

## Description

The present invention refers to an articulated structure forming a skeleton framework of a doll or puppet as set forth in the preamble of claim 1. A structure of this type is known from USA-2 129 421.

The aforementioned document shows a skeleton-like framework whose elements are movably connected with each other by articulations formed by a ball affixed to one of said elements and lodged in a semispherical cavity formed in the associated other element where a movable pressure plate is disposed which is urged by a coil spring against said ball to provide friction and restriction of movement resulting therefrom. To enable said springs to be disposed within said elements, the elements are formed of a plurality of parts formed with inner and outer threads and screwed one to another. Thus, this structure is rather complicated and results in considerable costs of manufacture.

From FR-A-1 386 510 an articulated structure for a doll is known comprising a framework element formed from tubes the ends of which are provided with cross bores. Middle link connection elements formed of two balls integrally connected to each other by a rod are seated in the end portions of said members which are resiliently widened by the insertion of said balls, the latter being secured therein by partial interengagement in said cross bores. In order to prevent that the members may be severed from one another by tearing the balls out of the members, safety shells may be affixed around the resiliently widened end portions of said members. Thus, this structure is complicated as well.

From DE-A-174 835 a limb articulation of a doll is known comprising a sphere lodged in a semispherical cavity, said sphere having longitudinal ribs over which a resilient sheath is disposed which is in contact with the inner surface of said cavity, so that friction is generated thereby to restrict free movement of the members connected to each other by said articulation.

It is the object of the invention to provide an articulated structure for a doll as set forth above by virtue of which arbitrary and multiple positions and postures can be consigned to the doll and can be held stable for an indefinite length of time, while not constituting any obstacle to the manipulation of the doll and which is secured against separation of its members.

This object is attained by the features of claim 1. A preferred embodiment of the invention is subject matter of claim 2.

The invention is further explained by means of a preferred embodiment with reference to the accompanying drawings.

In the drawings :

Figure 1 corresponds to a plan view of the structure. Figure 2 is a detail of the top part of the structure, seen along "A" in Fig. 1;

Figures 3, 4, 5, 6 and 7 show respectively sections of the structure seen along lines A-A', B-B', C-C', D-D' and E-E' in Fig. 1;

Figures 8 and 9 represent two link connections of the components of the structure;

Figures 10 and 11 represent an articulation in greater detail, shown from the outside and sectioned through a diametral plane (through the center of the sphere) F-F';

Figures 12 and 13 show respectively a basic part provided to obtain the link connection and the link connection obtained from said part by careful injection of a new application of material, all with the objective of attaining improved sphericity.

## DESCRIPTION OF ONE EMBODIMENT OF THE INVENTION

In the embodiment shown in the drawings, the articulated structure for dolls, furnished with the improvements of the invention and in accordance with one realization of the same, comprises a structure or skeleton-like framework constituted of the aforementioned structural elements, designated 1, 2 and 3, which correspond to the spine, hips and neck or head of a person; and members 4 and 5, and 6 and 7, making up the top and bottom limbs; and the link connection elements 8, which connect the aforementioned members with the principal elements 1, 2 and 3, and connect said principal elements among themselves.

Element 1 is constituted of a part manufactured of injected material which adopts a "T" configuration, shown in cross section in Fig. 3, shaped by ribs 11 which intersect orthogonally. The arms 1a of said part are essentially oblique, and the ends are finished by semispherical hollow forms, designated as 9, with recesses 10.

Element 2 is configured of a part comprising an obtuse angle of cross section identical to that of part 1, provided with semispheres 9 arranged in its ends and its apex.

Element 3, connected to element 1, is configured of a revolving cylindrical part, hollow and open at the top, with annular ribs 3a, and with a semisphere 9 at its bottom, with its opening to the exterior.

Member 4, forming part of a top limb, presents a section A-A', shown in Fig. 4, formed by ribs 12 which intersect orthogonally. Likewise, member 5, another component of said top limb, presents a section D-D', shown in Fig. 6, formed by intersecting ribs 13, one of them straight and the other in a double "I" shape, and shows a reduced cross section 5a, joining with an end 5b.

Member 4 presents semispheres 9 at its ends, with its opening at the top being disposed at a 90 degree angle, while member 5 presents a semisphere of larger cross section at its upper end, with its opening aligned transversally.

Member 5 presents a section A-A', as shown in Fig. 3, and two semispherical ends of the same type as 9,

with its opening arranged transversally and obliquely with respect to the longitudinal axis of said member.

