

March 17, 1964

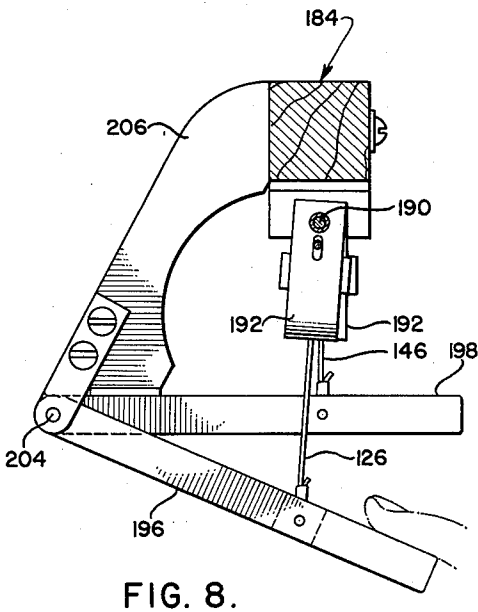
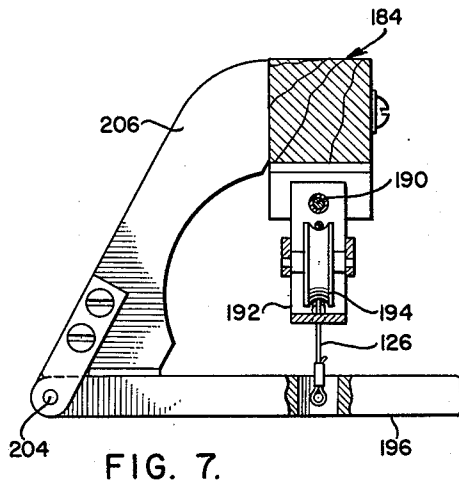
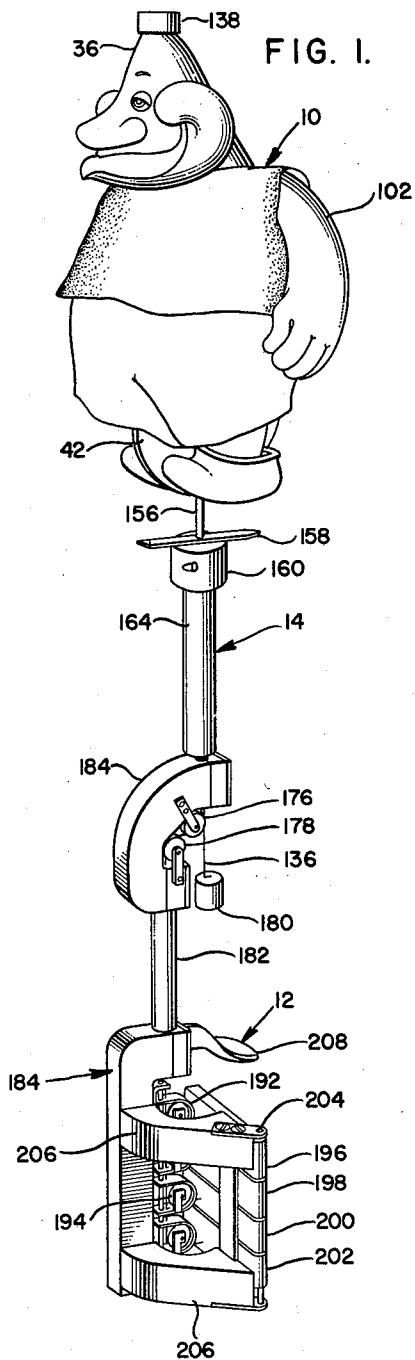
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3,124,900

