The present invention relates generally to an amusement device and is more particularly concerned with a toy figure or doll.

The primary object of our invention is the provision of a toy figure or doll having movable joints that closely simulate the movable portions of the human anatomy.

A further object of our invention is the provision of a toy figure or doll that may be dressed in different attire by children and then manipulated to any one of many varied positions due to the movable construction of the figure.

Another object of our invention is the provision of a toy figure or doll of the character described that is so constructed that virtually all of the parts thereof may be made of molded plastic.

Another object is the provision of a doll of the character described so constructed that no metallic springs are necessary for resiliently maintaining the parts in assembled relation.

A further object is the provision of a toy figure of the character described having novel and improved structure at the movable joints for enabling the movable parts of the figure to be frictionally maintained in any selected and manipulated position.

A further object of our invention is the provision of a novel and improved swivel joint that is adapted to be used in the construction of a toy figure or doll of the instant type.

Still another object of our invention is the provision of a toy figure or doll of the character described that is relatively simple and economical to manufacture, that is lightweight and yet durable in operation, and that is eminently safe for children to play with.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated for carrying out the instant invention:

FIG. 1 is a perspective view of a toy figure or doll constructed in accordance with our invention;

FIG. 2 is an enlarged front elevational view thereof, partly in section;

FIG. 3 is an enlarged sectional elevation of the head assembly per se;

FIG. 4 is a section taken on line 4—4 of FIG. 2;

FIG. 5 is an enlarged fragmentary section of a modified joint construction;

FIG. 6 is an exploded perspective view, on an enlarged scale, of the foot and ankle assembly which forms a part of our construction;

FIG. 7 is a perspective view, on an enlarged scale, of a connector stud that is used in our construction; and

FIG. 8 is an enlarged exploded view, partly in section, showing a modified foot and ankle assembly.

Referring now to the drawings, and more particularly to FIGS. 1 and 2 thereof, there is shown generally at 10 a toy figure or doll comprising a head assembly 12, a hollow chest member 14, a hollow hip portion 16, legs 18, and arms 20. All of these parts are preferably of molded plastic construction, and although any suitable plastic material may be used, it has been found that a material having substantially the characteristics of polyethylene is particularly adaptable to the instant invention. It will be understood, however, that other suitable materials, such as rubber or wood, for example, could also be used in the construction of these parts.

Referring to FIG. 3, it will be seen that the head assembly 12 comprises a neck piece 22, preferably of molded plastic construction, said neck piece comprising a substantially solid rounded bottom portion 24 having a radial slot 26 therein extending upwardly from its bottom surface. The upper surface of portion 24 inclines inwardly as at 28 and merges with a circular flange 30. Thus, the inclined surface 28 and flange 30 cooperate to define an annular groove 32, the function of which will hereinafter be made apparent. Spaced above the flange 30 is a second circular flange 34, it being seen that the flanges 32 and 34 define a second annular groove 36. Above flange 34 the piece 22 is provided with a plurality of radially extending vanes or wings 38, the function of which is to facilitate molding and also to form an internal support for the hollow head 40 soon to be described. More specifically, the vanes 38 support head 40 in the sense that they limit the degree to which a hollow head can be depressed, this being of particular importance when it is desired to press a hat onto the head. The neck piece 22 resiliently and detachably receives thereon a hollow head 40, preferably made of molded rubber or plastic. The head 40 is provided with an aperture surrounded by edge 42 at its lower portion, and said aperture is defined by a pair of spaced inwardly extending annular projections 44 and 46, which projections are adapted to interengage with the grooves 32 and 36, as will be seen most clearly in FIG. 3. The interconnection of projections 44 and 46 in grooves 32 and 36, respectively, serves to securely maintain the head 40 on the neck piece 22 while at the same time permitting relative rotation of the former with respect to the latter. If for any reason it is desired to remove the head 40 from neck piece 22, this may be done, although it takes a relatively powerful pull to effect this detachment.

