

May 26, 1959

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2,887,822

DOLL OR MANIKIN CONSTRUCTION

Filed Jan. 22, 1958

3 Sheets-Sheet 1

FIG. 1.

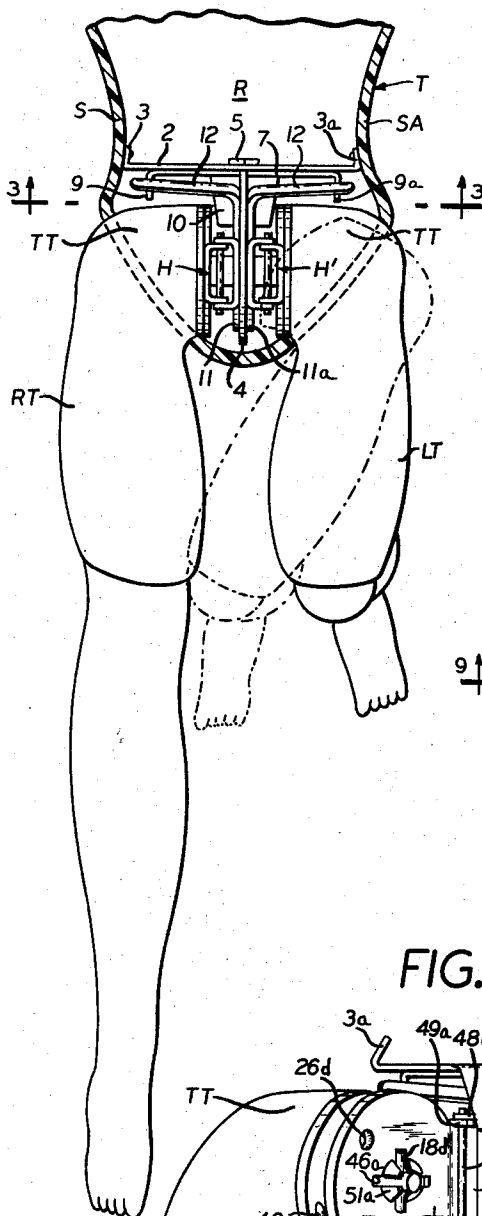


FIG. 2.

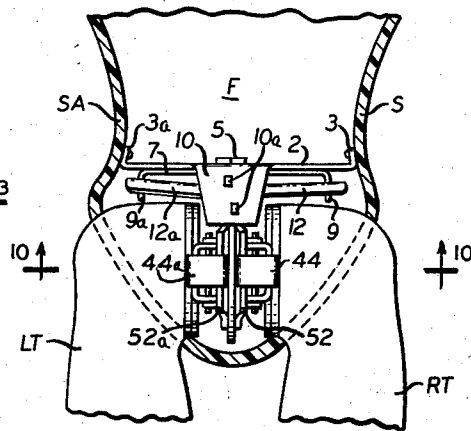


FIG. 3.

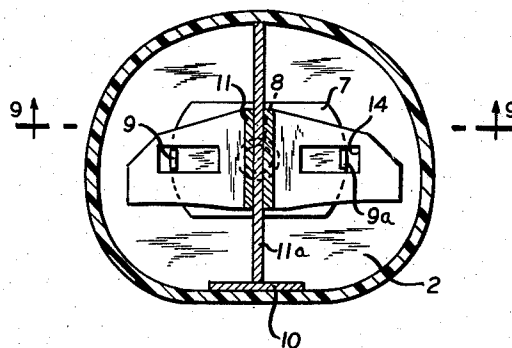


FIG. 4.

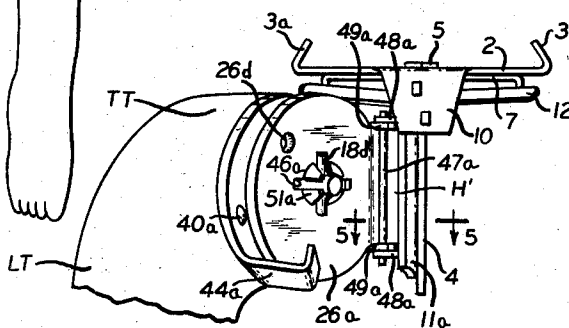
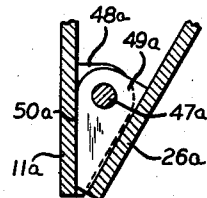


FIG. 5.



