

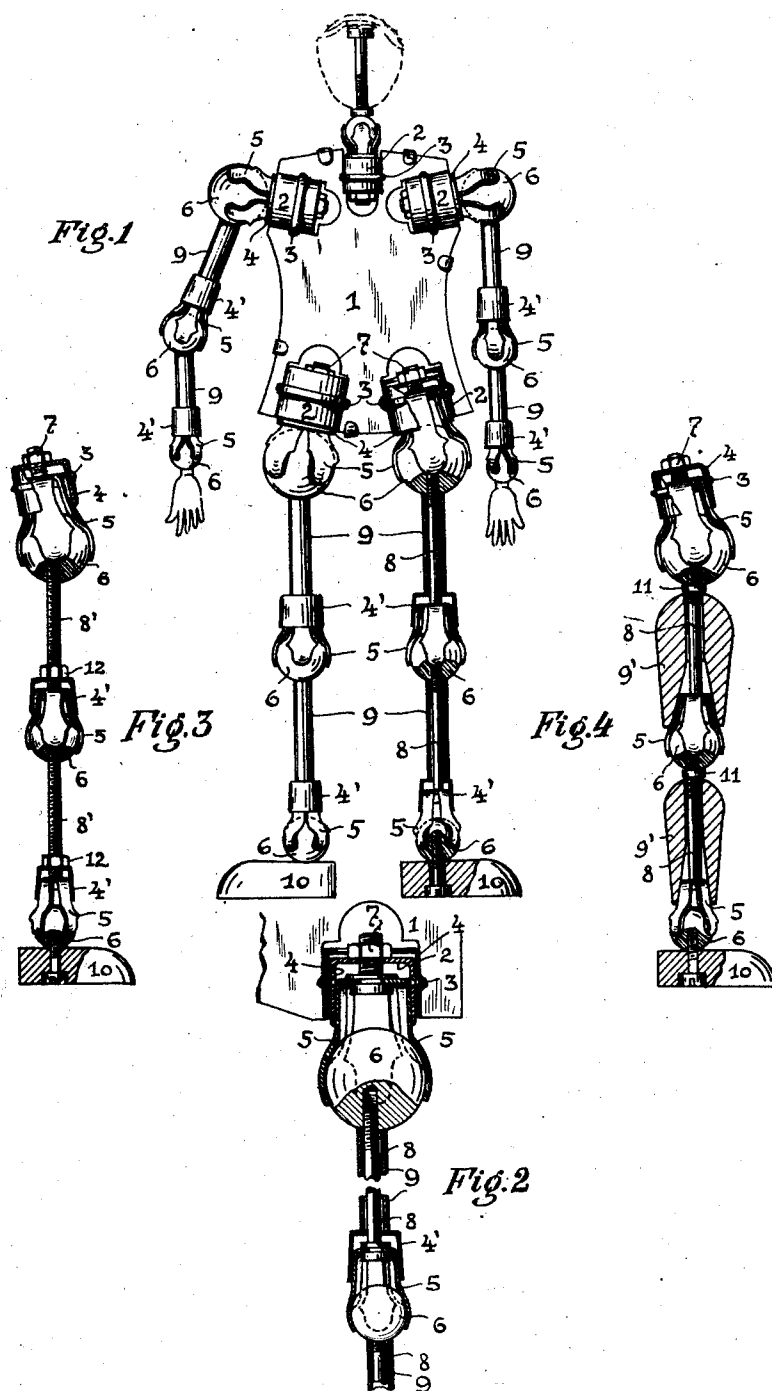
Sept. 28, 1926.

1,601,447

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SKELETON FOR ARTICULATED TOYS, ESPECIALLY DOLLS

Filed July 31, 1924



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Patented Sept. 28, 1926.

1,601,447

UNITED STATES PATENT OFFICE.

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Application filed July 31, 1924, Serial No. 729,413, and in Germany October 17, 1923.