As will be seen most clearly in FIGS. 2 and 3, the bottom portion 24 of neck piece 22 is swivelly mounted in socket 48 formed in the upper portion of chest member 14. Chest member 14 in turn is provided with a peripheral inwardly extending shoulder 49 adjacent the lower end thereof from which centrally depends an integral ball-like extension 50, which extension is swivelly received in hollow hip portion 16. As will be clearly noted in FIGS. 1 and 2, hip portion 16 has a peripheral top surface 51 that is normally spaced from and oppositely disposed with respect to the aforesaid shoulder 49. It will be noted that the socket 48 and the hollow head extension 50 are provided with openings 52 and 54, respectively. The hip portion 16 is open at its top for swivelly receiving the extension 50, and it will be apparent that when chest member 14 is tilted with respect to hip portion 16, surface 51 will engage shoulder 49 at one point on the circumference of these parts so as to limit the amount of tilting movement that can take place.
lower extremity, is provided with a pair of apertures 56 which swivelly receive therein a pair of balls 58, each of which is moveable. The passages 60 preferably converge toward the center of each ball 58 for reasons soon to be described.

The above described balls 58 each swivelly receive a hollow thigh portion 62 of unitary one-piece construction, each of said thigh portions having a pin 64 extending therethrough. As clearly illustrated in FIGS. 1, 2, and 3, the diameter of balls 58 is approximately equal to the outer cross dimension of the hollow thigh portion 62 and is therefore slightly larger than the inner cross dimension of said thigh portion, whereby said balls extend into the hollow thigh portions for only a short distance. A pin 66 similar to the aforesaid pin 64 extends through the rounded bottom portion 24 of neck piece 22 and bridges the slot 26 therein. In order to keep all of the aforedescribed parts resiliently assembled, a rigid connector element 68 having hooks 70 and 72 at its opposite extremities is provided. As will be seen most clearly in FIGS. 2 and 3, hook 70 extends upwardly into slot 26 and engages around pin 66. Hook 72 in turn receives an elastic braid 74 that extends downwardly through chest member 14, hip portion 16, and each of the balls 58 to a point of connection with the pins 64. Since the braid 74 is resiliently and swivelly maintained in socket 48 while at the same time the ball-like extension 50 is resiliently and swivelly maintained in the hip portion 16. Likewise, the thigh portion 62 is resiliently urged into swivel engagement with balls 58, while the latter are resiliently and swivelly maintained in hip portion 16.

Thus, the single piece of elastic braid 74 maintains all of the aforementioned parts in assembled relation. It has been found that the use of elastic braid is highly advantageous in that it maintains its elasticity much more effectively than does a conventional spring or plain rubber band. It will thus be seen that the aforesaid interconnection of parts results in a complete swivel mounting between the head assembly and the chest member, between the chest member and the hip portion, between the hip portion and the balls 58, and between the balls and the leg portions. In addition, and as 60 may be rotated on neck piece 22 for further maneuverability of the doll's head. The converging passageway 60 in the balls 58 not only facilitate threading of the elastic braid 74 therethrough, but also permit greater movement of the balls without undue interference from the elastic braid.

Chamber 14 is further provided with apertured shoulder sockets 76, each of which is adapted to swivelly receive an arm 20. Thus, each arm 20 is provided at its upper extremity with a ball or rounded portion 78 having therein a radial slot 80. A pin 82 extends across each ball portion 78 and bridges each slot 80. In order to resiliently and swivelly maintain the ball portions 78 in the sockets 76, a pair of connector elements 84 are provided. These elements are generally similar to the aforesaid connector elements 68 and each has hooks 86 and 88 at opposite extremities thereof. As will be clearly seen in FIG. 2, the hooks 86 extend into slots 80 and engage around pins 82. The hook ends 88 receive an elastic braid loop 90, which, being under tension, resiliently maintains the ball portions 78 in sockets 76.