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FIG. 6.

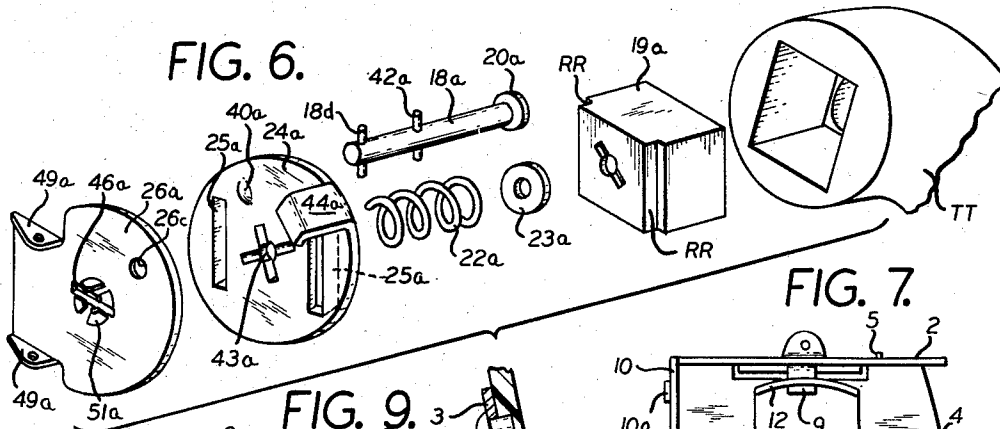


FIG. 7.

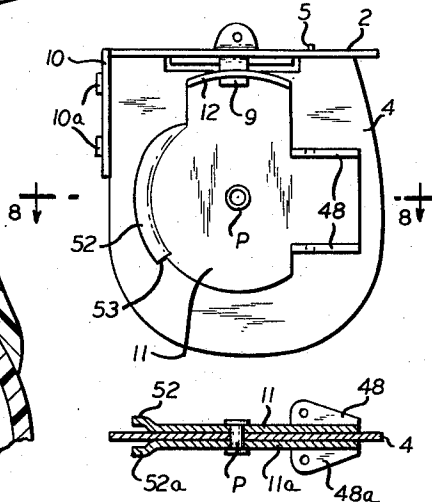


FIG. 8.

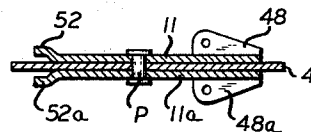


FIG. 9.

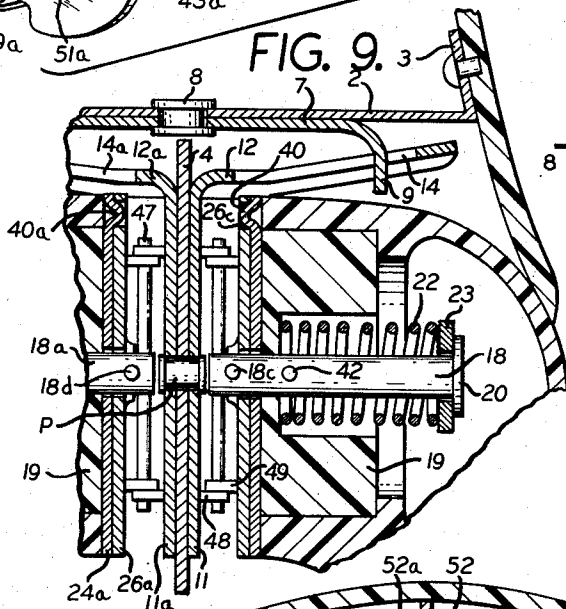
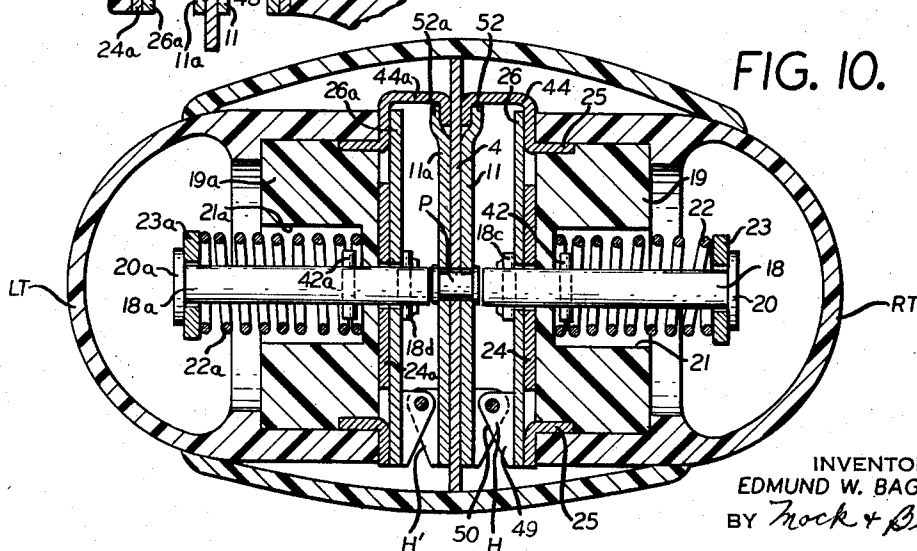