PUPPET MOVABLE ON A WHEEL TO SIMULATE WALKING

Filed June 23, 1960

5 Sheets-Sheet 1



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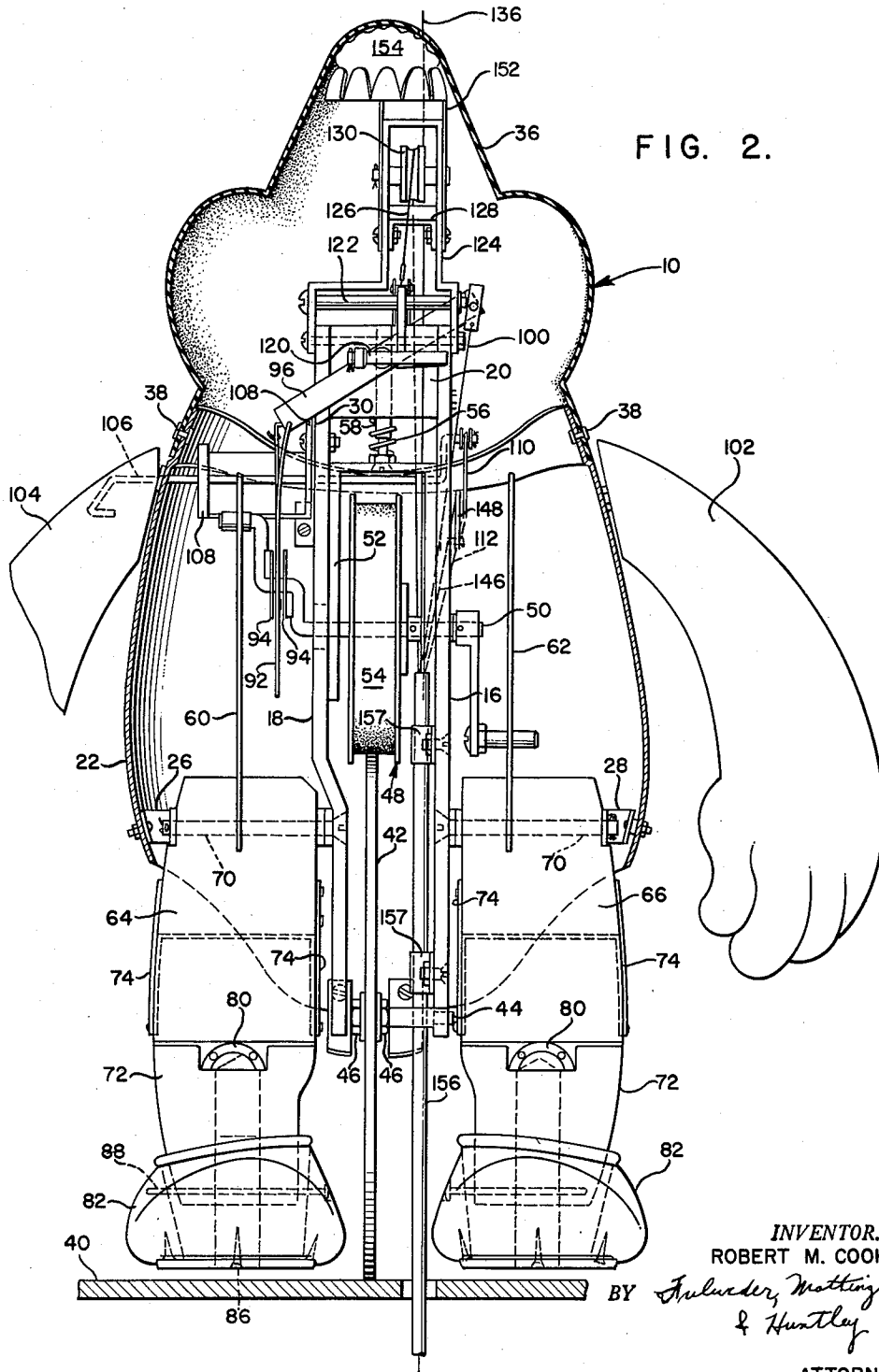


FIG. 2.

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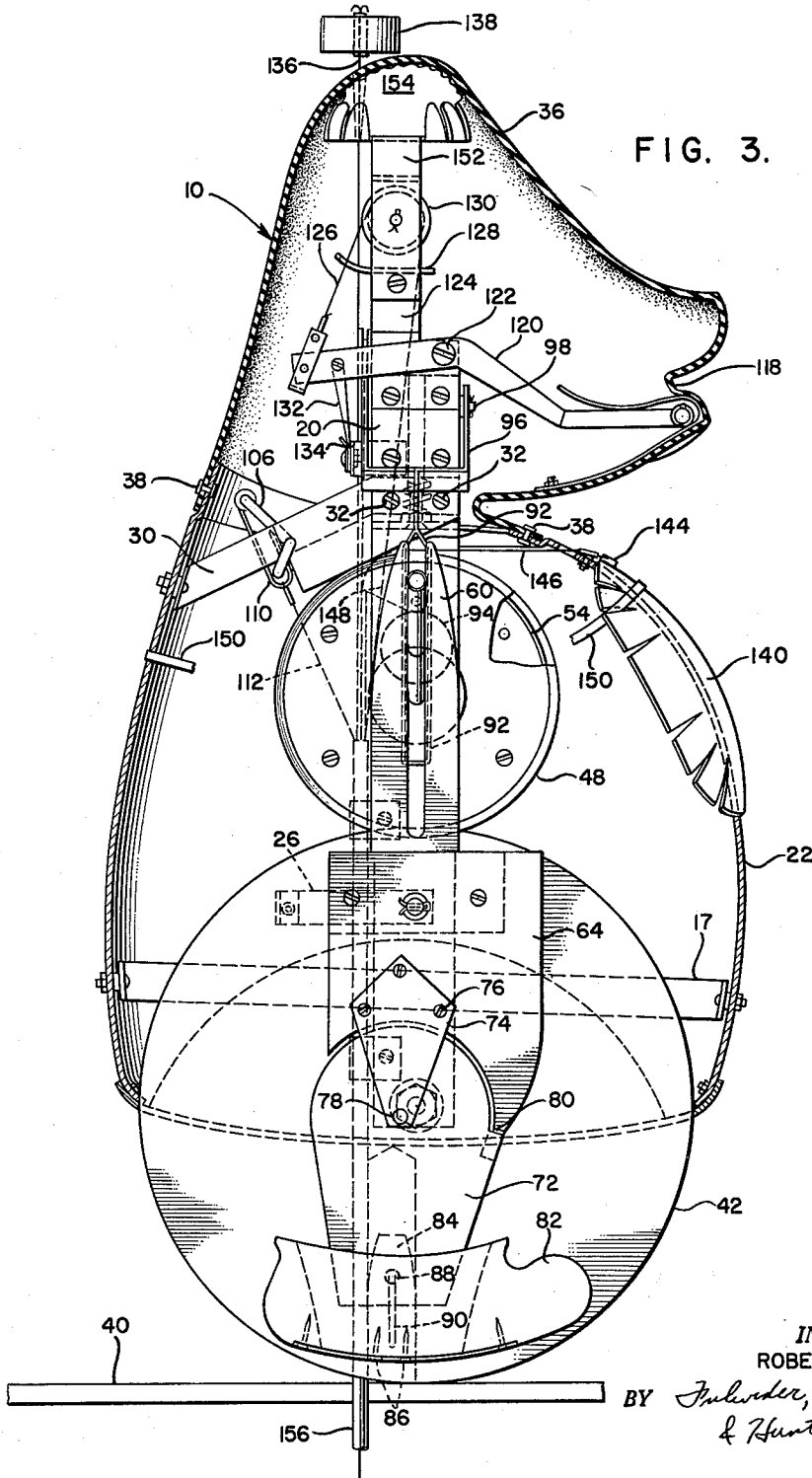


FIG. 3.

