toward the lower limb member 24a, and forming, at least substantially, part of a sphere.

A joint member 30a which in cross section is larger than the cross section of the bore 26a slidably engages the end surface 28a at the lower end of the upper limb member 22a, and this joint member 30a has an exterior surface which substantially forms part of a sphere.

A means connects the lower limb member 24a to the joint member 30a for swinging movement relative thereto about an axis which extends transversely with respect to the upper limb member 22a, and this means includes a tongue 32a which is integral with the lower limb member 24a and which is received in a notch 34a (FIG. 3) of the joint member 30a. The joint member and the tongue are formed with aligned bores which receive a rivet 36a which forms the turning axis for the lower limb member 24a, so that in this way the lower limb member is connected to the joint member for swinging movement with respect thereto. It will be noted that the lower limb member has on opposite sides of its tongue 32a concave surfaces also forming substantially part of a sphere and slidably engaging the exterior surface of the joint member 30a. If desired, as indicated in FIG. 2, the inside faces of the tongues 32a and 32b may be corrugated to reduce friction from rivets which are too tight and these corrugations may also serve to retain dry lubricant if desired.

The structure of the invention further includes an elastomeric means 40 having a pair of elongated, stretchable elastic portions 42a and 42b which are respectively integral with the joint member 30a and 30b and which extend therefrom all the way through the bores 26a and 26b, respectively, into the hollow interior of the body member 12. In the hollow interior of the body member 12 these portions 42a and 42b of the elastomeric means 40 have, respectively, enlarged ends 44a and 44b engaging each other. A ring 46 extends at least partly around the elongated portions 42a and 42b in the hollow interior of the body member 12 in the region of the enlarged ends 44a and 44b thereof, and this ring 46 is too small to permit the enlarged ends 44a and 44b to pass therethrough, so that in this way the ring 46 maintains the elongated portions 42a and 42b of the elastomeric means 40 in engagement with each other. In addition, the elastomeric portions 42a and 42b of the elastomeric means 40 are maintained in stretched condition by the ring 46, so that the elastomeric means 40 serves to urge the upper limb members 22a and 22b at their upper ends into slidable engagement with the body member 12 at the opposite sides of the latter, respectively, where the body member 12 is provided with openings defined by annular surfaces forming parts of spheres and slidably engaging spherical upper end portions of the upper limb members, as indicated in FIG. 2. Furthermore, the very same elastomeric means is integrally connected at its portions 42a and 42b with the joint members 30a and 30b which are of the same elastomeric material so that it serves in addition to urge these joint members against the lower end surfaces of the upper limb members 22a and 22b. Thus, this single elastomeric means 40 of the invention serves on the one hand to maintain the components shown in FIG. 2 in assembled condition and on the other hand to retain these components in whatever position they are moved to with respect to each other. Thus, the elastomeric means will frictionally retain either of the upper limb members in whatever position it is moved to with respect to the body member 12. Furthermore, the joint member 30 is movable in all directions with respect to the end surface 28a and will be retained in whatever position it is moved to with respect to the latter end surface by the elastic means 40. The operations at the other limb member 22b are identical.

Thus, through this exceedingly simple structure of the present invention which is composed of only a relatively

small number of parts it is possible to retain all of the components in assembled condition as well as to provide for these components the required range of movement with respect to each other and to retain the components in whatever positions they are moved to.

The structure of the invention may be made of any suitable materials such as any molded plastic well known in the art. For example, polyethylene may be used for the components, although rubber could also be used, if desired. In addition, the joints 30a and 30b as well as the elastomeric means 40 which is integral therewith may be made of any stretchable elastic plastic or the like or they may be made also of rubber.

In their unstretched conditions, the elastic portions 42a and 42b of the elastomeric means 40 have their enlarged ends 44a and 44b, respectively, situated in the regions of the upper ends of the limb members 22a and 22b. The bores 26a and 26b are large enough to permit the enlarged ends 44a and 44b to pass upwardly through these bores to the regions of the upper ends of the limb members 22a and 22b, while the joint members 30a and 30b will of course be prevented from moving beyond the lower end surfaces of the limb members 22a and 22b.

As one possible method for assembling the components, the enlarged ends 44a and 44b are respectively provided with openings 48a and 48b passing therethrough. The ring 46 is initially in the form of a wire hog nose clamp which is in an open condition with its ends spread apart from each other. Also, before the elastic means has the condition shown in FIG. 2, the head assembly 14 has not yet been joined to the body member 12 so that the interior of the latter is accessible through its upper open end which is visible in FIG. 2.