FIG. 10.



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FIG. 11.

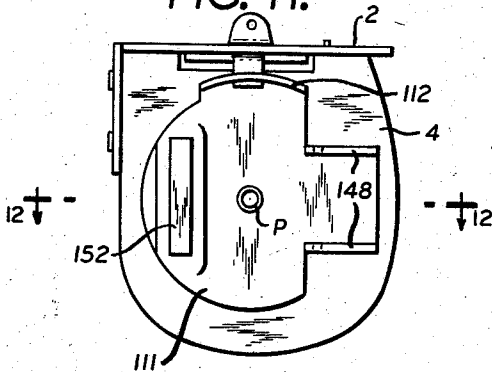


FIG. 13.

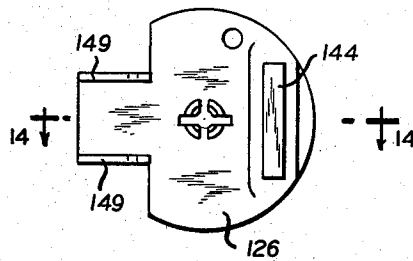
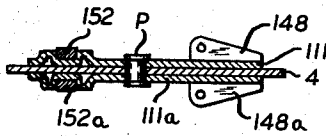
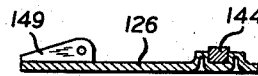
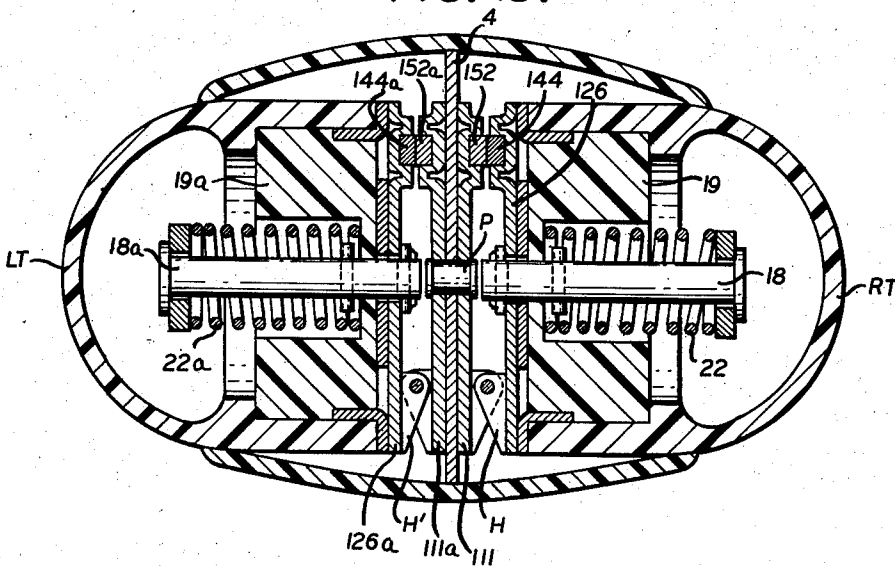


FIG. 12.

FIG. 14.

FIG. 15.



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DOLL OR MANIKIN CONSTRUCTION

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Application January 22, 1958, Serial No. 710,433

7 Claims. (Cl. 46—149)

This invention relates generally to articulated or joined doll constructions and is particularly concerned with such doll constructions of the general type disclosed in my co-pending patent application Serial No. 698,548.