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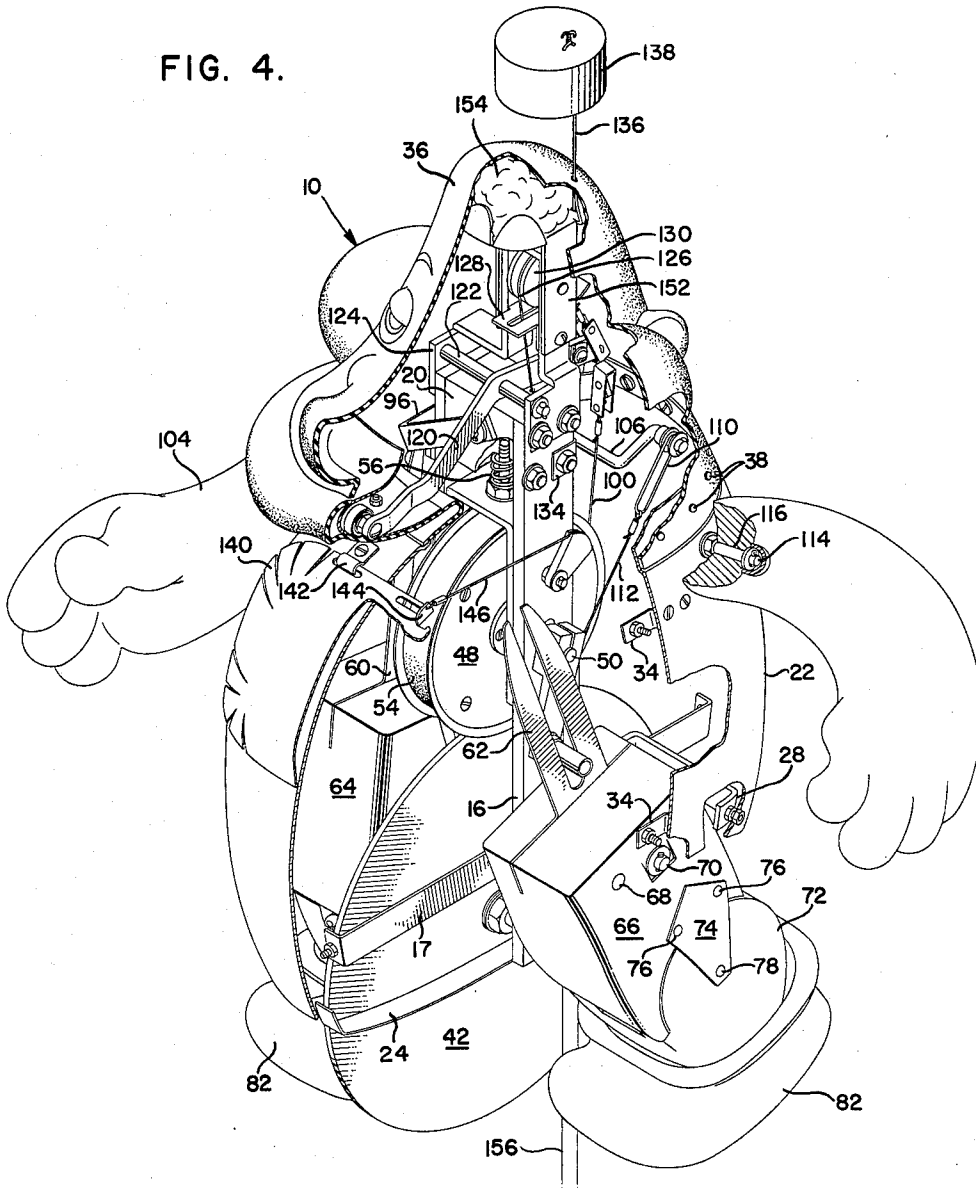
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FIG. 4.



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Filed June 23, 1960

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FIG. 5.