Each of the legs 18 is provided with a lower portion 92 that is unitary one-piece construction that is swivelly connected to thigh portion 62 by a simulated knee joint 94. As will be seen most clearly in FIG. 2, the knee joint 94 comprises a ball-like or rounded portion 96 integrally formed at the lower extremity of each thigh portion 62. An upwardly extending radial slot 98 is provided in each of the ball portions 96. Each of the lower portions 92 is preferably provided with a longitudinally extending bore 100 and with a concave socket 102 at its upper extremity. It will be seen that socket 102 is adapted to swivelly receive the ball portion 96 and is maintained swivelly connected thereto by means now to be described.

A connector element 104 (note FIG. 6) is provided with a hollow one-piece construction, having a pair of apertures 106 extending centrally therethrough and a shank 110 extending radially therefrom, said shank being provided with a plurality of circumferential convolutions or grooves 112. The plate 106 is adapted to be snugly received within slot 98, and a pin 114 extends across ball portion 96 and is swivelly connected thereto by means now to be described. A connector element 104 is forced into bore 100 of lower leg portion 92, whereupon the circumferential convolutions 112 maintain lower leg portion 92 against detachment from the corresponding element 104 while at the same time permitting relative rotation of the former with respect to the latter. Thus it will be seen that lower leg portion 92 is pivotal around pin 114 and at the same time is rotatable around the shank 110.

In order that lower leg portion 92 may be maintained in any selected position of pivot movement around pin 114 as an axis, it is desired that a frictional drag be imparted to any pivotal movement of the lower leg portion. This may be accomplished by any suitable means, although it has been found that the easiest technique is to simply head the pin 114 at its outer extremities so as to sufficiently compress the head assembly. In order that said portions will frictionally grip the plate 106. Other possible techniques for accomplishing this same objective are to serrate the peripheral edge of plate 106 (note FIG. 8) as at 116 whereupon said serrated edge will tend to grip the corresponding serrations 117 which may be provided along the marginal surface of slot 98 as to maintain plate 106 in any selected pivotal position. It would also be possible to knurl the side faces of plate 108 to achieve this same general effect. Another possibility would be to slightly misalign the aperture 108 and pin 114 so as to create a frictional drag during relative pivotal movement between these parts. No matter which of these techniques is employed to create this desired frictional drag, it has been found desirable to construct the connector element 104 of plastic, since this minimizes wear between the plate 106 and the surfaces of slot 98 during regular pivotal movement and thereby reduces friction. However, it will be understood that the connector elements 104 could be made of metal if desired, although this would obviously result in greater wear of the abutting plastic parts, hence raising the possibility of a gradual lessening of elastic drag.

The connection between lower leg portion 92 and foot portion 118 is identical to the knee joint 94 just described. Likewise, each arm 20 is provided with a unitary upper portion 120 and a unitary lower portion 122 having an elbow joint 124 that is identical to the above-described knee joint 94. By the same token, lower arm portions 122 are swivelly connected to hands 126 by identical means.

Since it is not absolutely essential that the knee joint 94 or elbow joint 124 be rotatable about its own axis, it is possible to utilize a slightly modified form of joint at these connections. Thus, as will be seen in FIG. 5, lower leg portion 94 may be provided with an integral upwardly extending circular plate 128 having an aperture 130 therein for receiving the pin 114. It will be seen that this modified connection enables lower leg portion 92 to pivot about pin 114 as an axis but does not permit the lower leg portion to rotate about its own axis. It is possible where the separate connector element 104 is employed. As hereinbefore stated, the modified form of joint shown in FIG. 5 may be used at the knee and elbow connections, but not at the hand or foot connections where it has been found that it is essential that rotary movement about these extremities be permissible, and hence it is necessary that the connector elements 104 be utilized at these joints.

It will be understood that at the knee and elbow joints, as well as the hand and foot joints, where the connector
element 104 is employed for effecting the connection, one of the aforesaid means for imparting frictional drag will always be utilized. This is important since otherwise it will not be possible to maintain desired positions of pivotal adjustment, since without the frictional drag the pivotal parts would simply straighten out by gravity. In FIG. 8, the foot 118 is shown having serrations 117 at the inner edge of the slot that corresponds to the slot 98 in the knee joint, said serrations cooperating with the serrations 116 on the connector 104 to enable desired positions of pivotal adjustment to be maintained.