According to this invention, a new and improved connecting means is provided between the torso of a doll or mannequin and one or more of its limbs. While the structure of the invention is described hereinafter with particular reference to its use in connecting its torso and legs, it is appreciated that other limb members may also be connected to the torso, or other joints articulated by use of the instant structure, all of which applications are intended to be comprehended herein.

It is therefore one object of the present invention to provide a structure for the connection of doll limbs to the doll torso wherein the limbs are each turnable about a pair of axes normal to each other, and, also, about an additional axis normal to and swingable about one of the aforementioned axes. By such construction applied to the thigh members, a doll may be simply and easily caused to simulate various human body movements, such as walking and sitting with crossed thighs.

It is another object of the present invention to provide a construction of the type described above which is extremely simple and sturdy, capable of being easily adjusted even by small children, and which can be manufactured and assembled at relatively low cost.

It is a more particular object of the particular invention to provide a thigh connecting structure for dolls wherein the thigh members are retained in position about generally vertical axes when in the normal angular positions of standing and walking, but wherein the thigh members are released for relative crossing or swinging about the vertical axes when in the angular positions assumed during sitting.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

In the drawings:

Figure 1 is a partial front elevational view showing the lower torso portion, thigh members and connecting means, partly in section for clarity of understanding, and illustrating in phantom an alternate position of one thigh;

Figure 2 is a partial rear elevational view of the device of Figure 1 also partly in section;

Figure 3 is a generally horizontal or transverse sectional view taken along the line 3—3 of Figure 1;

Figure 4 is a partial, rear elevational view showing the thigh connecting structure and a thigh member apart from the torso, and illustrating a limiting position of thigh swinging movement;

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Figure 5 is a fragmentary sectional view taken substantially along the line 5—5 of Fig. 4;

Fig. 6 is an exploded perspective view of certain parts of the connecting mechanism;

Fig. 7 is a side elevational view showing a supporting structure adapted to be fixed interiorly of a doll torso and illustrating part of the limb connecting mechanism associated therewith;

Fig. 8 is a horizontal view taken substantially along the line 8—8 of Fig. 7;

Fig. 9 is a partial, vertical sectional elevational view taken substantially along the line 9—9 of Fig. 3;

Fig. 10 is a horizontal or transverse view taken substantially along the line 10—10 of Fig. 2;

Fig. 11 is a side elevational view showing a supporting structure similar to that of Fig. 7, but illustrating a slightly modified embodiment of the present invention;

Fig. 12 is a horizontal sectional view taken substantially along the line 12—12 of Fig. 11;

Fig. 13 is an elevational view showing an element of the embodiment of Fig. 11, apart therefrom;

Fig. 14 is a horizontal sectional view taken substantially along the line 14—14 of Fig. 13; and

Fig. 15 is a horizontal or transverse sectional view similar to that of Fig. 10, but showing the slightly modified embodiment of Figs. 11—14.

Referring more particularly to the drawings, we will assume that the doll is in the vertical position so that the torso T has a vertical, central axis. The torso T is preferably made of a resilient, flexible, elastic material, and has right and left side walls, S and SA, respectively, a rear wall R, and a front wall F.

A right thigh or thigh member is designated RT, and a left thigh or thigh member is designated LT, which thigh members are hollow and also preferably fabricated of resilient, flexible, and elastic material.

At its lower end, the torso T has respective thigh openings or sockets, which are indicated in broken lines in Figure 1, for the upper or pivot ends TT of the right and left thighs. It is understood that the right and left thighs are identical, but inverted as right and left hand. These upper thigh ends, TT, are substantially horizontal and perpendicular to the main body of their respective thighs RT and LT. Said upper thigh ends TT are turnable relative to the torso T, around a common horizontal axis which is in the plane of Figure 1, in one position of the mechanism.

A lower leg member may be connected turnably to each thigh RT and LT, by any suitable knee-joint, such that these lower leg members can be aligned with the thighs when walking movement is desired. These lower leg members can be bent rearwardly relative to their thighs when it is desired to put the doll in a sitting or kneeling position. Figure 1 shows the right lower leg aligned with the right thigh RT, and shows the left lower leg bent rearwardly relative to the left thigh LT. Such knee joints are of conventional construction, so that their details need not occupy us here.