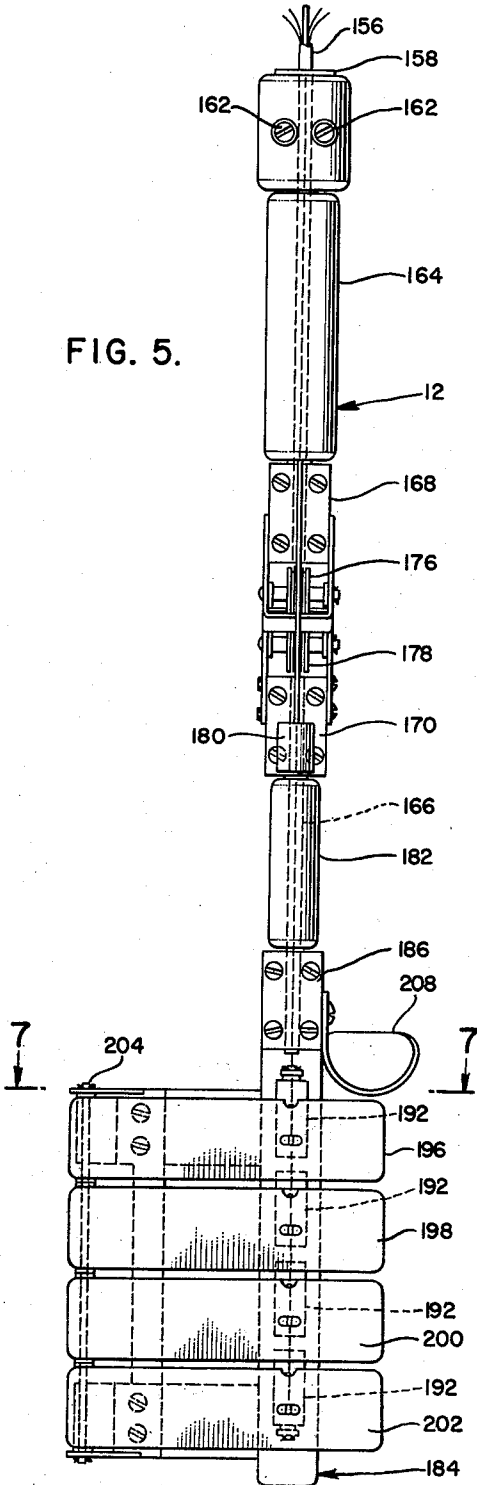
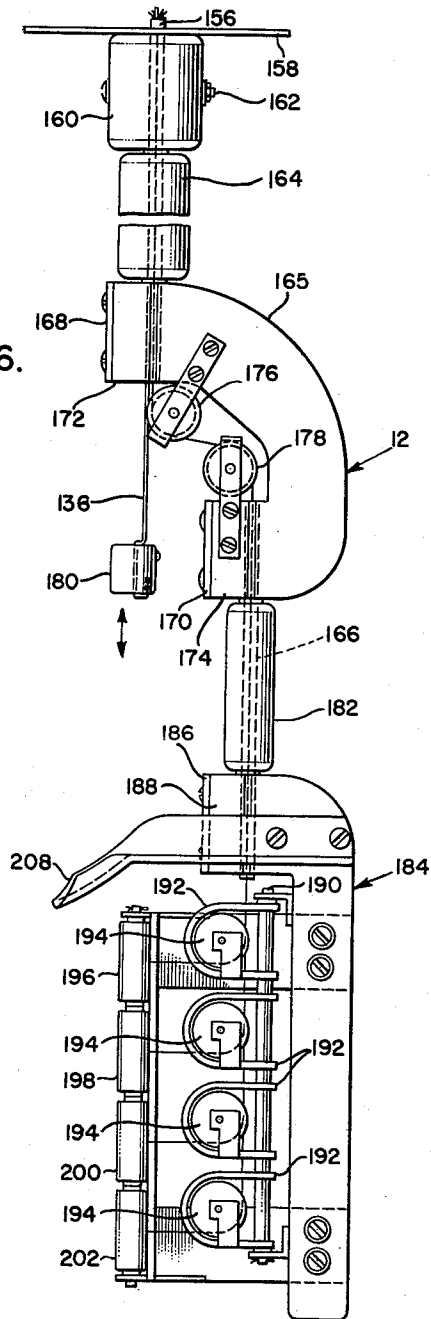


FIG. 6.



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PUPPET MOVABLE ON A WHEEL TO
SIMULATE WALKING

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15 Claims. (Cl. 46-105)

The present invention relates generally to mechanical-ly actuated puppets, and more particularly to puppets which are mechanically animated by manipulation of control apparatus located on the opposite side of the surface upon which the puppets perform.

The puppets of the invention are very different from the existing methods of hand and string puppetry, and provide, for example, a means of making motion pictures of puppet characters without resort to tedious, expensive, stop-action photography. The present puppets may be photographed in live action, in contrast to the stop-action process of shooting or photographing a frame at a time.

There are no depending strings attached to the puppets, as in string puppetry, no covered wrists, as in hand puppetry, and the arms and legs of the puppets can be made to move with a minimum of mechanical control attachments visible to an audience. Additional animation of the mouth, chest, and the like provide an extremely lifelike variety of motions to the puppets.

Although the present invention will subsequently be described with reference to a preferred embodiment, the puppets may take various forms, depending upon the type of animation desired, and the invention is not to be limited to the particular embodiment set forth. Thus, the animated character can take the form of a walking puppet having a pair of arms and legs, wherein the puppet frame carries means forming a round surface in contact with the stage floor. As the puppet is moved about the stage, these means, which are illustrated as a thin wheel, rotate, and the rotation is transmitted through linkages to the puppet legs, imparting a lifelike walking motion. If a puppet is employed which has no legs, a ball used as a support would provide a comical rolling effect to the moving puppet.

The puppet is conveniently positioned above a slot in the stage floor, or at the edge of the stage floor, with the rotatable wheel resting upon the floor. A hollow control column is rigidly attached at its upper end to the puppet, and extends downwardly through or beyond the stage floor. A control assembly is rigidly attached to the lower end of the column, and includes a plurality of manually manipulatable controls. A corresponding plurality of control strings or wires are secured to these controls and extend upwardly through the column to various portions of the puppet, such as the legs, arms, mouth and chest. Manual operation of the plurality of controls produces animation of the puppet, and the sole control means visible to the audience is the column carrying the control wires. A startling illusion of lifelike animation is thus produced.

Since the puppet, column, and control assembly are rigidly secured together, the control assembly can be moved, tilted, and rotated to effect corresponding animation of the puppet. Further, the provision of the hollow column makes possible the addition of various control wires to produce any desired movement of a portion of the puppet, including doffing of the puppet's hat, as will be seen.

The hollow column includes offset portions so that one of the portions may be held steady with one hand while the other portion is rotated. This action produces a comical spinning of the puppet.

Since the puppet may be operated at the edge of the stage or through slots in the stage floor, walls, or ceiling, the puppet can be made to walk or move over the floor,

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walls, or ceiling of the stage with equal facility, providing a novel freedom of action very entertaining to an audience.

Rhythmic manipulation of the control for the arms is effective to spin the arms through a complete circle, and in either direction.

It is therefore an object of the present invention to provide a mechanical puppet which can be controlled to move upon various parts of a stage to provide maximum choice of camera angles for television and motion picture photography.