My invention relates to skeletons for articulated dolls and other articulated toys, the flexibility and adjustability of which is ensured by ball-joints inserted between their movable parts and combined with braking-members, and provided each with a pressure-sleeve, by means of which the respective ball-joints are rendered adjustable and re-adjustable. In contradistinction to the known arrangements and combination of parts of the above-mentioned kind, for instance, firstly, as regards dolls, in which each joint-ball is enclosed between and by two hollow semi-spherical seat-forming members or sockets, the movement of these members or sockets and of the ball relatively to one another being braked by supporting springs arranged therebetween; and secondly, as regards artificial limbs in which the hollow semi-spherical ball-seat or socket is devised to form kind of an elastic bandage encompassing the ball at its circumference,—thus, in contradistinction to said known arrangements and combinations of parts the present improvement consists therein that the hollow semi-spherical ball-seat or socket which is transformed into an elastic casing consisting of, or forming, elastic fingers or claws, or flat curved springs, holding the ball between them, is provided with a head-forming end, preferably of cylindrical shape, and with a pressure-cap or an equivalent therefor, that is shoved over said head and can be adjusted and re-adjusted relatively thereto.

This just-mentioned arrangement and combination of parts constitutes a simple and cheap articulated joint which is well suited for the requirements of the toy industry, operates reliably, and is regulable as to the extent of the movements of the jointed parts or toy-members relatively to one another. The several articulated joints pertaining to a doll or other articulated toy can be connected with each other in a simple manner and reliably by rods connected each at one end with the head of one joint and being screwed at its other end into the ball of the next-following joint, as is all fully described hereinafter.

Mention must be made, however, still of the feature that the joints connected with one another in this manner can also be turned relatively to one another whereby the possibilities as regards the adjusting of the parts or members of the respective toy, for in-

stance of the limbs of a doll, relatively to one another, are greatly increased.

My invention is illustrated by way of example in the accompanying drawing in which Figure 1 is a front-view of a complete doll-skeleton; Figure 2 is a separate sectional view of the upper half of the left leg of that skeleton (right-hand half of the drawing, as regards Fig. 1), drawn to an enlarged scale; Figure 3 is a separate view of a modified constructional form of the whole left leg of the skeleton; and Figure 4 is a similar representation showing another modification; and the leg provided with members constituting the thigh and the shank of the leg.

Each ball-joint consists of a ball 6 and of spherically curved springs or claws 5, holding the ball between them and forming a kind of socket therefor. The springs or claws 5 form parts of a cap-shaped hollow head, the rim of which is provided with incisions whereby said springs or claws are formed, and over this hollow head or cut cap is shoved a cap 4, or 4' respectively. The caps 4 are provided at those ball-joints which are located at the body-plate 1 of the skeleton, whereas the caps 4' are those located at the junction of the limb-parts (upper arm with fore-arm; thigh with shank). The caps 4, 4' are adjustable axially whereby the degree of elasticity of the springs or claws 5 can be altered as required for the respective toy or toy-member. The adjusting-means are described hereinafter. The spring-forming caps at the lower ends of the upper arms, the fore-arms, the thighs, and the shanks, are provided each with a rod 8, one end of which is firmly connected with the respective cap, whereas the other end is provided with a screw-thread and engages the ball of the next joint therewith, as shown. The rod 8 is enclosed by a tube 9 contacting at its upper end loosely with the ball 6 of the respective joint, and being connected at its lower end with the cap 4' of the lower joint. It is obvious that the degree of elasticity of the springs 5 of this latter joint depends on how much the rod 8 is screwed into the upper ball 6, as the cap 4' is shoved correspondingly along upon the upper parts of the adjacent springs 5 whereby the lower parts thereof are pressed more or less powerfully against the adjacent ball, the flexibility of the hands relatively to the fore-arms, of

these latter relatively to the upper arms, of the feet relatively to the shanks, and of these latter relatively to the thighs, being, of course varied correspondingly.

