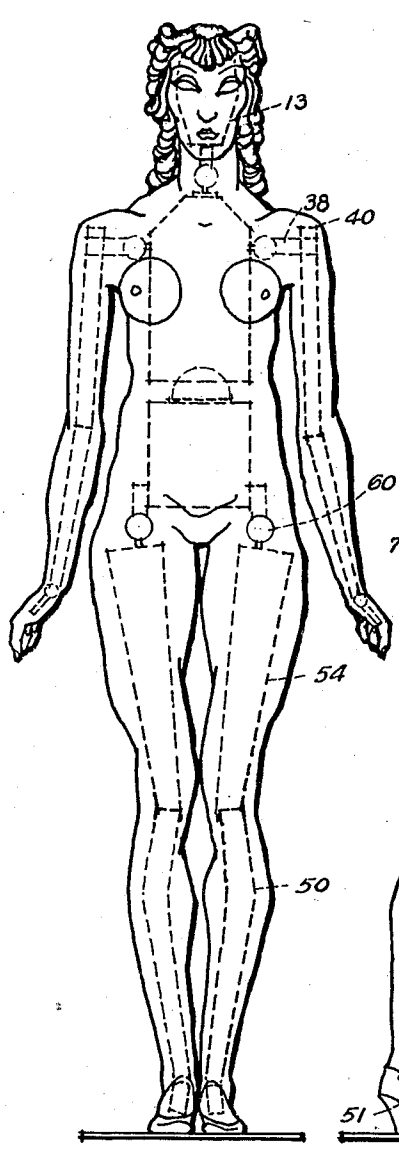
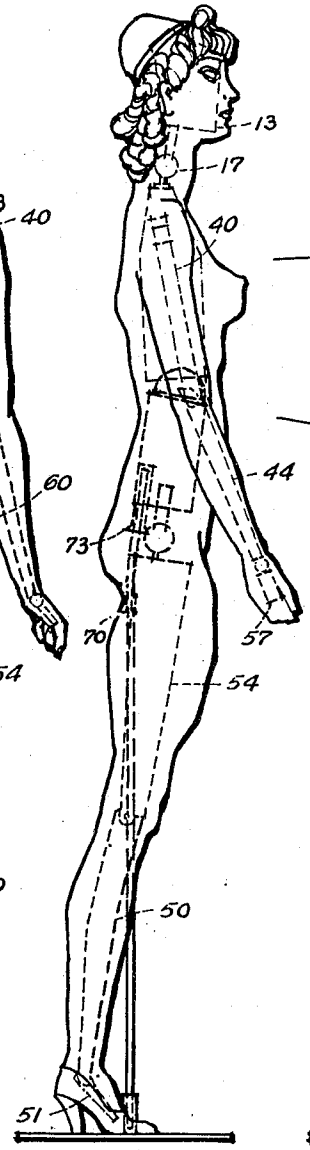
Oct. 3, 1939. S. WEIS ET AL 2,174,932

MANIKIN

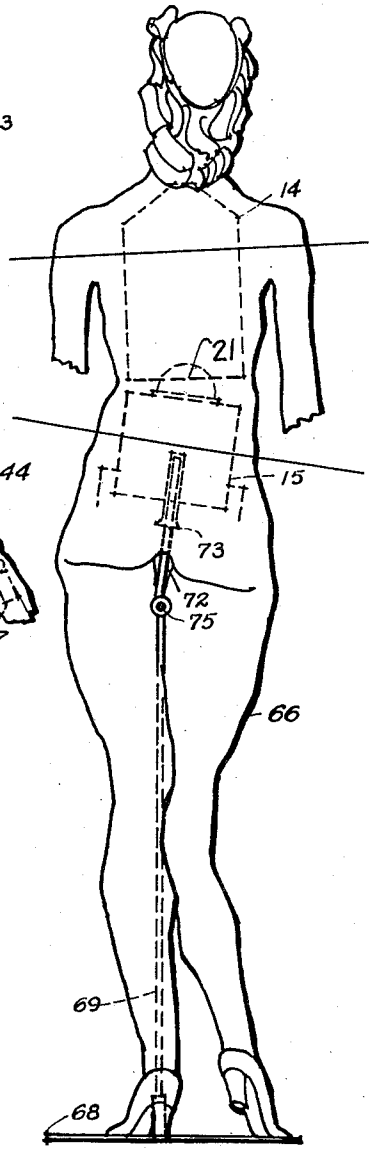
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FIG·1