As shown in Figures 1 and 2, a rigid and horizontal support member or flat plate 2 is provided within the hollow torso, T, close to and above the thigh openings or sockets of the torso. The flat plate or support member 2 may be peripherally configured to contact or conformably engage about its periphery with the inner surface of the torso. This plate 2 has upstanding side lugs 3 and 3a, which are riveted or otherwise fixed to the side walls S and Sa of the torso T. This rigid plate 2 is part of the mechanism. As shown in Figures 1 and 7, the rigid plate 2 is rigidly connected to a rigid, flat depending flange or hanger member 4, which is in a plane perpendicular to the longitudinal plane of Figure 1. The lower end of the rigid, flat

flange or hanger 4 is above and close to the bottom end of the torso T. As shown in Figure 7, the flange 4 has one or more upstanding lugs or tabs 5 which extend through openings of plate 2 and are rigidly fixed to the plate, as by a drive fit or being bent over. In addition, the flat plate or support 2 may be provided centrally of its rear edge with a laterally extending depending tongue 10, through which may fixedly extend locking lugs 10a projecting from the rear edge of hanger plate 4. Thus, as described hereinbefore, or by any suitable means, the horizontal plate or support 2 is rigidly secured to the depending flange or hanger 4.

An optional walking mechanism is illustrated as including a rigid plate having an angularly disposed leg or plate elements 11 and 12 for the right thigh RT and a similar rigid plate having angularly disposed leg or plate elements 11a and 12a for the left thigh LT. That is, the legs 11 and 11a are disposed substantially vertically and in facing engagement with opposite sides of the hanger plate 4, while the legs 12 and 12a extend generally horizontally away from the hanger plate and are formed with longitudinally extending, respective slots 14. When the angular plates 11—12 and 11a—12a are in the respective positions of Figure 1, the slots 14 have approximately horizontal axes which lie in the plane of Figure 1. If the walking movement mechanism is to be omitted, the slots 14 and their legs 12 and 12a may be omitted.

When the walking mechanism is desired, a rigid, flat lever or bar 7 is arranged beneath the support plate 2, above the legs 12 and 12a, and pivoted to the bottom face of the support plate by a rivet or other suitable means 8, which preferably has a vertical axis coincident with the vertical central axis of the torso T. At its ends, the bar 7 has rigid, depending lugs 9 and 9a which extend loosely or slidably through the slots 14 of the respective legs 12 and 12a.

The vertical plate portions or legs 11 and 11a turnably about the respective faces of the intermediate flange or hanger 4. That is, the vertical legs or plates 11 or 11a are turnably connected to the hanger 4 by a laterally extending, substantially horizontal pivot pin P, which extends through aligned, transverse bores of the hanger 4 and vertical plates 11 and 11a. As illustrated, the pivot pin P may have enlarged heads on its end respectively abutting the outer surfaces of plates 11 and 11a to mount the plates for rotation about the lateral pivot pin axis.

As later explained, these vertical plates 11 and 11a, having respective horizontal legs 12 and 12a, can be detachably connected to the upper ends TT of thighs RT and LT, so that the upper thigh ends can pivot or rotate back and forth about the horizontal axis of the pivot pin P. In such case, and if the bar 7 and slotted horizontal legs 12 and 12a are included, the upper thigh ends TT will simultaneously turn in respective opposite directions about the horizontal axis about the pivot pin P, thus simulating or producing a walking movement.

At the open ends of the upper thigh member ends, TT, there are provided rigid insert blocks 19 and 19a. These rigid insert blocks are conveniently molded from a suitable plastic and they are inserted into the sockets of the thigh ends TT. One of these sockets is shown in Figure 6 and is identical to the other upper thigh end, so that illustration of only one is sufficient. It may be there seen that the insert block 19a is of non-circular shape and has two outer cutouts or recesses RR. Thus, each of the blocks 19 and 19a is non-turnable and fixed relative to its respective thigh pivot end TT, so that each thigh is turned or otherwise shifted in unison with its respective insert block.

The insert blocks 19 and 19a may be shaped to fit snugly in their respective thigh end sockets, and are also fixed in their respective thigh ends TT by means of identical, and respective, rigid fixing plates 24 and

24a, one of which is shown in Figure 6. It may also be seen in Figure 6 that rigid lugs or tongues 25a are struck out of the plate 24a, which tongues fit tightly in the spaces between the recesses RR of blocks 19a and the interior wall of the structure of the respective thigh ends TT, preferably with a drive fit to rigidly fix the plate 24a and the insert block 19a in the respective thigh end.