In order to obtain greater versatility of movement for the arms 20, it is desirable to provide upper arm portion 120 in two sections, namely, parts 132 and 134. These parts are connected to each other by a stud 136 (FIG. 7) having circumferential convolutions 138 at both ends thereof. By pressing the convoluted portions of stud 136 into parts 132 and 134, it will be seen that the parts are maintained connected to each other but at the same time are permitted to rotate about stud 136 as an axis. If desired, instead of utilizing the separate stud element 136, it is possible to integrally form the stud so that it extends outwardly from one of the parts 132 or 134 and is adapted to be pressed into the other part.

It will thus be seen that there has been provided a toy doll or figure having unusual versatility of movement and that is capable of performing and achieving all of the hereinbefore enumerated objectives of this invention. While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described except insomuch as indicated by the scope of the appended claims.

What is claimed is:
1. A toy figure comprising a hollow chest member having a socket at its upper extremity and a ball-like extension at its lower extremity, said ball-like extension being open at its lower portion to permit passage thereof into the interior of said chest member, a head assembly swivelly mounted in said socket, a hollow hip portion swivelly receiving said ball-like extension, a pair of apertures at the lower part of said hip portion, a pair of legs having hollow upper portions, means swivelly connecting said legs to said hip portion, said means comprising a pin extending across the hollow portion of each leg, and resilient means connected to said head assembly and extending downwardly through said chest member and the ball-like extension thereof, and then through said hip portion and being connected to said pins, thus resiliently maintaining all of the aforesaid parts in assembled relation, said head assembly comprising a neck piece having a rounded bottom in engagement with said socket, a slot extending vertically upward in said rounded bottom, a pin extending across said slot, and a connector element having hooks at opposite extremities, one of said hooks extending into said slot and engaging said pin and the other hook being in engagement with said resilient means, said head assembly further comprising a hollow, flexible head, and means detachably and rotatably connecting said head to said neck piece.

2. A toy figure of molded plastic comprising a hollow chest member having a socket at its upper extremity, a 65 peripheral inwardly extending shoulder adjacent its lower extremity, an integral hollow ball-like extension centrally disposed with respect to said shoulder and extending downwardly therefrom, said ball-like extension having an enlarged opening at its bottom to permit passage there-through into the interior of said chest member, a head assembly swivelly mounted in said socket, a hollow hip portion swivelly receiving said ball-like extension, said hip portion having a peripheral top surface oppositely disposed and normally spaced from said shoulder by a distance such that when said chest member is tilted with respect to said hip portion, said surface and said shoulder will engage each other at one point to limit said tilting movement, a pair of legs having hollow upper portions, means swivelly connecting said legs to the lower end of said hip portion, said means comprising a pin extending across the hollow portion of each leg, and resilient means connected to said head assembly and extending downwardly through said chest member and the ball-like extension thereof, and then through said hip portion and being connected to said pins, thus resiliently maintaining all of the aforesaid parts in assembled relation, said chest member further having a pair of opposed shoulder sockets, arm members swivelly mounted in each of said shoulder sockets, and second resilient means extending transversely across said chest member and interconnecting said arm members to resiliently maintain said arm members in their respective shoulder sockets, said arm members comprising an upper part and a lower part swivelly connected together to effect a simulated elbow joint, one of said parts being rounded at the extremity thereof adjacent the elbow joint and the other having a socket at its adjacent extremity, a radial slot extending through said rounded extremity, a connector element swivelly joining said parts, said element having a plate snugly received within said slot, an aperture in said plate, a pin extending across said slot and through said aperture thus pivotally securing said plate to said rounded extremity, said connector further comprising an elongated generally cylindrical shank extending integrally from said plate, said shank being pressed into said socket and having connection means integral with said shank resisting separation of said parts while at the same time permitting rotation of either of said parts about an axis defined by said shank, said connection means comprising at least one circumferential groove around said shank.

3. The combination of claim 2 further characterized in that said connector element and said upper and lower arm parts are all constructed of plastic having substantially the characteristics of polyethylene.

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