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Klamer

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[54] **DOLL HAVING LIMBS WITH HEMISPHERICAL PORTIONS PIVOTALLY JOINED TO ITS BODY**

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Related U.S. Application Data

[62] Division of Ser. No. 136,045, April 21, 1971, abandoned.

[52] **U.S. Cl.** **46/161;** 46/118; 46/163; 46/173

[51] **Int. Cl.** **A63h 3/20;** A63h 3/46

[58] **Field of Search** 46/161, 162, 163, 22, 173, 46/118, 120, 119, 148, 92, 99, 107, 204, 149, 150, 128

[56] **References Cited**

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[57] **ABSTRACT**

There is disclosed herein a mechanical toy having a movable head and arms with respect to its body. The toy has a hollow body with its arms connected to a common shaft extending through the body. The head has a lower extension which also extends into the hollow body and contacts a portion of the shaft causing the arms to move when the head is turned. The legs of the toy are also held by the hollow body and each leg has a hemispherical portion. The two hemispherical portions fit together to form substantially a sphere which is held within a lower portion of the hollow body. The body may be formed by two mating halves held together by a paper wrapping glued in place, or by a sleeve of shrinkable material. The arms may be provided with openings to permit the toy to hold objects. The head may be fabricated in a hollow form from a flexible material and provided with noise-making means. There is further disclosed a plurality of dolls adapted to make different sounds.

6 Claims, 6 Drawing Figures

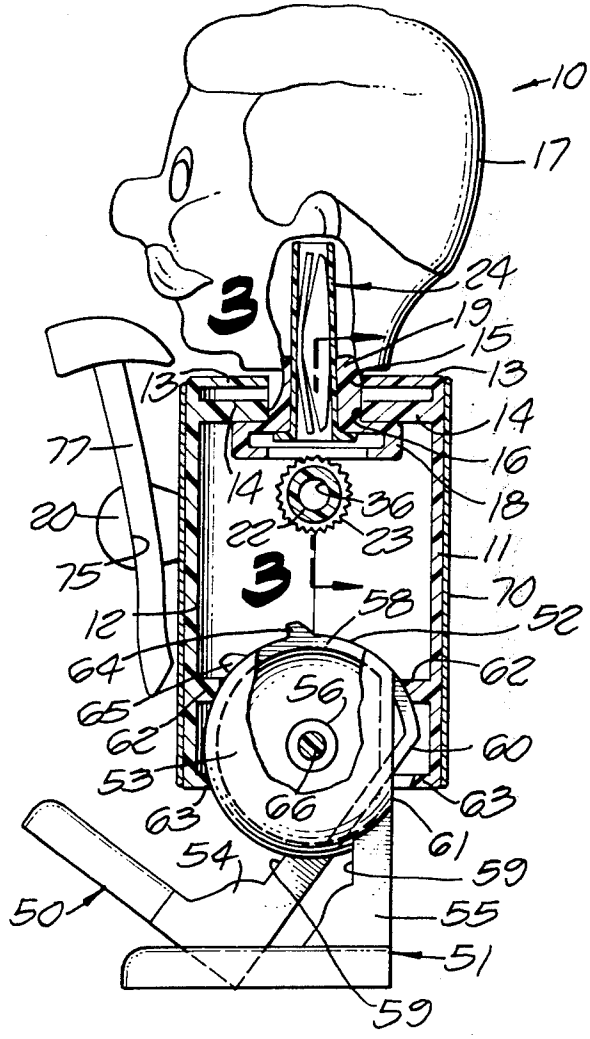
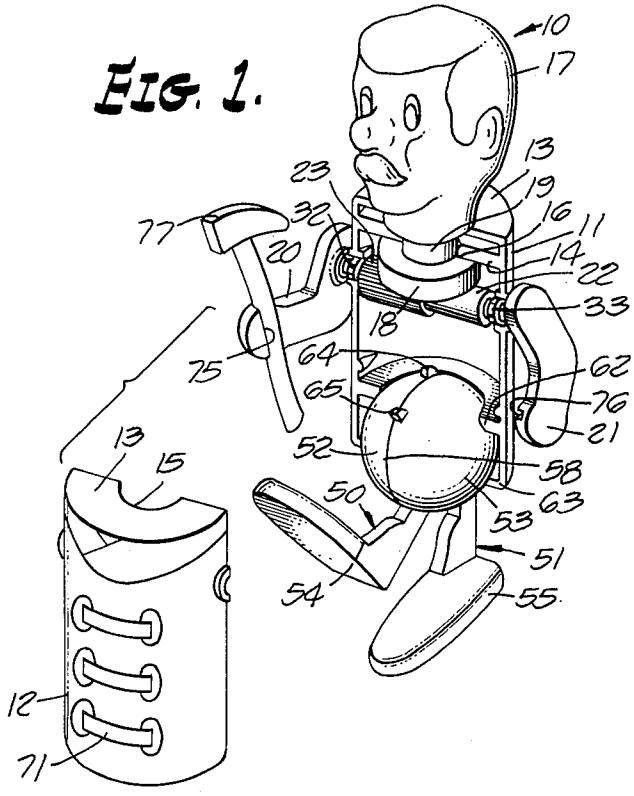


FIG. 1.