The companion fixing plate 24 of the other thigh end has tongues 25 for the same purpose as tongues 25a; and, these disc-shaped plates 24 and 24a are applied to the entire annular end faces of the thigh ends TT, and cover said end faces having substantially the same dimensions as the said end faces.

If desired, the lugs 25 and 25a may be rigidly fixed to the inserted blocks 19 and 19a and to the inner faces of the socket of the pivot ends TT by suitable adhesive or other fastening means. In addition, the plate 24a is provided with an eccentrically located protuberance, boss or detent 40a. A central slot or aperture 43a is provided extending through the plate 24a for receiving the rivet or pin 18a, as will appear presently. Also, extending from a portion of the periphery of face plate 24a, substantially normal to the face plate in direction away from the thigh member end TT, is a hook-like member, latch or catch 44a.

The identical and rigid face plates or members 26 or 26a turnably about the fixing plates 24 and 24a respectively, and the latter are provided with projections or detents, as defined by the protuberances or bosses 40 and 40a, which are releasably engageable in apertures 26c and 26d of the plates 26 and 26a. These turnable plates 26 and 26a are proximate to the turnable, pivotable legs or plates 11 and 11a.

The mechanism further includes two rivets or pins 18 and 18a which are separate from the pivot pin P. These pins 18 and 18a have straight cylindrical shanks and may be provided with inner cross pins or heads 18c and 18d proximate to and laterally inward of the plates 26 and 26a respectively, and outer heads 20 and 20a interiorly of the thigh member end sockets. Intermediate the ends of the pins 18 and 18a are cross-pins 42 and 42a, respectively. This may be seen in Figure 10.

It will also be seen there that the inserted blocks 19 and 19a have identical recesses 21 and 21a at their remote ends. The shank of pin 18 sits closely in and extends through a bore of the insert 19 and also through central openings or slots 43 and 46 of the respective fixing plate 24 and turnable plate 26, which latter plate is turnable on said shank relative to the respective pivot end TT and its rigidly fixed insert block 19 and face plate 24. The cross pin 18c abuts the inner face of plate 26 under spring pressure, but does not clamp plate 26 rigidly to plate 24. The cross pin 18c is held against rotation and out of registry with the slot 46 by struck up lugs 51.

The shank of pin 18 and its medial cross pin 42 are located in the recess 21 of insert block 19 and a slidable washer 23 is mounted on the shank just inward of its outer head 20. A helical compression spring 22 has one end abutting the washer 23, whose movement is limited by the head 20, and the other spring end abuts the vertical inner face of recess 21, which recess may have a cylindrical shape. The inner head or cross pin 18c of pin 18 is maintained under suitable, pressure of spring 22 against the rotatable plate 26.

The pin 18a also has a straight, cylindrical shank which extends through and closely fits in a bore of insert 19a, the latter bore opening into the cylindrical recess 21a of the insert. On the inner end of pin 18a is the cross head 18d which abuts the rotatable plate 26a, being held against rotation by lugs 51a on the plate.

The straight cylindrical shank of pin 18a extends through respective central openings or slots 43a and 46a of plates 24a and 26a, and outward through the recess 21a of insert block 19a, where a slidable washer 23a

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is circumposed about the pin shank just inward of the outer pin head 20a. A compression spring 22a, similar to the compression spring 22 is interposed between the washer 23a and inner end wall of recess 21a to maintain the head or cross pin 18d pressed against the rotatable plate 26a under suitable, light pressure while permitting rotation of the latter plate on the shank of the pin. The medial cross pin 42a of pin 18a is located interiorly of the recess 21a within the spring 22a, in the same manner as cross pin 42 of pin 18.

As may be seen in Figs. 1, 9 and 10, the plates 11a and 26a are disposed in facing relation with respect to each other and swingably connected together by hinge means H' having a generally vertically disposed axis located forward of the pin 18a. Stated otherwise, the pair of facing plates 11a and 26a are hingedly connected together for swinging movement about the axis of a pintle 47 disposed normal to both the pivot pin P and pivot pin 18a, and which hingedly connects the facing plates by extending through a pair of hinge knuckles or fingers 48a struck out from the plate 11a and, also through a pair of hinge knuckles or fingers 49a struck out from the plate 26a and interdigitated with the first-mentioned hinge knuckles. Thus, the hinge knuckles 48a and 49a, and pintle 47a combine to define the hinge H' which connects the plates 11a and 26a together for a relative swinging movement about the pintle axis normal to pivot pins P and 18a.