FIG·2



FIG·3

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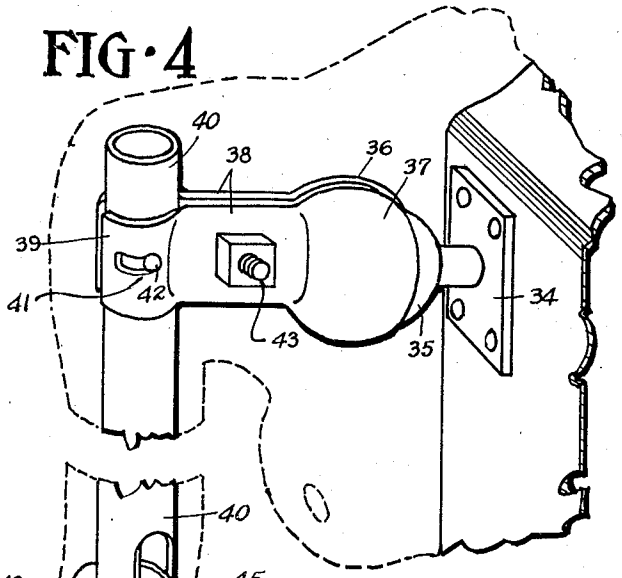
BY Frank Zugelter
ATTORNEY

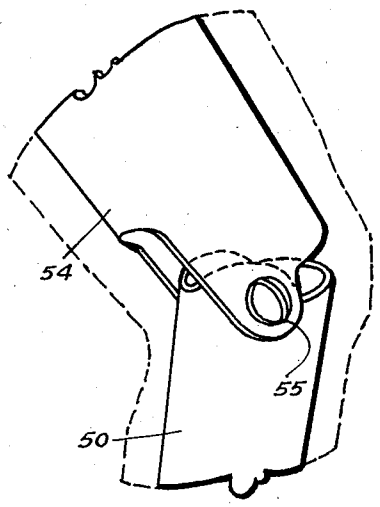
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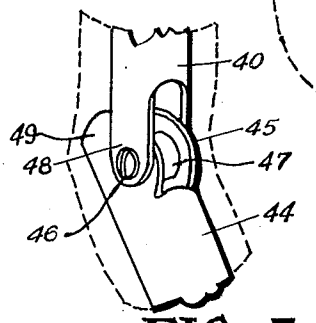
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FIG·4

