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BALL AND SOCKET JOINT FOR TOYS.

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Fig. 1

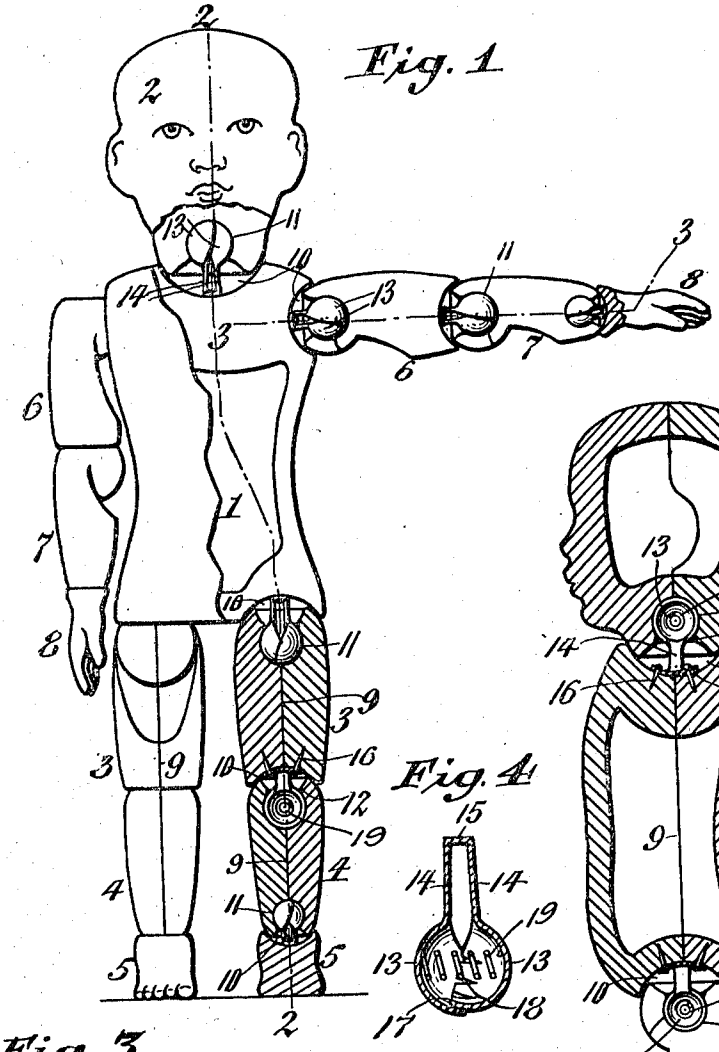


Fig. 2

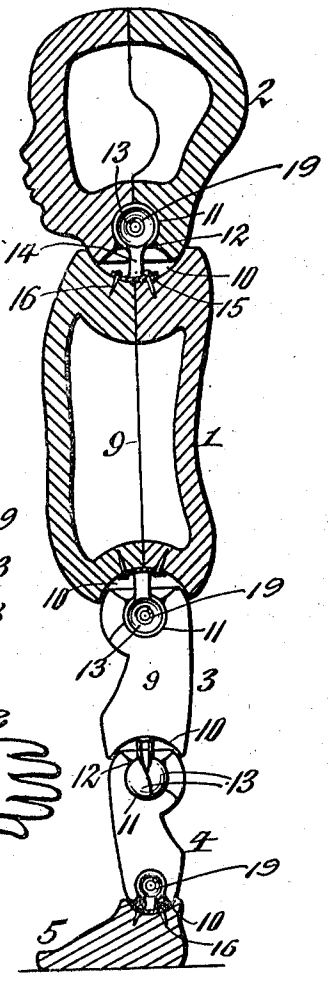
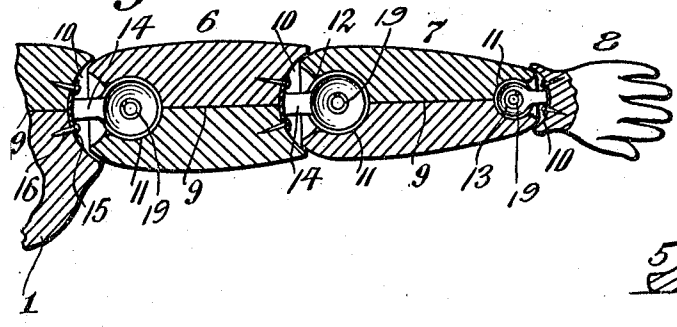


Fig. 4

Fig. 3



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BALL-AND-SOCKET JOINT FOR TOYS.

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To all whom it may concern:

Be it known that I, CHARLES CABANA, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Ball-and-Socket Joints for Toys, of which the following is a specification.

The object of this invention is the production of a ball and socket joint for connecting the different members of a doll and other toys which can be produced at small cost and so connect these members that they may be freely turned bodily as well as swung laterally toward and from each other in a manner superior to that heretofore employed for this purpose.