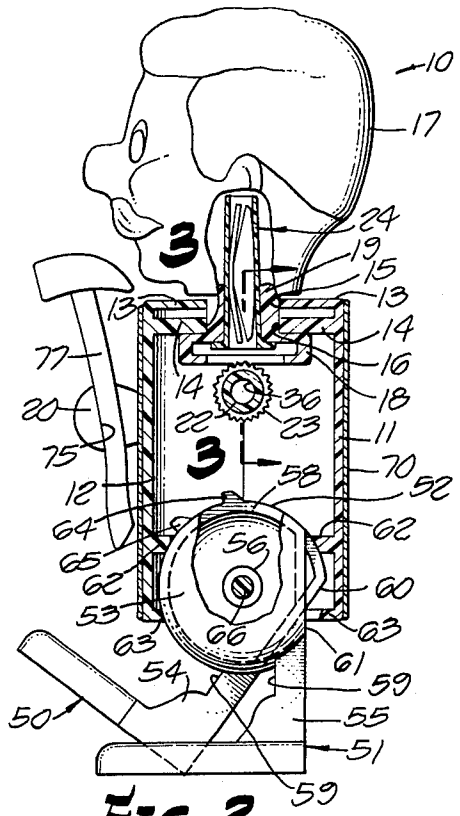


FIG. 2.

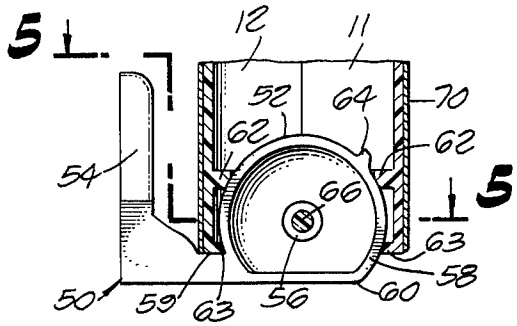


FIG. 4.

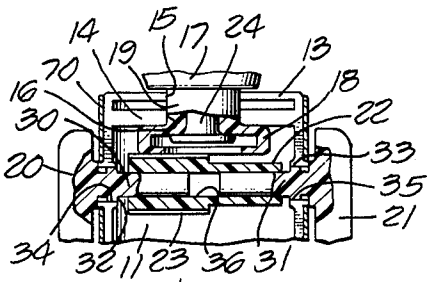


FIG. 3.

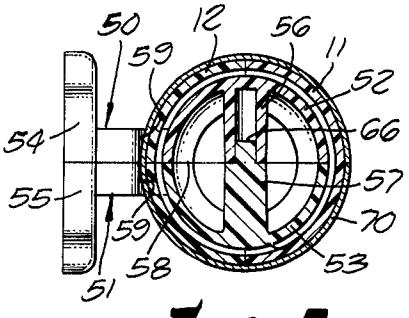


FIG. 5.

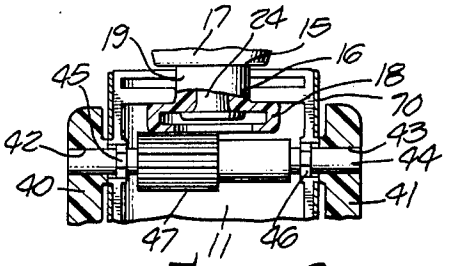


FIG. 6.

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DOLL HAVING LIMBS WITH HEMISPHERICAL PORTIONS PIVOTALLY JOINED TO ITS BODY

This is a division of application Ser. No. **136,045,** filed Apr. **21, 1971,** now abandoned.

BACKGROUND OF THE INVENTION

Dolls with movable heads, arms and legs have been made for centuries. Various means have been utilized to attach these members to the doll body so that their movement will be lifelike or entertaining to children.