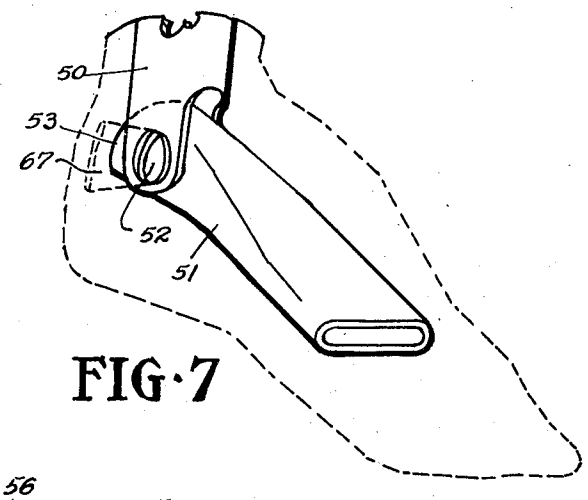




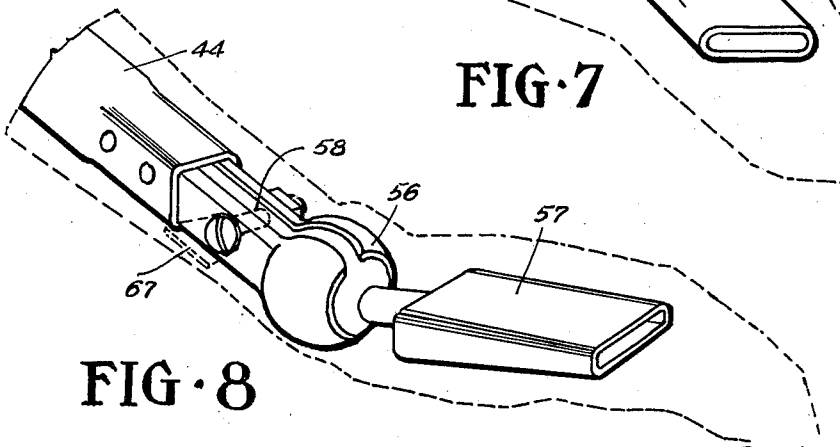
FIG·6



FIG·5



FIG·7



FIG·8

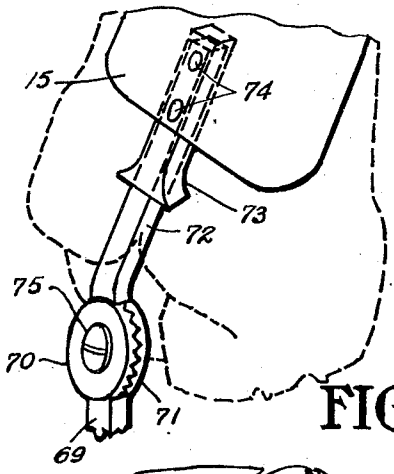
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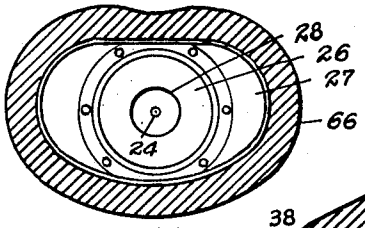
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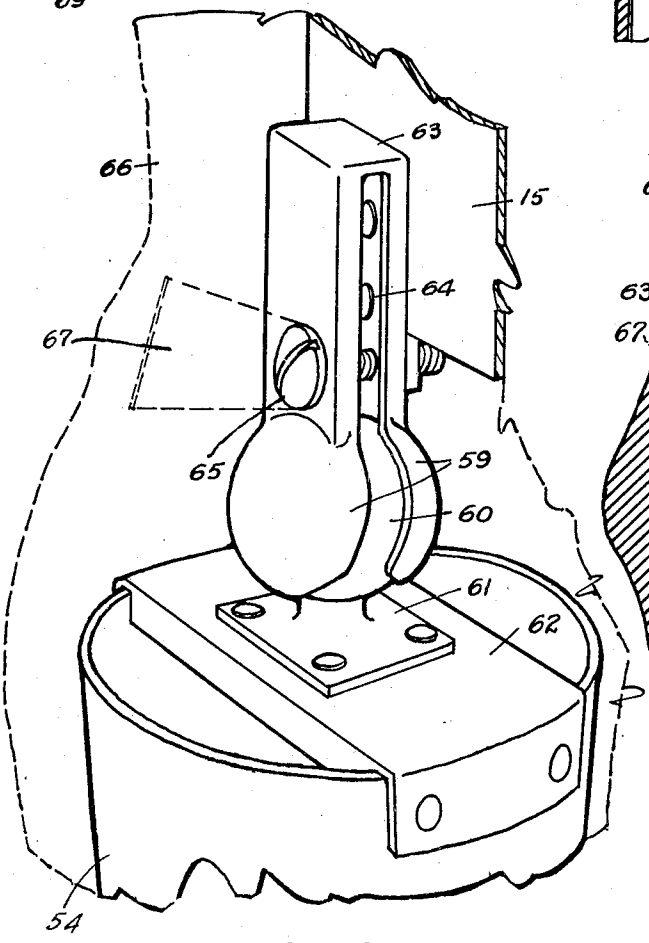
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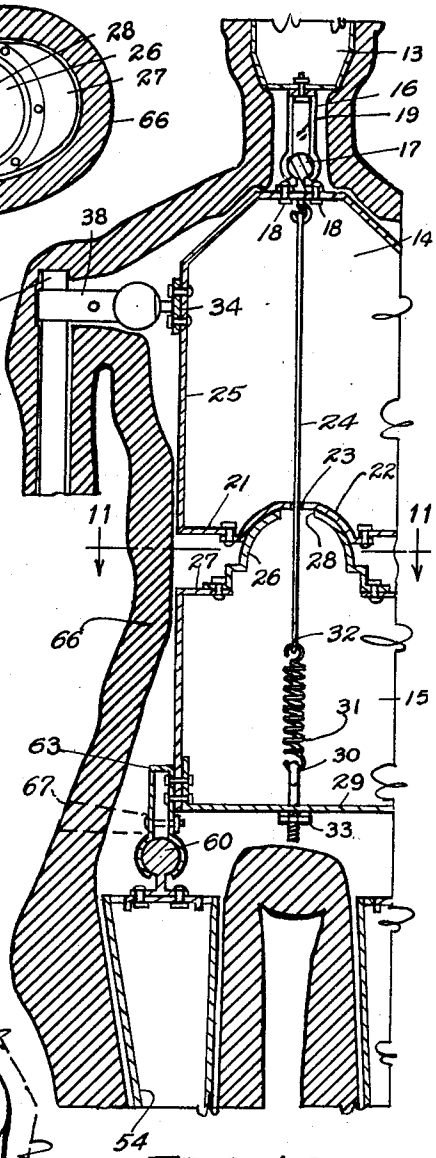
FIG·12