Similarly, the facing pair of plates or members 26 and 11 are hingedly connected together by a pintle 47 which extends through interdigitated knuckles 48 and 49 of the plates 11 and 26, respectively. The hinge H thus defined by the pintle 47 and knuckles 48 and 49 also has its axis generally vertical and normal to the axis of pivot pins P and 18.

By the hinges H' and H, the left and right thigh members are mounted for swinging movement about the hinge axes. This swinging movement in each hinge is limited in its outward direction, which would be the inward direction of leg movement, by the configuration of at least one pair of hinge knuckles, as at 49a in Figure 5. That is, the hinges knuckles 49a are formed with a flat surface 50a configured for abutting engagement with the adjacent face of the hinged member 11a to prevent further outward swinging movement of the hinged members. Of course, the hinge knuckles 49 of the other hinge H may also be configured, as in 50, to limit outward swinging movement of the hinged members 11 and 26.

In Figures 7 and 8 are best seen the construction of the hinged member or plate 11, which, of course, is substantially identical to the hinged member or plate 11a, so that a description of one will suffice. The hinged member 11 is there illustrated as mounted on the central pivot pin P, and the hinge knuckles 48 are shown as being substantially vertically spaced and struck out from the forward region of the hinged member. Along a rearward edge of the hinged member is an arcuate retaining lip or flange 52 extending generally concentric with respect to the pivot pin P and offset laterally away from the hanger plate 4. It will be observed that the retaining member or flange 52 is located at the forward region of the plate 11 and extends downward from the upper leg or plate 12 for a predetermined distance, terminating at an edge 53. The cross-sectional configuration of the retaining element, lip or flange 52 is best seen in Figure 8, as is the companion retaining element 52a, on the hinged member 11a.

In the assembly, as best seen in Figure 10, the hook or catch 44a of the plate 24a is engaged over the retaining element 52a, into the space between the latter retaining element and the hanger plate 4. Similarly, the companion hook or catch 44 which is fixed relative to the right thigh RT, extends over the retaining element 52 and into the space between the latter retaining element

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and the hanger plate 4. Thus, in the condition illustrated in Figure 10, the thigh members RT and LT are respectively prevented from swinging about their adjacent pintles 47 and 47a by the hooked engagement of their respective catches 44 and 44a and retaining lips 52 and 52a. However, the thigh members LT and RT are free to rotate with their respective pairs of hinged members 11a and 26a, and 11 and 26, about the axis of pivot P, for effecting normal walking action. Further, the thigh members LT and RT are independently rotatable relative to their respective pairs of hinged members about the pivot pins 18a and 18 by the application of sufficient force to deflect the springs 22a and 22 and enable movement of the detent members 40a and 40 out of their respective apertures 26c and 26d. Upon such rotation of the thigh members, their respective catches or hooks 44a and 44 will slide along and relative to their retaining elements 52a and 52. When each of the said catches passes beyond the terminus of its adjacent retaining element upon forward and upward swinging movement of the thigh members, as when the catch 44 passes beyond the edge 53 of retaining element 52, the catches are released from the retaining elements. This in turn releases the left and right thigh members for swinging movement about their adjacent hinges H' and H.

Thus, upon sufficient forward and upward swinging of a thigh member, such thigh member will be released for swinging movement about the generally vertical axis of its hinge, so that a doll may be seated with its thigh members in crossed position. Of course, the hooks 52 and 52a may be returned to their retained condition by reversal of the above described procedure.

In the modified embodiment of Figs. 11-15, each pair of hinged members 111, 126, and 111a, 126a, are substantially the same as the hinged members 11, 26, and 11a, 26a; however, the catch-and-retainer means for holding the hinged members of the first-described embodiment against their relative swinging rotation has been eliminated. In place thereof, the hinged members 111 and 126 are provided on their facing sides, remote from their hinged connection, with magnets 152 and 144 respectively. That is, the magnets 152 and 144 are secured to the respective hinged members 111 and 126 by any suitable means, and serve to releasably retain the hinged members in their facing relation, and hold the same against relative swinging movement. The hinged members 111a and 126a are similarly provided on their facing sides, remote from their hinged connection, with cooperating magnets 152a and 144a.