Another object of the invention is to provide a novel puppet which is controlled from the side of the stage opposite to that upon which the puppet rests.

Still another object of the invention is the provision of a puppet which is quickly and delicately responsive to manipulation of a remote control assembly connected to the puppet body by hidden wires.

Another object of the invention is to provide a mechanical puppet which is movable over a stage upon a means forming a rounded surface, such as a wheel, ball, disk or the like, which means is effective to produce a smooth, realistic movement of the puppet about a stage.

Other objects and features of the present invention will be readily apparent to those skilled in the art from the following specification and appended drawings wherein is illustrated a preferred form of the invention, and in which:

FIGURE 1 is a perspective view of the entire puppet assembly, illustrating the puppet body, control column, and control assembly;

FIGURE 2 is an enlarged front elevational view, partially in cross section, of the puppet body;

FIGURE 3 is an enlarged side elevational view, partially in cross section, of the puppet body;

FIGURE 4 is a perspective view of the puppet body illustrated in FIGURES 2 and 3, portions thereof being cut away for clarity;

FIGURE 5 is a front elevational view of the control assembly and control column;

FIGURE 6 is a side elevational view of the control assembly and control column;

FIGURE 7 is a view taken along line 7-7 of FIGURE 5; and

FIGURE 8 is a view similar to that of FIGURE 7, but showing the control pulleys in full line, with one of the control levers being operated.

Referring now to FIGURES 1 through 4, a description will first be made of the puppet body 10, followed thereafter by a description of the control assembly 12 which is operated to animate the puppet body 10 through control column 14.

Puppet body 10 comprises, generally, a left side plate 16 and a right side plate 18 which extend substantially vertically in spaced apart, parallel relationship, and are secured adjacent their upper ends to a yoke block 20 which maintains the plates in position. Plates 16 and 18 and block 20 serve as a frame to support a number of components of puppet body 10.

The upper portion of the mechanical structure of the puppet is enclosed in a glass fiber laminate shell 22 which is attached to the ends of a lower bracket 24, FIGURES 3 and 4, which extends from front to rear of the puppet. This bracket 24 is secured at its mid portion to left side plate 16 (not shown). A pair of side brackets 26 and 28, at either side of body shell 22, secure the lower side portions of the shell 22 to side plates 18 and 16, respectively, FIGURES 3 and 4, to prevent shell 22 from moving sideways relative to these plates. In addition, the upper part of body shell 22 is anchored in position by an upper bracket 30, FIGURE 3, which is

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secured to the shell 22 at one end, and to right side plate 18 by usual machine screws 32.

The body shell 22 separates into half-sections for convenient access to the interior of the puppet. The separation joint is located at the sides of the puppet, and the half-sections are secured together by four brackets 34, two of which are illustrated in FIGURE 4.

The head 36 of the puppet is made of latex rubber and is attached to the body shell 22 by a plurality of metal screws 38, FIGURE 3, which are evenly spaced about the perimeter of head 36 to hold the head securely in position. This arrangement permits the interchanging of various heads to create new puppet characters without the necessity of major disassembly of the puppet.

As the puppet performs, it is supported on the stage surface 40 by means which provide a round or rolling surface. In the present embodiment this takes the form of a plastic wheel 42, although it will be apparent that a sphere, a tire, or a tread mounted for rotation upon the puppet body 10 would also operate satisfactorily.

Wheel 42 is fixed to an axle 44 by a pair of nuts 46 threaded upon the axle 44, FIGURE 2, and the ends of axle 44 are rotatably carried at its ends within suitable openings in side plates 16 and 18 so that wheel 42 is rotatable relative to the main portion of puppet body 10. Thus, as the puppet is moved across the stage, wheel 42 rolls on the stage surface 40.

Wheel 42 is arranged so that it is in contact with an upper wheel 48 whereby, as will be seen, rotation of wheel 42 effects a corresponding rotation of wheel 48. Wheel 48, in turn, is pinned to a transversely disposed crankshaft 50 so that these parts rotate together, crankshaft 50 being rotatably carried through suitable, closely fitted openings provided in a wheel fork 52. It is important that no slippage occur between wheels 42 and 48 so that movement of the puppet over the stage will rotate crankshaft 50. Accordingly, a wide rubber band 54 is stretched over the peripheral face of wheel 48 to provide good frictional engagement, and a wheel fork 52 is slidably urged downwardly, carrying crankshaft 50 and wheel 48 downwardly with it. More particularly, wheel fork 52 is slidably carried between side plates 16 and 18, and the openings in side plates 16 and 18 through which crankshaft 50 extends are made oversize, so that a limited amount of relative movement can occur between the plates 16 and 18 and crankshaft 50 when wheel fork 52 is raised and lowered.

Wheel fork 52 is constantly biased or urged downwardly, thereby urging wheels 42 and 48 into firm contact, by a compression spring 56 which acts at its ends against the upper portion of fork 52 and the lower portion of yoke block 20. The spring 56 is kept in position by a screw 58 which is secured at its lower end to fork 52. At its upper end the screw 58 is slidably receivable within a vertical opening provided in yoke block 20.

Rotation of crankshaft 50 rotates the crank throws at the ends of crankshaft 50 which are positioned for slidable travel within slots provided in a pair of leg plates 60 and 62. Plates 60 and 62 are secured, respectively, to the upper portions of a pair of legs 64 and 66 by a plurality of pins 68, one of which is illustrated in FIGURE 4, and, therefore, rotation of the crank throws causes legs 64 and 66 to swing forward and backward from their supporting pivot points in an alternating, natural walking action. The pivot points are provided by a pair of machine screws 70, FIGURES 2 and 4, which are rotatably disposed through legs 64 and 66, respectively, and rigidly secured to side plates 18 and 16. The axis of these pivot points is located below the points of engagement of leg plates 60 and 62 to enable the desired pivotal movement of the legs.