FIG·11



FIG·9



FIG·10

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Patented Oct. 3, 1939

2,174,932

UNITED STATES PATENT OFFICE

2,174,932

MANIKIN

Sarabelle Weis, Cincinnati, Ohio, and Julian F. Bechtold, Fort Thomas, Ky.

Application April 11, 1938, Serial No. 201,210

6 Claims. (Cl. 46—161)

The present invention relates to a manikin or life size figure for purposes of decoration or for the display of wearing apparel and the like.

An object of the invention is to provide a manikin or display figure so constructed that it may be caused to assume any pose or position which is natural to a human figure.

Another object of the invention is to provide a manikin constructed in such a manner that its pliability and flexibility permits shoes, dresses, hats and the like to be applied without injury or damage to the wearing apparel, and without removal of any parts of the manikin.

Another object of the invention is that of providing a manikin having a skin-like surface which may be tinted using regulation rouges, powders, creams and other make up, and which may be freely handled without damaging the surface when washing or otherwise preparing the manikin for use.

A further object is to provide a manikin or display figure that may be renovated or modernized by removing the entire outer covering and replacing it with one having any new or different characteristics that may be desired for any particular display purpose.

Another object of the invention is to provide a display figure having structural advantages facilitating the manipulation of the manikin in simulation of human poses.

The foregoing and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Figs. 1, 2 and 3 are front, side and rear views, respectively, of a manikin embodying the present invention.

Fig. 4 is a perspective view showing a shoulder joint of the device.

Fig. 5 is a detail view showing an elbow joint of the device.

Fig. 6 is a detail view showing a knee joint of the device.

Fig. 7 is a detail view showing a foot joint of the device.

Fig. 8 is a detail view showing a hand joint of the device.

Fig. 9 is an enlarged fragmental perspective view showing a hip joint including details of the invention.

Fig. 10 is a fragmental cross-sectional view taken vertically through the central portion of the manikin.