In the accompanying drawings:

Figure 1 is a front elevation, partly in section, of a doll having its different relatively movable members connected by ball and socket joints embodying my invention. Fig. 2 is a vertical section taken in line 2—2 Fig. 1. Fig. 3 is a horizontal section taken in line 3—3 Fig. 1. Fig. 4 is a detached sectional view of the ball and associated parts forming part of my improved ball and socket joint.

Similar characters of reference refer to like parts throughout the several views.

My improved ball and socket joint is capable of use for connecting different members of a doll which are movable relatively to each other and in the drawings the same is shown in connection with a doll which has a body 1, a head 2 connected with the top of the body, two thighs 3 connected at their upper ends with the lower part of the body, two legs 4 each connected at its upper end with the lower end of one of the thighs, two feet 5 each connected on its upper side with the lower end of one of the legs, two arms 6 each connected at its inner end with the upper part of one side of the body, two forearms 7 each connected at its inner end with the outer end of one of the arms, and two hands 8 each connected at its inner end with the outer end of one of the forearms.

Each of the hands and feet is preferably constructed of one piece but each of the remaining members, constituting the body, head, thighs, legs, arms and forearms, is preferably constructed of two sections the division of the joint 9 between which preferably extends lengthwise thereof, as shown in the drawings. The material from which these members are constructed preferably consists of papier mâché, although any other suitable material may be employed, and the two sections of each member may be connected in any suitable manner, for instance, by means of cement applied to the opposing surfaces of the same.

The ball and socket joints between every two adjacent members of the doll are preferably constructed substantially alike and the following description referring to one of these joints will therefore apply equally to the remaining joints between the several doll members:

10 represents a cavity which is formed in one of the doll members so that the same is of substantially semi-globular form. Into this cavity the opposing end of the adjacent doll member projects part way with a sufficient clearance between these members so that they are free to move laterally relatively to one another by means of the ball and socket joint which embodies my invention.

In its preferred form this ball and socket joint is constructed as follows:

11 represents a spherical socket which is formed in that end of one of the doll members opposite to one of the cavities of an opposing member, the spherical area of this socket being somewhat more than one half of a complete sphere and provided with a contracted neck 12 which opens outwardly. One half of this socket is formed in one section of the doll member and the other half in the companion section of the respective doll member. Within this socket is arranged a ball which comprises two hollow semi-spherical sections 13, 13 which have their concave inner sides facing each other while their convex outer sides engage with diametrically opposite sides of the socket. 14—14 represent two arms which are arranged side by side and connected at their front ends with the rear edges of the two ball sections. 15 represents a base which is connected with the rear ends of the arms 14, 14, and secured to the bottom of the cavity of a doll member by means of nails 16, as shown in Figs. 1, 2 and 3 or by any other suitable means. The ball sections, arms and base of each joint are preferably constructed of sheet metal which is resilient so that the arms 14 form springs which operate to constantly spread apart the ball sections and hold the same frictionally in

engagement with the opposite sides of the companion ball socket. By this means the two doll members which are connected by this ball and socket joint are free to be turned bodily and also swung laterally relatively to each other in all directions. It is therefore possible to pose the doll in a large variety of natural positions, thereby increasing the entertainment of the children using the same.

The sections of the ball are preferably introduced into the socket after the latter has been completed by the union of the sections forming the respective doll member, this insertion of the ball into the socket being effected by pressing the ball sections and arms together sufficiently to permit the ball sections to pass the contracted portion or neck 12 at the outer end of the ball socket. The resilience of the arms 14 is sufficient to again spread these ball sections apart and hold the same frictionally in engagement with the ball socket.

In order to hold the ball sections in a substantially concentric position and prevent displacement of the same either while assembling the doll joint or while using the doll, the opposing sides of a pair of ball sections are so constructed that they telescope one relative to the other. This is preferably effected by slightly contracting the inner edge 17 of one of the ball sections which can be easily accomplished by first slitting this edge as shown at 18 and then inserting this contracted part within the inner part of the companion ball section, as best shown in Fig. 4. A ball thus constructed will retain its spherical form and still exert a sufficient frictional engagement with the companion ball socket to produce a joint which will permit the doll members to be easily moved into different positions and retained in any desired position.

If desired the resilience of the ball for holding the same frictionally in engagement with the ball socket may be effected wholly or partly by arranging a helical spring 19 within the ball and engaging its opposite ends with the inner sides of the respective ball sections.

This ball and socket joint for dolls is not only low in cost of manufacture but the same can also be easily assembled and holds the different doll members reliably in different positions and when broken, this joint can be readily repaired.

I claim as my invention:

1. The combination of two relatively movable members of a toy, one of which is provided with a socket, and a ball mounted on the other member and engaging said socket, said ball comprising two hollow semi-spherical sections which telescope one into the other.

2. The combination of two relatively movable members of a toy, one of which is provided with a socket, a ball engaging with said socket and composed of two semi-spherical sections which have their concave sides facing each other, spring arms connected at their front ends with the corresponding rear edges of said ball sections, a base connected with the rear ends of said arms and secured to the other doll member, and a spring interposed between the inner sides of said ball sections.

CHARLES CABANA.