Thus, while the thigh members of the embodiment of Figs. 11-15, in the condition illustrated in Fig. 15, are releasably held against swinging movement about the axes of hinges H' and H, by the magnets, the thigh members are respectively rotatable about the axes of pins 18 and 18a, and about the common axis of pin P. In addition, the thigh members are forcibly swingable about the axes of hinged connections H' and H, as by the application of sufficient force to overcome the attraction of cooperating magnets.

From the foregoing, it is seen that this invention provides a limb connecting construction for dolls and mannequins which fully accomplishes the intended objects, and is well adapted to meet practical conditions of manufacture and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. In a doll or mannequin construction, a hollow torso having laterally spaced thigh openings in its lower end, a support member fixed in said torso spaced above said thigh openings, a hanger member fixedly depending from

the support member centrally of said torso, thigh members having their upper ends extending respectively through said thigh openings into said torso on opposite sides of said hanger member, a pair of facing hinged members interposed between each thigh member and said hanger, the hinged member of each pair adjacent to said hanger being pivotally connected to the latter for rotation about a first generally lateral axis and the hinged member of each pair adjacent to a thigh member being pivotally connected to the adjacent thigh member for relative rotation about a second generally lateral axis, said hinged members of each pair being connected together for relative swinging movement about a hinge axis normal to said first and second laterally extending axes, detent means releasably holding each of said thigh members against rotation relative to its adjacent hinged member, an arcuate retaining element on the hinged member of each pair adjacent to said hanger and extending a predetermined distance about the pivotal connection thereof, and a catch fixed to each of said thigh members and extending therefrom into holding engagement with the adjacent retaining element to hold the adjacent pair of hinged members against said relative swinging movement throughout a predetermined angular rotation of each thigh member relative to its adjacent hinged members, said catches each being disengageable from its adjacent retaining element upon continued angular thigh member rotation to release the adjacent hinged members for swinging movement of said thigh members about said hinged axes.

2. A doll or mannequin construction according to claim 1, in combination with stop means associated with said hinged members to limit their relative swinging movement about their said hinged axes.

3. A doll or mannequin construction according to claim 2, said stop means comprising interdigitated hinge knuckles on each pair of hinged members, the knuckles of one hinged member of each pair being configured for abutting engagement with the other hinged member of the respective pair to limit said relative swinging movement.

4. In a doll or mannequin construction, a hollow torso having laterally spaced thigh openings in its lower end, a support member fixed in said torso-spaced above said thigh openings, a hanger member fixedly depending from said support member generally centrally of said torso, thigh members having their upper ends extending respectively through said thigh openings on opposite sides of said hanger member, a pair of facing hinged members interposed between each thigh member and said hanger, the hinged member of each pair adjacent to said hanger being pivotally connected to the latter for rotation about a first generally lateral axis and the hinged member of

each pair adjacent to the thigh member being pivotally connected to the adjacent thigh member for relative rotation about a second generally lateral axis, each pair of said hinged members being connected together for a relative swinging movement about a hinge axis normal to said first and second laterally extending axes, and releasably interengageable latch means on each of said thigh members and the proximate hinged member pivoted to said hanger to hold each pair of hinged members against said relative swinging movement throughout a predetermined angular rotation of its adjacent thigh member and release each pair of hinged members for said relative swinging movement upon further angular rotation of the adjacent thigh member.

5. A doll or mannequin construction according to claim 4, said interengageable latch means comprising an arcuate retaining flange on the hinged members of each pair adjacent to said hanger and extending a predetermined angular distance about the pivotal connection thereof, and a hook fixed to each of said thigh members and extending therefrom into holding engagement with the adjacent retaining flange to hold the adjacent pair of hinged members against said swinging movement throughout a predetermined angle of rotation of the respective thigh member relative to its adjacent hinged member, said hooks each being disengageable from its adjacent retaining flange upon further angular rotation of the adjacent thigh member to release said hooks for swinging movement of said thigh members about said hinge axes.

6. A doll or mannequin construction according to claim 4, in combination with stop means associated with said hinged members to limit their relative swinging movement about said hinge axes.

7. A doll or mannequin construction according to claim 6, said stop means comprising interdigitated hinge knuckles on each pair of hinged members, the knuckles of one hinge member of each pair being configured for abutting engagement with the other hinged member of the respective pair to limit said relative swinging movement.

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