Fig. 11 is a cross-sectional view taken on line 11—11 of Fig. 10.

Fig. 12 is a fragmental perspective view showing a supporting standard and its mode of attachment to the manikin.

In accordance with the present invention, the manikin or display figure is constituted of a series of interior cooperating metal parts comprising a skeletal frame about which is molded, or otherwise applied, a covering of sponge rubber or like material having a smooth or non-porous outer surface. It is particularly desirable to so finish the covering that its exterior surface may be readily washed or decorated as hereinbefore stated. The use of sponge rubber has been found particularly desirable as a covering material, due to its high degree of flexibility, and its tendency to accommodate itself to any formation determined by the manipulation of the skeletal frame parts. It may be noted also that sponge rubber will not have a strong tendency to strain any joint that may be disposed to positions at which the outer covering may be stressed or compressed.

With reference to Fig. 10, it will be apparent that the skeletal frame comprises a series of hollow casings or box like elements 13, 14, and 15 providing cores for supporting the head, the upper torso, and the pelvic portion, respectively, of the manikin. The head core 13 carries a depending socket bracket 16 adapted to engage about a ball 17 which is mounted as at 18 upon the top portion of the upper torso core 14. The part 16 provides a core for the neck of the figure and it may include an adjusting screw 19 operating in the manner of the screw 65 of Fig. 9, for adjusting the frictional connection at the ball member 17 of the neck joint. The adjustment screw 19 is accessible by way of a slit formed in the back of the neck portion, as will be more fully explained hereinafter.

The bottom wall 21 of the core 14 is provided with an enlarged aperture within which is mounted an enlarged socket member 22. The member 22 may be securely fixed to the bottom wall 21 in any suitable manner such as by means of bolts or rivets, as shown. The center of the socket member 22 is apertured as at 23, to receive a tie rod 24, the upper end of which may be anchored in any suitable manner, to the upper portion of the torso core 14. It should be noted that the aperture 23 is but slightly larger than the diameter of the tie rod, so that the rod will be maintained in substantial parallelism with the side walls 25 at all times.

A ball portion 26 is fixed upon the upper wall 27 of the pelvic core 15, and received by the socket member 22 as illustrated. The ball portion is provided with a central aperture 28 of a diameter

considerably greater than that of aperture 23. The lower wall 29 of core 15 carries an anchorage 30 for a spring 31 which connects with the lower end of the tie rod at the location 32. At this point, attention is directed to the fact that any lateral movement of the pelvic core 15 relative to the upper torso core 14, will not laterally shift the tie rod 24 so as to result in a snap action or off-center pull tending to decrease the angle between the cores 14 and 15. By means of this construction, the spring tension would rather tend to return the cores 14 and 15 to the aligned relationship of Fig. 10, in the presence of vibration or jarring that might possibly overcome the friction between the ball and socket members 22 and 26. The obvious purpose of this precaution is to preclude the possibility of the parts presenting any grotesque or unsightly appearance.

The connection at 30 may be in the form of a hook having a threaded lower portion carrying an adjusting nut 33 for regulating the frictional contact between the ball socket members 22 and 26.

At opposite sides of the upper torso core 14, there may be provided suitable brackets 34 (Fig. 4), each carrying a ball 35 adapted to be embraced by a pair of socket members 36 and 37 which form the shoulder joints of the manikin. The arms 38 upon which the socket members are developed, have their opposite ends curved as at 39 to receive a tube 40 which provides a core for the upper arm of the manikin. A slot 41 may be provided in the part 39 to receive an extending pin 42 which is fixed to the tube, said slot serving to limit rotational movement of the tube relative to the arms 38 and bolt 43 passing through the arms 38 at a location between the tube 40 and the socket members 36—37, furnishes a means of varying the frictional engagement of the parts comprising the shoulder of the figure.