5 10 designates foot-members intended to receive shoes or the like.

Each of the upper spring-caps is provided with a threaded pin 7 extending through a central hole of the appertaining 10 cap 4 and provided with a nut bearing on the top-surface of this cap; owing to this arrangement the cap 4 may be shoved more or less along upon the adjacent parts of the springs 5 appertaining to the respective ball-joint whereby the degree of elasticity of 15 these springs can be varied as required, practically just so as has been described with respect to the springs pertaining to the lower joints.

20 The connection of the arms and of the legs with the body-plate 1 is effected by cylindrical casings 2 affixed to said plate 1 in suitable position and provided each with a circumferential hollow collar 3 into which 25 engages, inside the respective casing 2, a circumferential collar 3' of the cap 4 whereby this latter is coupled with the casing in such a manner that it can be turned therein, but cannot be shifted axially.

30 In the modification illustrated in Fig. 3 there are, instead of rods 8 8, continuously threaded spindles 8' 8' carrying nuts 12, by means of which the caps 4' can be adjusted axially in order to increase or decrease 35 the tension of the springs or elastic claws 5.

In the other modification shown in Fig. 4, the members 9', of which the upper one imitates a thigh and the lower one a shank, are provided at their lower parts or ends 40 with conical bores which receive the upper parts of the springs or elastic claws and serve as substitutes for the caps 4'. The rods 8 are screwed more or less into the ball at their upper ends whereby the elastic claws are 45 acted on exactly as by the caps described. Preferably a small annulus 11 is arranged on the threaded part of the rod, between the upper end of the thigh- or shank-forming member 9' and the lowermost surface-part 50 of the ball 6 above it. That annulus is not screwed upon the threaded rod-part, but sits loosely thereon, and the pressure exerted from above down upon the limb 9' is transmitted by it; its diameter is, of course, such, 55 that the proper angular movement of the arm-parts or leg-parts relatively to each other are not impeded; the diameter of the ring 11 is, in fact, preferably such that the ring can enter into the interstices between the 60 springs or elastic claws 5.

I claim:

1. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid members, and ball-joints, connecting 65 said members movably with each other and

comprising each a ball connected rigidly with a rigid member, a crowning set of elastic claws shaped partly spherically and holding said ball between them, and being connected with the adjacent rigid member of 70 the skeleton; and adjustable means for pressing said claws more or less against the said ball, substantially as set forth.

2. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid 75 members, and ball-joints connecting said members movably with each other and comprising each a ball connected rigidly with a rigid member, a crowning set of elastic claws shaped partly spherically and holding 80 said ball between them and forming with their other parts which extend off the ball a kind of cap connected with the adjacent rigid member of the skeleton; an axially 85 shiftable member arranged on the latter skeleton-member, and adjustable means for pressing said shiftable member more or less onto the cap-part of the combined claws, substantially as described.

3. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid 90 members with screw-threads, and ball-joints connecting said members movably with each other and comprising each a ball connected 95 rigidly with a rigid member, a crowning set of elastic claws shaped partly spherically and holding said ball between them and being connected with the adjacent rigid member of the skeleton; an axially shiftable 100 member arranged on the latter skeleton-member, and being adapted to be pressed more or less onto the adjacent parts of the said claws, substantially as set forth.

4. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid 105 members with screw-threads, and ball-joints connecting said members movably with each other and comprising each a ball connected rigidly with a rigid member, a crowning set of elastic claws shaped partly spherically 110 and holding said ball between them, and being connected with the adjacent rigid member of the skeleton; an axially shiftable member arranged on the latter skeleton-member, and a nut located on said thread 115 and being adapted to press the shiftable member more or less onto the adjacent parts of the said claws, substantially as set forth.