Each of legs 64 and 66 includes a lower leg portion 72 which is pivotally carried by its associated leg by pairs of side plates 74. These side plates are rigidly

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secured to the legs by small nails 76, and pivotally secured to the leg portions 72, respectively, by pins 78. With this arrangement, as the top of either of the legs 64 and 66 is swung rearwardly or backwardly, the connection of that leg with its lower portion acts as a knee which moves forward, leaving the lower portion lagging behind so that the complete leg assembly gives the appearance of a bent leg. As the knee reaches its most forward position and starts its sudden movement to the rear, the momentum of the lower portion of the leg carries the lower portion forward. This results in a straightening of the leg assembly, and gives the leg action a natural appearance on the stride to the rear. The lower leg portion 72 is convex in shape, and the upper leg with which it is mated is concave in shape, and a stop or bumper 80, FIGURE 2, is provided on the mating surface of each lower leg portion 72 to engage the upper leg and thereby limit forward travel of the lower leg when the upper leg is swinging rearwardly. This prevents the leg assembly from straightening beyond a normal position.

A shoe assembly 82 is secured to the lower end of each of the lower leg portions by a dowel 84 which is slidably carried within a suitable bore provided in the associated lower leg portion 72, and which is fastened to the bottom of assembly 82 by screws 86. Dowel 84 is sufficiently tightly fitted within its bore that shoe assembly 82 will not drop downwardly of its own weight, but should assembly 82 undesirably strike the stage surface 40 and interfere with the rotation of the wheel 42, assembly 82 would be allowed to move upwardly by the sliding of dowel 84 upwardly into its bore. To insure that the shoe assembly 82 does not drop off its associated leg, a pin 88 is transversely disposed through assembly 82 and through a vertical slot 90 provided in dowel 84, FIGURE 3.

As the walking puppet rolls across the stage surface 40 and then comes to a stop, it is important for the puppet legs to be in a natural vertical position, and this occurs when the crank throws of crankshaft 50 extend substantially vertically. The present puppet includes an apparatus to provide positively that the crank throws will be arranged vertically whenever desired, thereby insuring that the legs of the puppet are straight up and down. More particularly, a length of stiff wire 92 is formed into an elongated loop which is arranged over the right crank throw of crankshaft 50, as best illustrated in FIGURES 2 and 3. The lateral position of wire 92 is maintained by a pair of washers 94 which are pinned to the crank throw. The upper end of the loop of wire 92 is secured to one end of an elongated leg straightening lever 96 which is pivotally secured at its mid portion to yoke block 20 by a bolt 98. The other end of lever 96 carries a control wire 100 which is pulled downwardly by operation of the control assembly 12, as will later be described.

The loop of wire 92 is of sufficient length to allow free movement of the right crank throw up and down its length as the throw rotates. During this relative movement the wire 92 swings forward and rearwardly at its lower end. Assuming now that the puppet is stopped, and it is desired to straighten its legs, a downward pulling of the control wire 100 causes wire loop 92 to be pulled upwardly, and, if the right crank throw is not arranged vertically, the lower end of loop 92 will engage the throw and move it to a vertical position. This will also vertically position the legs 64 and 66 of the puppet.

The present puppet is provided with a left arm 102 and a right arm 104, the latter being rigidly attached to one end of a transversely extending crankshaft 106, FIGURES 2 and 4. Crankshaft 106 spins freely, being disposed through suitable openings in the spaced sides of a bracket 108 which is secured to right side plate 18 by the same fasteners which hold bracket 30 in position. The opposite end of crankshaft 106 is formed into a throw which

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forms a 40 degree angle with the horizontal when right arm 104 is hanging in a normal down position. This crank throw rotatably carries an elongated loop of stiff wire 110 to which a control wire 112 is attached.

When control assembly 12 is operated, wire 112 can be pulled downwardly to rotate the throw of crankshaft 106, and hence raise right arm 104. The amount of downward pull on wire 112 will dictate the amount by which arm 104 is raised. Further, by rhythmic downward pulling and releasing of control wire 112, arm 104 can be made to spin or rotate. This rotation is enhanced by the curve of arm 104 and the center of gravity of arm 104, which is to the rear of the axis of crankshaft 106 when arm 104 is in a straight up position. That is, arm 104 tends to return rearwardly to its down position by gravity. Proper manipulation of control wire 112 will spin arm 104 in either direction, and at various rates of rotation.

The left arm 102 is rotatably mounted to body shell 22 by a bolt 114, FIGURE 4, which is rigidly secured to shell 22 and rotatably carried in a tubular sleeve 116 carried by arm 102. Thus, arm 102 is a free swinging arm. It can be provided with a control wire just as was described in connection with arm 104, but preferably it is merely free-swinging to enable it to be spun or rotated by manipulation of the entire puppet assembly. Sudden, turning movements of the puppet cause a comic flailing of the arm, and, with a rhythmic twisting motion of the whole puppet, arm 102 can be made to spin in a fashion similar to the described spinning of arm 104. It is important to note that arm 104 is also free-swinging because of the elongated loop connection 110, as well as mechanically controlled by the control wire 112. That is, the length of the loop of wire 110 permits the throw of crankshaft 106 to move within the loop without pushing or pulling of the control wire 112.

The mouth 118 of the rubber head is caused to stretch, to what appears to be an open position, by downward movement of the outer end of an elongated lever 120, FIGURES 3 and 4. Lever 120 is fixed to a shaft 122 which is transversely disposed between and rotatably carried by the sides of an upwardly extending channel-shaped bracket 124 which is rigidly secured at its lower portion to side plates 16 and 18. The other end of lever 120 connects with a control wire 126 which is trained upwardly through an opening in a guide plate 18 which is secured to bracket 124. Wire 126 is then trained over a pulley 130 which is rotatably carried upon a shaft mounted transversely between the sides of the channel-shaped bracket 124. From pulley 130 the wire is disposed downwardly toward the control assembly 12, as will later be described.