With reference to Fig. 5, it will be observed that the tube 40 is pivoted relative to a core 44 for the fore arm of the figure, said core being likewise in the form of a tube, and having a pair of spaced parallel ears 45 perforated to receive an adjustment screw 46. A suitable spacer 47 between the ears 45 prevents collapse at this point when the adjusting screw is tightened. A pair of extending lugs 48 on the tube 40 afford the means of pivoting that part of the core 44. It is to be noted particularly that an extension 49 is provided beyond the pivotal point furnished by the adjusting screw 46, said extension performing the function of keeping the elbow pointed when the arm of the manikin is bent, that is, when a considerable degree of angularity is desired between the forearm and the upper-arm of the figure.

The elements 50, 51 and 52 of Fig. 7 constitute the same kind of joint for the foot of the manikin, as is disclosed for the elbow of Fig. 5. The foot joint includes a rearward extension 53 on the foot core 51 corresponding to the extension 49 of Fig. 5, and performs the same function.

In Fig. 6 is shown a knee joint comprising the hollow limb members 50 and 54 pivoted together by means of a friction adjusting screw 55 cooperating with the parts in substantially the manner indicated in Fig. 5.

Fig. 8 discloses the forearm core 44 having a ball joint connection 56 with a hand core 57, to enable manipulation of the hand to various natural positions. An adjustment screw 58 furnishes the necessary frictional contact at the ball joint.

Attention is now directed to the illustration of Fig. 9, wherein is shown the means for mounting the upper limb core 54 upon the pelvic core 15 by means of a ball joint comprising the socket members 59 and ball 60. The ball is mounted upon a supporting plate 61 which may be riveted or otherwise secured to a bridge member 62 spanning the upper end of the cylindrical limb part 54. The U-shaped bracket 63 carrying the socket parts 59 may be riveted or otherwise fastened to the side wall of the pelvic core 15, as indicated at 64. An adjustment screw 65 provides a suitable means for varying the frictional force of the socket members 59 upon the ball 60.

Special attention is directed to the fact that wherever a joint is provided with an adjusting screw, the sponge rubber covering material 66 is furnished with a knife slit 67 rendering the adjusting screw accessible, and serving also as a guide for the insertion of a screwdriver bit to a proper location for engagement with the adjusting screw. Although such slits 67 are indicated on Figs. 7, 8, 9, and 10 only, it should be understood that similar slits are to be provided at any other locations where necessary for providing access to the adjusting screws; for example, a guide slit would be properly located in alignment with the adjusting screws of the shoulder, elbow, knee and neck joints in accordance with the teaching herein.

As indicated by Figs. 3 and 12, there is provided a weighted base 68 including a standard 69 which may be employed for supporting the manikin in any upright position. At the upper end of the standard is fixed a toothed or serrated disc 70 adapted to cooperate with a similar disc 71 forming part of an adjustable extension 72. Extension 72 is adapted for insertion into a socket member 73 which may be mounted upon the rear wall of the pelvic core 15 by the use of rivets 74 or other suitable fasteners. The extension 72 need not be fixed within the socket, and by preference it is merely slidably received therein so that the manikin may be lifted from the extension and placed in sitting or prone positions. An adjusting screw 75 passes through the disc 70 and threadedly engages the complementary disc 71 for holding the serrations in contact at any desired degree of angularity between the standard 69 and its extension 72. As will be understood, lateral inclination of the body may be varied by losening the adjusting screw and rotating the discs 70 and 71, relatively.

In constructing the device of this invention care has been exercised to minimize the weight thereof, and to this end it is deemed desirable to employ sheet aluminum or other light weight material wherever possible. It may therefore be stated that the skeletal frame is essentially of light weight sheet metal or its equivalent whereas the covering material is likewise kept at a minimum weight with the use of sponge rubber or similar material interspersed with air chambers throughout its thickness, except for the extreme outer face which is rendered smooth by known methods of molding. As will be readily understood the manikin of the present invention is not susceptible to the cracking and chipping which has been found so objectionable in manikins constructed of plaster or papier-mâché. The provision of the separate body cores 14 and 15 which are adjustable in all directions relative to one another, enables disposition of the body to many natural poses not attainable in manikins otherwise constructed.