5. A skeleton for articulated toys, especially dolls, comprising, in combination: 120 rigid members, and ball-joints, connecting said members movably with each other and being connected by them and comprising each a ball connected rigidly with a rigid 125 member, a crowning set of elastic claws shaped partly spherically and holding said ball between them, and being connected with the adjacent rigid member of the skeleton, each of said rigid members connecting the 130 ball of one ball-joint with the claw-forming

member of an adjacent ball-joint; and means to press each claw-forming member more or less towards the appertaining ball, substantially as described.

5 6. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid members, and ball-joints connecting said members movably with each other and being connected by them and comprising
10 each a ball connected rigidly with a rigid member, elastic claws shaped partly spherically and holding said ball between them, and being connected with the adjacent rigid member of the skeleton, each of said rigid
15 members connecting the ball of one ball-joint with the claw-forming member of an adjacent ball-joint; tubes enclosing the rigid skeleton members located between said joints and extending from the ball of one thereof
20 near to the claw-forming member of the other joint; and a cap-shaped member located between this claw-forming member and the adjacent end of said tube and being adapted to be shifted axially by the same,
25 substantially as set forth.

7. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid members, and ball-joints connecting said members movably with each other and
30 being connected by them and comprising each a ball connected rigidly with a rigid member, elastic claws shaped partly spherically and holding said ball between them, and being connected with the adjacent rigid
35 member of the skeleton, each of said rigid members connecting the ball of one ball-joint with the claw-forming member of the adjacent ball-joint; tubular members forming limbs and enclosing the rigid skeleton
40 members located between said joints and extending from the ball of one thereof near to the claw-forming member of the other joint; and being at this end adapted to act on the claws so as to press them more or
45 less against the ball of the appertaining joint, substantially as set forth.

8. A skeleton for articulated toys, especially dolls, comprising, in combination; rigid members, and ball-joints connecting
50 said members movably with each other and being connected by them and comprising a ball connected rigidly with a rigid member, elastic claws shaped partly spherically and holding said ball between them, and being
55 connected with the adjacent rigid member of the skeleton, each of said rigid members connecting the ball of one ball-joint with the claw-forming member of the adjacent ball-joint; tubular members forming limbs
60 and enclosing the rigid skeleton members

located between said joints and extending from the ball of one thereof near to the claw-forming member of the other joint and having at this end a conical bore adapted to receive the body-parts of the claws; each
65 limb-forming member being adapted to be adjusted longitudinally and to be pressed onto the claw-forming member, substantially as set forth.

9. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid members, and ball-joints connecting said members movably with each other and comprising each a ball connected rigidly
70 with a rigid member, elastic claws shaped partly spherically and holding said ball between them; a threaded pin projecting forth from the body-part of said claw-forming member; an axially movable cap shoved
75 upon this member and being adapted to be adjusted relatively to the claws thereof so as to press them more or less against said ball; a stationary casing attached to the body-forming frame-part of the toy and having
80 an inner circumferential groove; an outer circumferential collar on said cap, this collar engaging said groove; and means for adjusting the said cap relatively to the claw-forming member, substantially as set
85 forth.

10. A skeleton for articulated toys, especially dolls, comprising, in combination: rigid members, and pairs of ball-joints connecting said members movably with each
90 other, one ball-joint of each pair comprising a ball connected rigidly with a rigid member, elastic claw shaped partly spherically and holding said ball between them, and being connected with the adjacent rigid
95 member of the skeleton, and means to press said claws more or less against the said ball the other ball-joint of the pair consisting also of a ball, a claw-forming-member, the claws of which hold this ball between
100 them; a threaded pin projecting forth from the body-part of said claw-forming member; an axially movable cap shoved upon this member and being adapted to be adjusted relatively to the claws thereof so as
105 to press them more or less against said ball; a stationary casing attached to the body-forming frame-part of the toy and having an inner circumferential groove; an outer circumferential collar on said cap, this collar engaging said groove; and means for
110 adjusting the said cap relatively to the claw-forming member, substantially as set forth.

In testimony whereof I affix my signature.

ROBERT HUCK.