When control wire 126 is pulled downwardly, the outer end of lever 120 is also moved downwardly, and mouth 118 is caused to stretch to an apparently open position. An elastic band 132 is secured between the inner end of lever 120 and a bracket 134, FIGURES 3 and 4, which is secured to left side plate 16, band 132 serving to return mouth 118 to a closed position in the absence of a downward pulling of control wire 126.

A length of stiff wire, such as piano wire 136 is substantially vertically disposed through the interior of the puppet body 10, extending downwardly to the control assembly 12. The upper end of the stiff wire 136 protrudes through an opening in the puppet head 36, and a hat block 138 is secured to this upper end. It is noted that the upper end of wire 136 is bent, FIGURE 4, so that block 138 is mounted eccentrically with respect to the vertical axis of wire 136. With this arrangement, wire 136 may be rotated about its axis to spin the hat block 138, and a raising or upward movement of wire 136 gives the illusion that the puppet is doffing its hat.

A life-like animated breathing is provided the puppet by a chest breathing plate 140, FIGURES 3 and 4, which

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is pivotally attached at its upper edge to the chest area of body shell 22 by a pair of clips 142, one of which is illustrated in FIGURE 4. Plate 140 includes a bent-up tab 144, and a control wire 146 is secured to tab 144, is trained through a suitable opening in the body shell 22, and is trained about a quadrant arm 148 which is pivotally mounted to left side plate 16. From arm 148, the control wire is disposed downwardly toward control assembly 12. With this arrangement, a downward pull on control wire 146 causes breathing plate 140 to pivot about its upper edge, and the bottom edge swings forward and upward to cause the shirt or jacket of the puppet to swell out, giving the illusion that the puppet is breathing. Plate 140 is returned to its inward position by a rubber band 150, FIGURE 3, which completely encircles the body shell 22 and crosses the breathing plate 140.

The top of the puppet's head 36 is kept from moving forward, when the mouth 118 opens, by the restraint of a bracket 152 which is secured to the sides of bracket 124, and a wad of cotton 154 conceals the hard outlines of this bracket 152.

A hollow tube 156, FIGURES 2 and 3, is disposed upwardly through the interior of the puppet, and terminates in a flaring mouth into which the various control wires are deployed. These wires are carried down within the hollow interior of tube 156 to the control assembly 12.

Tube 156 is secured in position by a pair of clamps 157 which are fastened to left side plate 16 so that any movement of tube 156 results in movement of the puppet body 10.

Referring now to FIGURES 1 and 5 through 8, the control assembly 12 and its connection to tube 156 of the puppet will next be described.

The lower end of tube 156 is disposed through a metal pointer 158 and through a split clamping block 160 to which pointer 158 is rigidly secured. Block 160 is securely tightened upon tube 156 by screws 162 so that pointer 158 will remain oriented in a predetermined position to indicate the direction in which the puppet is facing.

An upper spinning handle 164 is rotatably carried by tube 156 below block 160. Below this an offset crank block 165 accepts the lower end of tube 156 and the upper end of a similar hollow tube 166. Screw plates 168 and 170 tightly clamp blocks 172 and 174, respectively, against tubes 156 and 166 to prevent relative rotation between crank block 165 and tubes 156 and 166.

The control wires coming out of the lower end of tube 156 are trained into the upper end of tube 166 by a pair of pulleys 176 and 178 which are connected to crank block 165 by pairs of brackets. However, the stiff control wire 136 for doffing the puppet's hat extends straight down from tube 156 and is secured to a cylindrical block 180. This block may be moved upwardly and downwardly, or spun by the fingers, to obtain the desired manipulation of hat block 138.

A lower spinning handle 182 is rotatably carried by tube 156 beneath crank block 165, and it is noted that by firmly holding upper handle 164 and rotating handle 182, the puppet body 10 can be made to spin, as desired.

The lower end of tube 166 is securely held within the upper portion of a lever control block 184 by a screw plate 186 which acts against a clamping block 188 to securely grip tube 166 and prevent relative rotation between tube 166 and block 184.

A vertically disposed rod 190 is mounted to lever block 184 by suitable brackets, and carries four pulley brackets 192 which are pivotable about rod 190 and spaced apart by a plurality of sleeves fitted over rod 190. To each pulley bracket 192 is rotatably mounted a pulley 194.

Four control levers 196, 198, 200, and 202 are mounted adjacent the pulleys 194, each of the levers being pivotally carried at one end by a rod 204 which is secured by brackets to a rod 204 which is secured by brackets to a pair of arms 206, FIGURE 1, which are fixed to lever

control block 134. A control wire is attached adjacent the opposite end of each of these levers, and the wire is trained over the adjacent one of pulleys 194 and thence up into control tube 166. As each of the control levers is moved away from its associated pulley 194, the control wire connected to that lever will be pulled downwardly.

To operate the control assembly 12, the puppeteer places the thumb of his right hand upon a thumb rest 208 secured to block 134, and also places the four fingers of the same hand upon the control levers. The left hand is placed upon control tube 166 to steady the puppet. Next, the particular one or more of control levers 196, 198, 200, and 202 is actuated to obtain the desired puppet animation. In the present embodiment, control wires 126, 146, 100, and 112 are connected, respectively, to the control levers 196, 198, 200, and 202.