Member 7 presents a section D-D', as shown in Fig. 6, and a section E-E', as shown in Fig. 7, formed by intersecting ribs 14 which join with an end 7a.

The link connection elements of the components described are configured by the parts 8 which comprise two spherical bodies 8a connected by a diametral appendix 8b. The surfaces of the spherical bodies 8a can be smooth or else can include flat facets, curved concavely as in 8c, elongated fissures 8d, or some other type of protuberance or recess in order to offer resistance to the friction with the surface of semispherical cavities 9, inside which they are to revolve, since this is the resistance which determines the fixation and immobility of the position adopted by the skeleton-like framework. The recesses 10 of these semispherical cavities 9 coincide with the natural movement of the respective components, such as arms, legs, etc., in such a manner as to allow a greater inclination to swivel in this sense.

In some cases, a base part 15 is constructed beforehand to achieve improved sphericity in the link connections 8a, in the ends of which are constituted annular projections 15a. The material 16 is injection molded over said ends, and the material adopts a uniform spherical shape.

The structural components and members are joined with the link connection elements 8 during the actual manufacturing process, consisting of the injection molding of the material of the cited parts over the spheres 8a, in such a manner that they constitute an indivisible articulated whole.

The structural components and members, formed by longitudinal ribs which intersect orthogonally, present virtually circular cross sections, as can be appreciated in Figures 3 to 7.

### Claims

1. An articulated structure for a doll, comprising a T-shaped element (1), the transverse section of which forms the shoulder portions and the longitudinal section of which forms the spine portion of a skeleton-like framework, an angle element (2) forming the hip and pelvis portion of said framework and articulated to the lower end of the spine portion of said T-shaped element (1), a cylindrical element (3) forming a head portion of said framework and articulated centrally to a top extension of said T-shaped element (1) and limb portions each consisting of a pair of rectilinear elements (4,5;6,7) articulated to each other, wherein one element (4,6) of each said pair is articulated to the ends of the shoulder portions of said T-shaped element (1) and to the ends of said angle element (2) respectively, all said articulations being ball and socket articulations, characterized in that said articulations are established each by means of middle link connection elements (8) each composed of two spheres (8a) integrally connected to each other by

a diametral appendix (8b) in combination with semispherical cavities (9) formed at the component members (1 to 7) of said framework and in which said spheres (8a) are revolvably lodged, said spheres (8a) each having a plurality of facets, planar zones (8c), recesses (8d) or protuberances to offer resistance to friction with the inner surface of the associated semispherical cavity (9), said component members (1-7) of the framework being attached to said middle link connection elements (8) by the material of said semispheres (9) being injection molded over the spheres (8a) of said middle link connection elements (8), thus forming an indivisible unit.

2. The structure as set forth in claim 1 wherein said middle link connection elements (8) are constituted of a base part (15) having ends comprising annular projections (15a) and a material (16) injection molded over said ends and adopting a uniform spherical shape.

### Patentansprüche

1. Gelenkstruktur für eine Puppe, enthaltend ein T-förmiges Element (1), dessen Querschapel die Schulterteile und dessen Längsschenkel den Rückgratteil eines skelettförmigen Rahmens bildet, ein Winkerelement (2), das den Hüften- und Beckenteil des Rahmens bildet und am unteren Ende des Rückgratteils des T-förmigen Elements (1) gelenkig angebracht ist, ein zylindrisches Element (3), das einen Kopfteil des Rahmens bildet und in der Mitte an einem oberen Vorsprung des T-förmigen Elements (1) gelenkig angebracht ist, und Gliederteile, die jeweils aus einem Paar geradliniger Elemente (4,5;6,7) bestehen, die gelenkig miteinander verbunden sind, wobei ein Element (4,6) eines jeden Paares an den Enden der Schulterteile des T-förmigen Elements (1) bzw. an den Enden des Winkerelements (2) gelenkig angebracht sind, wobei sämtliche Gelenkverbindungen Kugelgelenkverbindungen sind, dadurch gekennzeichnet, daß die Gelenkverbindungen jeweils durch Zwischenverbindungselemente (8) geschaffen sind, die jeweils aus zwei Kugeln (8a) bestehen, die integral miteinander durch einen diametralen Fortsatz (8b) verbunden sind, in Kombination mit halbkugelförmigen Hohlräumen (9), die an den Bestandteilen (1-7) des Rahmens ausgebildet sind, und in denen die Kugeln (8a) drehbar aufgenommen sind, wobei die Kugeln (8a) jeweils mehrere Facetten, ebene Zonen (8c), Vertiefungen (8d) oder Vorsprünge aufweisen, um Reibungswiderstand mit der Innenfläche des zugehörigen halbkugelförmigen Hohlraums (9) zu erzeugen, wobei die Bestandteile (1-7) des Rahmens, die an den Zwischenverbindungselementen (8) durch das Material der Halbkugeln (9) angebracht sind, über die Kugeln (8a) der Zwischenver-

with its opening arranged transversally and obliquely with respect to the longitudinal axis of said member.