A common method used to attach legs, arms and a head to a doll body involves the inserting of an enlarged extension on the limb into a corresponding opening in the body. For instance, to attach an arm to a body, the arm would contain a generally cylindrical enlarged portion made from a flexible material. The body contains a corresponding opening through which the enlarged portion may be forced and which serves to hold the enlarged portion within the body. The movement of such limbs is then limited to one fixed axis of rotation about the axis of the enlarged portion of the inserted member. In other instances types of ball joints have been used to permit multidirectional movements.

Various means have also been used to cause the movement of one limb to be transmitted through the doll to result in the movement of another limb. Also means have been utilized to cause head movement to result in arm or leg motion. Such means generally involve complicated mechanisms, gears or pins, and have generally substantially added to the cost of assembly of such dolls. Furthermore, such means are usually rather fragile and the parts are bent or mis-aligned during the first few hours of play.

SUMMARY OF THE INVENTION

Accordingly, it is a principle object of this invention to provide a new doll or figure with a movable head and arms.

An additional object of this invention is to provide a doll whose arms will move with the movement of its head.

A further object of this invention is to provide a novel doll with legs which are able to rotate about a multiplicity of axis.

Another object of this invention is to provide a doll which may be simply constructed and yet be durable enough to withstand hard use.

The present invention is for a doll or toy animal having a movable head and arms. The head is interconnected to the arms in a hollow body so that rotation of the head causes the arms to move. This interconnection may be provided by the contact of a raised portion on one side of a shaft inter-connecting the arms with a lower extension of the head. The toy or animal figure may be provided with a pair of legs or limbs, each of the limbs having a matching hemispherical portion so that when the limbs are placed together, substantially a sphere is formed. This sphere fits within a narrowed area of the hollow body with the limbs depending therefrom extending outside of the body. In this way the limbs may be turned in any direction which is not prevented by the contact of the limbs with the body. One limb may also be moved with respect to the other limb. The hemispherical portions may also be provided with stop means which limits the movement of the limbs and may further be inter-connected by a central pin. A particularly effective means for attaching the sphere and head member to the body utilizes a pair of spaced rings within the hollow body. Furthermore when the body is either cylindrical or frustro-conical and is divided equally along its longitudinal axis, the two halves may be readily joined by wrapping them with a piece of paper or other sheet-like material. Such wrapping may be given various decorations to enable a single body molding to form dolls or animals with different appearances or costumes.

BRIEF DESCRIPTION OF THE DRAWING

These and other features of the present invention will become better understood through a consideration of the following description taken in conjunction with the drawing in which:

FIG. **1** is a perspective view, partially disassemblied, of a doll constructed in accordance with the present invention;

FIG. **2** is a side elevation, partly in cross-section, of the doll of FIG. **1**;

FIG. **3** is a cross-sectional view taken along line **3—3** of FIG. **2**;

FIG. **4** is a partial cross-sectional view of the lower extremity of the doll of FIG. **1**;

FIG. **5** is a cross-sectional view taken along line **5—5** of FIG. **4**;

FIG. **6** is a partial cross-sectional view of a portion of the upper part of the doll body showing an alternate construction of the arm assembly of FIG. **3.**

Turning now to the drawing, a doll, generally denoted by the numeral **10,** is shown in FIG. **1.** The doll body is composed of two halves **11** and **12** which fit together to form a cylindrically shaped body. In the upper portion of each cylindrical half are two half rings **13** and **14** each of which has an opening **15** and **16** in its center. These openings serve to hold the head **17** to the joined body halves. The head **17** has a generally cylindrical lower extension or flange **18** which is connected to a smaller intermediate cylinder **19** which in turn is connected to the head **17.**

The head **17,** cylinder **19** and extension **18** may all be formed of one material and are preferably hollow. Rotationally cast or slush molded polyvinyl chloride plastisol may be used to fabricate these members. Alternatively, these members may be formed from a powdered plastic such as powdered polyethylene distributed in a heated two-part mold. Other means for forming hollow members known to those skilled in the toy making art may be used such as blow molding.

As is evident from FIG. **2,** when body halves **11** and **12** are joined, the head assembly **17, 18** and **19** is held by the body halves, and the head may be rotated in any direction with respect to the joined body halves. Downward movement of the head is prevented by contact between the lower part of the head **17** with disc **13,** and upward movement of the head is prevented by contact between the lower flange **18** with disc **14.**

Two arms **20** and **21** are connected to a central shaft **22** which has a cylindrical raised portion **23** along one half of the shaft. The raised portion has a frictional surface comprising a series of serrations shown more clearly in FIG. **2** where the raised portion **23** is shown in end view. The raised portion **23** of shaft **22** contacts the lower surface of the flange or extension **18** of the head assembly, causing arm movement as described below. Arms **20** and **21** are frictionally attached to shaft **22** in a manner shown more clearly in FIG. **3.**