It is to be understood that various modifica-

tions and changes in structural details of the device may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed is:

1. In a manikin of the character described, the combination of a skeletal frame and a body, including an upper torso core and a pelvic core, said cores being in the form of hollow boxes having top and bottom walls, an enlarged ball and socket joint connecting the top wall of one core to the botom wall of the other core enabling disposition of the body to all natural positions attainable by a human body, means maintaining a frictional engagement between the parts of the ball and socket joint, and body extremities adjustably supported by said torso cores.

2. In a manikin of the character described, the combination of a skeletal frame and a body, said frame including an inner core and an extremity, a relatively thick but light-weight flexible rubber cover for the core and extremity, said extremity including a plurality of other cores joined together by means of a frictional connection, a friction adjusting element at said connection, and a guide slit in the rubber cover providing a passage-way aligned with said adjusting element, for guiding a tool through the thick cover and into contact with the friction adjusting element.

3. In a manikin of the character described, the combination of an extremity comprising a pair of cores, means including a pivot joining the cores for relative movement to various angular relationships, a thick pliable cover for the cores simulating human flesh, and an extension formed on one of the cores beyond the pivot for keeping the extremital region of the cover beyond the joint pointed, in life-like fashion, when the cores are disposed at an angle to one another.

4. In a manikin of the character described, the combination of a skeletal frame including an upper torso core and a pelvic core, said cores being in the form of hollow boxes having top and bottom walls, an enlarged ball joint member on one of the cores having an enlarged aperture formed at the middle point of the ball joint member, a socket member on the other core for receiving the ball member to furnish a universal joint, said socket member having a middle point provided with a constricted aperture of considerably smaller size than the aperture of the ball member, an elongated tie rod passing through both said apertures and having an end anchored at the top wall of the upper torso core, said anchored end and said constricted aperture maintaining the tie rod always in an axial relationship to the upper torso core, and an anchor for the opposite end of the tie rod including a tension spring disposed within the pelvic core and attached to the bottom wall thereof directly below the enlarged aperture of the ball joint member.

5. In a manikin of the character described, the combination of a skeletal frame including an upper torso core and a pelvic core, said cores being in the form of hollow boxes having top and bottom walls, an enlarged ball joint member on one of the cores having an enlarged aperture formed at the middle point of the ball joint member, a socket member on the other core for receiving the ball member to furnish a universal joint, said socket member having a middle point provided with a constricted aperture of considerably smaller size than the aperture of the ball member, an elongated tie rod passing through both said apertures and having an end anchored at the top wall of the upper torso core, said anchored end and said constricted aperture maintaining the tie rod always in an axial relationship to the upper torso core, and an anchor for the opposite end of the tie rod including a tension spring disposed within the pelvic core and attached to the bottom wall thereof directly below the enlarged aperture of the ball joint member, and means disposed exteriorly of the core assembly for varying the tension of the spring.

6. In a manikin of the character described, the combination of a skeletal frame including an upper torso core and a pelvic core, said cores being in the form of hollow boxes having top and bottom walls, an enlarged ball joint member on one of the cores having an enlarged aperture formed at the middle point of the ball joint member, a socket member on the other core for receiving the ball member to furnish a universal joint, said socket member having a middle point provided with a constricted aperture of considerably smaller size than the aperture of the ball member, an elongated tie rod passing through both said apertures and having an end anchored at the top wall of the upper torso core, said anchored end and said constricted aperture maintaining the tie rod always in an axial relationship to the upper torso core, and an anchor for the opposite end of the tie rod including a tension spring disposed within the pelvic core and attached to the bottom wall thereof directly below the enlarged aperture of the ball joint member, a socket member having a flared mouth at one end thereof for receiving a manikin mounting standard, and means fixing the socket member to the pelvic core with the mouth directed downwardly in parallelism with the spring.

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