Member 7 presents a section D-D', as shown in Fig. 6, and a section E-E', as shown in Fig. 7, formed by intersecting ribs 14 which join with an end 7a.

The link connection elements of the components described are configured by the parts 8 which comprise two spherical bodies 8a connected by a diametral appendix 8b. The surfaces of the spherical bodies 8a can be smooth or else can include flat facets, curved concavely as in 8c, elongated fissures 8d, or some other type of protuberance or recess in order to offer resistance to the friction with the surface of semispherical cavities 9, inside which they are to revolve, since this is the resistance which determines the fixation and immobility of the position adopted by the skeleton-like framework. The recesses 10 of these semispherical cavities 9 coincide with the natural movement of the respective components, such as arms, legs, etc., in such a manner as to allow a greater inclination to swivel in this sense.

In some cases, a base part 15 is constructed beforehand to achieve improved sphericity in the link connections 8a, in the ends of which are constituted annular projections 15a. The material 16 is injection molded over said ends, and the material adopts a uniform spherical shape.

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2. The structure as set forth in claim 1 wherein said middle link connection elements (8) are constituted of a base part (15) having ends comprising annular projections (15a) and a material (16) injection molded over said ends and adopting a uniform spherical shape.

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bindungselemente (8) spritzgeformt sind, um so eine unteilbare Einheit zu bilden.

extrémités et prenant une forme sphérique uniforme.

2. Struktur nach Anspruch 1, bei der die Zwischenverbindungselemente (8) aus einem Basisteil (15) mit ringförmige Vorsprünge (15a) aufweisenden Enden und einem Material (16) bestehen, das über die genannten Enden spritzgeformt ist und eine gleichmäßig kugelförmige Gestalt aufweist.

#### Revendications

1. Structure articulée pour une poupée, comprenant un élément en forme de "T" (1) dont la section en travers forme les parties des épaules et dont la section longitudinale forme la partie de la colonne vertébrale de l'ossature ayant l'aspect d'un squelette, un élément d'angle (2) formant les hanches et la partie du bassin de ladite ossature et articulé avec l'extrémité inférieure de la partie de la colonne vertébrale dudit élément en forme de "T" (1), un élément cylindrique (3) formant une partie de la tête de ladite ossature et articulé centralement sur le prolongement supérieur dudit élément en forme de "T" (1) et des parties de membres chacune étant composée d'une paire d'éléments rectilignes (4, 5 ; 6, 7) articulés entre eux, dans lesquels un élément (4, 6) de chacune desdites paires est articulé avec les extrémités des parties des épaules dudit élément en forme de "T" (1) et avec les extrémités desdits éléments d'angle (2) respectivement, toutes lesdites articulations étant des articulations mobiles, caractérisée en ce que lesdites articulations sont toutes réalisées au moyen d'éléments de connexion des articulations intermédiaires (8) composés chacun de deux sphères (8a) intégralement reliées entre elles par un appendice diamétral (8b) en combinaison avec des cavités hémisphériques (9) formées sur les membres constitutifs (1 à 7) de ladite ossature et dans lesquels lesdites sphères (8a) sont placées de façon à pouvoir tourner, chacune desdites sphères (8a) ayant une pluralité de facettes, zones planes (8c), encoches (8d) ou protubérances afin d'exercer une résistance au frottement sur la surface interne de la cavité hémisphérique (9) qui lui est associée, lesdits membres constitutifs (1 à 7) de l'ossature étant fixés auxdits éléments de connexion des articulations intermédiaires (8) par le matériau desdites demi sphères (9) coulé par injection sur les sphères (8a) desdits éléments de connexion des articulations intermédiaires (8) formant ainsi une unité indivisible.
2. Structure comme indiqué dans la revendication 1, dans laquelle lesdits éléments de connexion des articulations intermédiaires (8) sont composés d'une pièce servant de base (15) comprenant des extrémités ayant des projections annulaires (15a) et un matériau (16) coulé par injection sur lesdites