Turning now to FIG. 3, arm 20 has an integrally molded cylindrical shaft 30 extending therefrom. Shaft 30 has a larger cylindrical raised portion 32 located near the arm 20. This raised portion fits in arm opening 34 of the body to provide support for arm 20. The central shaft 22 and its raised portion 23 are hollow and have an axial cylindrical opening 36. The shaft 30 of arm 20 fits into opening 36 to form a friction fit which still permits some rotation of the shaft 30 and arm 20 with respect to central shaft 22. Arm 21 similarly has a raised portion 33 which fits in the opening 35 of the body. It also has a cylindrical shaft 31 which forms a friction fit with the cylindrical opening 36 of shaft 22. Thus both arms may be moved about the axis of shaft 22 independently of one another and independently of the head. Alternatively only one arm may be frictionally attached to the central shaft.

As described above, the lower extension 18 of head 17 contacts the raised portion 23 of central shaft 22. Thus when the head is turned, the frictional drag of extension 18 against the raised portion 23 causes shaft 22 to rotate thereby causing both arms 20 and 21 to move. This frictional drag is increased by the serrations in the outer surface of the raised portion 23. Alternatively, serrations could be formed in the lower extension 18 or other frictional surfaces could also be used. Similarly, movement of arms 20 and 21 tends to turn head 17. Preferably, the contact between the head extension 18 and the raised portion 23 is such that movement of the head while the arms are being held does not cause damage to either the extension 18 or the raised portion 23. The configuration of serrations in the outer surface of the raised portion 23 together with a smooth but relatively soft lower extension 18 is particularly suitable for this combination of requirements. The raised portion 23 may be located on one half of the lower extension 18 of the head 17 rather than on the shaft 22. The important requirement is that the lower extension and central shaft form a contact which is located at a point away from the axis of rotation of the head.

A noisemaker 24 may be provided in the head 17. The noisemaker may be of the reed type which creates a squeaking noise when air is forced through it. When an air actuated noisemaker is utilized, the head should be hollow and fabricated from a flexible material such as plasticized polyvinyl chloride. The squeezing of the head thus causes the doll to squeak by forcing air through the noisemaker. Other types of air actuated noisemakers such as whistles may be used in place of a reed noisemaker.

A particularly entertaining effect for children is created by the provision of two or more dolls having noisemakers of a different pitch. In this way, two or more dolls may appear to be talking to one another. In this instance, reed noisemakers of different pitches have been found especially effective.

Arms 20 and 21 have openings or cavities 75 and 76 molded in the hand area of the arms. These openings function as tool holding means which may cooperate with various objects such as axe 77. In this way, various objects may be held by the arms.

Turning now to FIG. 6, there is shown an alternative configuration of attaching arms to the central shaft. In FIG. 6, arms 40 and 41 have cylindrically shaped openings 42 and 43 therethrough. A central shaft 44 forms a friction fit with the openings 42 and 43. The central shaft may be a single molded piece having raised areas 45 and 46 to correspond with openings in the body halves. The raised area 47 functions the same as the raised area 23 shown in FIG. 3.

Returning to FIG. 1, legs 50 and 51 are movably held by the body halves 11 and 12. Leg 50 has an upper hemispherical member 52 which is attached to a foot member 54. As seen more clearly in FIG. 4, hemispherical member 52 is integrally attached to foot member 54. The hemispherical member 52 is hollow and has an inner cylindrical extension 56 integrally formed therewith or attached thereto. Similarly hemispherical member 53 is hollow and has an extension 57 having a central pin 66 which fits into the cylindrical extension 56 of hemispherical member 52 as shown most clearly in FIG. 5. In this way the two hemispherical members are permitted to rotate with respect to each other but movement along the parting line 58 between the hemispherical members is prevented.

Hemispherical members 52 and 53 each have a flattened area 60 and 61 shown in FIG. 2. This flattened area permits the doll to have a stable sitting position as illustrated in FIG. 4 where both foot members 54 and 55 are moved to their maximum upward location (only foot member 54 is seen in this view).

The sphere which results from the joining of hemispherical members 52 and 53 is held within body halves 11 and 12 by two rings 62 and 63. The central opening in these rings may be shaped to mate with the sphere to facilitate the movement of the sphere in this opening. Conversely, this opening need not be formed by two rings but could also be formed by a solid spherical section where the space between discs 62 and 63 is filled in. The provision of two rings however does reduce the weight of the doll as well as the amount of material required for fabrication.