In order to assemble the structure a pair of special pliers which have curved jaws provided with tips which are bent toward each other is applied to the enlarged ends 44a and 44b of the elastomeric means 40. The curved tips of the plier jaws are placed in the openings 48a and 48b, respectively, these pliers initially extending downwardly through the top open end of the body member 12 before the head assembly 14 is joined thereto, and then the plier jaws are advanced toward each other so as to stretch the elastic portions 42a and 42b into the condition shown in FIG. 2 and so as to bring the enlarged ends 44a and 44b into engagement with each other. In fact, the enlarged ends may be pulled by the pliers upwardly through the top open end of the body member 12 so as to be accessible at the exterior thereof. In this condition the spread ring 46 is placed around the elastic portions 42a and 42b just beneath their enlarged ends 44a and 44b, and then with a suitable tool the wire ring 46 is clinched so that its ends will be located directly next to each other, as indicated in FIG. 3, and, as was indicated above, in this condition the opening defined by the ring 46 is too small to permit the enlarged ends 44a and 44b to pass through the ring 46. Now the interconnected elastic portions 42a and 42b can be released for movement into the hollow body member 12 to the position shown in FIG. 2, this being the position which the structure takes due to its own inherent resiliency. Then the head assembly 14 is assembled with the body member 12 in the manner indicated in FIG. 2. In this simple way it is possible to assemble the upper limb members 22a and 22b with the body member 12, and all of the above-described advantages of the invention are achieved both with respect to this assembly as well as with respect to the maintenance of the components in the positions to which they are moved as well as with respect to the large range of possible movement which closely simulates the movement of the limbs of a human figure.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above constructions without depart-

ing from the spirit and scope of the invention, 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. In a toy figure, a pair of limb-simulating members arranged substantially in end-to-end relation and including an upper limb member and a lower limb member, one of said members having in the region of the other of said limb members an end surface directed toward said other limb member and said one limb member being formed with a hollow interior bore terminating at said end surface thereof, an elastomeric joint member situated between said limb members and having a transverse cross section larger than the transverse cross section of said bore of said one limb member, said joint member engaging said end surface of said one limb member and engaging the other of said limb members at an end portion of the latter which is adjacent said one limb member, means connecting said other limb member to said joint member for swinging movement relative thereto about an axis extending transversely of said one limb member, said joint member itself being slidably movable at said end surface of said one limb member in all directions with respect thereto, and elastomeric means integral with said joint member, extending therefrom into said bore of said one limb member, and elastically urging said joint member against said end surface of said one limb member for retaining said joint member at said end surface at any position to which said joint member has been moved with respect to said end surface.

2. The combination of claim 1 and wherein said joint member has a substantially spherical exterior surface and said end surface of said one member forms part of a sphere and conforms substantially to the configuration of the exterior surface of said joint member.

3. The combination of claim 1 and wherein said means connecting said other limb member to said joint member includes a tongue fixed to and extending from one of the latter members, the other of the latter members being formed with a notch receiving said tongue, and said means including a rivet extending through said other of said latter members, across said notch thereof, and through said tongue.

4. The combination of claim 1 and wherein said one limb member is said upper limb member and is provided at its lower end with said end surface directed toward said lower limb member.

5. The combination of claim 4 and wherein a hollow body member slidably engages said upper limb member at an upper end thereof distant from said lower limb member so that said upper limb member is movable with respect to said body member at the region of said upper end of said upper limb member, said bore of said upper limb member extending longitudinally therethrough into communication with the interior of said hollow body member, and said elastomeric means extending from said joint member through said bore of said upper limb member into the interior of said body member for maintaining said upper limb member assembled with said body member and movable with respect thereto, said elastomeric means also retaining said upper limb member at any position to which it is moved with respect to said body member.

6. The combination of claim 5 and wherein a second upper limb member substantially identical with said first-mentioned upper limb member slidably engages said body member at a side of the latter opposed to the location where said first-mentioned limb member slidably engages said body member, a second elastomeric joint member engaging said second upper limb member in the same way that said first-mentioned joint member engages said first-mentioned upper limb member, and said elastomeric means extending from the interior of said body member through said second upper limb member to said second

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joint member and being integral with the latter for urging the latter against said end surface of said second upper limb member, whereby said elastomeric means maintains both of said upper limb members assembled with said body member and will retain said upper limb members at any position to which they are moved with respect to said body member.

7. The combination of claim 6 and wherein said body member simulates an upper torso portion of a human figure while said upper limb members simulate upper arm portions of a human figure.

8. The combination of claim 7 and wherein said elastomeric means includes a pair of elongated elastic portions respectively extending from said joint members into the hollow interior of said body member and having in the latter enlarged ends, respectively, engaging each other, and a ring situated in said hollow body member extending at least partly around said elongated portions of said elastomeric means in the region of said enlarged ends

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thereof and said ring being too small for passage of said enlarged ends therethrough so that said ring maintains said ends of said portions of said elastomeric means in engagement with each other, and said ring also maintaining said elastomeric means in stretched condition.

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