Hemispherical members 52 and 53 further have stop protrusions 64 and 65 located on their outer surface. These function to inhibit the backward movement of the foot members 54 and 55. As shown in FIG. 2, if foot member 55 were moved backward slightly, stop protrusion 65 would contact ring 62 and prevent the further backward movement of foot member 55. The location of stop protrusions 64 and 65 may be such that they permit a certain small amount of backward movement to permit the figure to stand leaning slightly backwards. This location of stop protrusions 64 and 65 is shown in FIG. 2. Preferably, the degree of backward leaning should not be such that the doll is unable to stand in the maximum backward position.

The body members 11 and 12 are held together by a wrapping 70 of paper which may be glued to the outer surface of the body. The paper may be decorated as shown at 71 to show a particular costume and in this way a series of different dolls may be made simply by wrapping the doll with paper containing different costumes. Similarly, the same body member may be used with different head configurations to further diversify the doll appearance while using the same body halves 11 and 12. Of course, materials other than paper may be used for wrapping the body members. The important requirement being sufficient strength to hold the body halves together and the ability to be decorated.

The resulting assembled doll has the ability to be moved in a large variety of positions. The provision of large foot members 54 and 55 as shown in the drawings permits the doll to stand in many diversified positions without falling. For instance, not only may the doll

stand upwardly as shown in FIG. 2, it may lean forward, backwards, to either side and may even twist in any direction. As explained above, the flattened areas **60** and **61** permit a stable sitting position to be maintained. By selection of a close fit between rings **62** and **63** with the joined hemispherical members **52** and **53**, there is sufficient friction to stabilize the doll in any position. The tolerance of these openings may be readily determined by those skilled in the art and should permit the relatively easy movement of the foot members while still providing enough resistance to maintain the desired position. In order to facilitate movement of the legs into a stable sitting position, the legs should be movable to a position where the flattened area is perpendicular to the central axis of the body. This position may be achieved with the leg location shown in the drawings having a recessed area **59** located in the front of the legs or by the provision of an opening in the skirt area in the front of the doll body.

Various materials of construction may be utilized to fabricate the figure of the present invention. The particular selection is dependent upon requirements of strength as well as fabrication and material costs. As mentioned above, vinyl plastisol is advantageously used for the head because of its strength, flexibility and ease of fabrication. The body may be readily injection molded from polystyrene as may the legs. The arms should have sufficient strength and flexibility so that they will not be broken at the shoulder area and yet will be elastic enough to form a satisfactory frictional fit with the central shaft. Flexibility of the arm members also enhances their tool holding ability. Polyethylene has been found useful for fabrication of the arms.

While the present invention has been discussed with respect to a human figure it may equally well be used for other figures such as animals. The body section need not be cylindrical but may also be frustro-conical or irregular in shape. It is only necessary that the interior of the body have openings which permit the holding and rotation of the head and legs. The use of a cylinder or frustro-conical shape is, however, particularly advantageous in that the two sections may be joined by a flat piece of paper or plastic. Of course, an irregularly shaped object may be covered by a flexible sheet or a sleeve of shrinkable material.

The present embodiments of this invention are thus to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims therefore are indicated to be embraced therein.

What is claimed is:

1. A figure having at least one pair of movable limbs comprising

a hollow body, and

a pair of limbs, said body and limbs including coacting means for holding said limbs pivotally attached to said body, said means including an opening at one end of said body, an inner section in said body capable of holding a spherical member an upper hemispherical portion on each said limb, the hemispherical portions of said limbs being of substantially equal size to enable them to be fitted together to form at least a major part of a sphere, said sphere mating with said inner section and being held thereby with a portion of each limb extending through said opening whereby one limb may be moved with respect to the other limb and each limb may be moved with respect to said hollow body.

2. The figure of claim **1** wherein one of said hemispherical portions has an extension with its axis along an axis of said hemispherical portion and the other hemispherical portion has a corresponding axially aligned opening, whereby the two hemispherical portions may be joined axially to form said major part of said sphere, and movement along the plane of the resulting joint between said hemispherical portions is prevented.

3. The figure of claim **1** wherein each of said hemispherical portions has a flattened area located on its outer surface to provide a stable base for allowing said toy to assume a sitting position.

4. The figure of claim **2** wherein said limbs are legs having feet thereon and wherein said flattened areas are located on that part of said hemispherical portion which are opposite from the direction in which said feet point.

5. The figure of claim **1** wherein each of said hemispherical portions has a stop protrusion thereon disposed in a position away from said limbs and in the interior of said body.

6. The figure of claim **1** wherein said inner section comprises two rings having their adjacent surfaces separated a distance less than the diameter of said hemispheres.

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