From the foregoing description, it is seen that the present mechanical puppetry is uniquely adapted to be moved with great freedom about a stage. Further, the present puppet may be tilted, spun around, and moved with a minimum of mechanical controls visible to an audience, and a variety of forms of animation are available through employment of the plurality of control wires and control levers.

The wheel 42 is merely exemplary of the various means that can be provided to afford a round or rolling surface for supporting the puppet and effecting smooth movement of the puppet from one portion of the stage to another portion of the stage.

While a certain preferred embodiment of the invention has been specifically disclosed, it is understood that the invention is not limited thereto as many variations will be readily apparent to those skilled in the art and the invention is to be given its broadest possible interpretation within the terms of the following claims:

I claim:

1. A mechanical puppet comprising:
 - a hollow puppet body simulating a human form;
 - a wheel means rotatably carried by and partially enclosed from view within the lower portion of said puppet body for supporting said puppet body for movement upon a surface;
 - a hollow column depending from within said puppet body to a point below the lowermost portion of said wheel means;
 - control means secured adjacent the lower end of said column;
 - and a plurality of flexible control elements extending through said column and connected at one end to said control means and at the other end to portions of said puppet body to be animated, said control means being operable to pull upon said control elements to animate said portions of said puppet body.
2. A mechanical puppet according to claim 1 and characterized in that at least one rigid continuous control element is also disposed within said column and is connected to said control means and to a portion of said puppet whereby said rigid control element is adapted to effect animation of said portion of said puppet when urged upwardly into said puppet body.
3. A mechanical puppet according to claim 1 and characterized in that said column at intervals below the lowermost portion of said wheel means and above said control means includes a pair of unobstructed portions whose longitudinal axes are laterally offset with respect to one another whereby said portions are manipulatable to rotate said column and thereby rotate said puppet body about its longitudinal axis.
4. A mechanical puppet comprising: a puppet body having a pair of legs, said body and legs simulating a human form; means pivotally supporting said legs from within said puppet body; a wheel member rotatably carried by and partially enclosed within the lower portion of said puppet body and extending between said legs, the

lowermost portion of which wheel member being located adjacent the lower ends of said legs; and coupling means connected between said legs and said wheel member and operative upon rotation of said wheel member to swingingly pivot said legs.

5. A mechanical puppet comprising: a puppet body; a pair of legs; pivot means pivotally connecting said legs to said body; elements fixed to the upper portions of each of said legs and extending upwardly into said body above said pivot means; a wheel member rotatably carried by said puppet body between said legs and partially enclosed within the lower portion of said puppet body for rolling movement upon a supporting surface, coupling means connected to said wheel member and including crank throws operative upon said elements to swingingly pivot said legs upon rotation of said member.

6. A mechanical puppet comprising: a puppet body; a pair of legs; pivot means pivotally connecting said legs to said body, said legs including elements fixed thereto and extending upwardly above said pivot means; a member rotatably carried by said puppet body between said legs and having a continuous rolling surface for movement upon a surface; coupling means connected to said member and including a plurality of crank throws at least two of which are operative upon said elements when said two throws are out of a predetermined angular position relative to said body to pivot said legs from a vertical stance upon rotation of said member; means engageable with at least one of said two crank throws and operative to position said crank throws in said predetermined angular position; and a control element depending from said puppet body and extending upwardly within said puppet body for operating said last-mentioned means.

7. In a mechanical puppet the combination comprising: a puppet body; a pair of legs each including an upper leg portion and a lower leg portion joined together with freedom for limited swinging motion of the lower leg portion relative to its upper leg portion in a manner simulating a knee joint; joint means separately swingingly connecting each of the upper portions of said legs to said body; a lever element fixed to the upper portions of each of said legs and extending upwardly into said body above said joint means; a rotatable member rotatably carried by said body between said legs and partially enclosed within said body and having a rolling surface for rotational movement upon a supporting surface; and coupling means actuated by said rotatable member including rotatably mounted crank throws engaging said lever elements to swing said upper portions of said legs about said joint means.

8. In a mechanical puppet, the combination comprising: a puppet body; a pair of legs each including an upper leg portion, a lower leg portion, and a foot portion, said upper and lower leg portions being joined together with freedom for limited swinging motion of the lower leg portion relative to its upper leg portion in a manner simulating a knee joint and said lower leg portion and said foot portion being joined together for permitting limited motion of said foot portion in the direction of the longitudinal axis of said lower leg portion; joint means separately swingingly connecting each of the upper portions of said legs to said body; a lever element fixed to the upper portions of each of said legs and extending upwardly into said body above said joint means; a round member rotatably carried by said body between said legs and having a rolling surface for rotational movement upon a supporting surface; and coupling means including crank means interconnecting each said lever element and said round member actuated by said rotational movement to swing said upper portions of said legs about said joint means.

9. A combination according to claim 7 in which the joint between the upper leg portion and the lower leg portion of each leg includes means limiting the forward swing of the lower leg portion to a position in substan-

tial alignment with the longitudinal axis of its upper leg portion, but permitting a backward swing of the lower leg portion through an angle relative to the said longitudinal axis of its upper leg portion.

10. A combination according to claim 8 in which the joint between the upper leg portion and the lower leg portion of each leg includes means limiting the forward swing of the lower leg portion to a position in substantial alignment with the longitudinal axis of its upper leg portion, but permits the backward swing of the lower leg portion through an angle relative to the said longitudinal axis of its upper leg portion.

11. A mechanical puppet comprising:

a puppet body;

a pair of legs;

pivot means pivotally connecting said legs to said body;

a rotatable member rotatably carried by said puppet body between said legs and having a continuous rolling surface for movement upon a surface;

coupling means connected to said rotatable member and including a plurality of crank throws at least two of which are connected to said legs and operative when said two throws are in a predetermined position to position said legs in a vertical standing position and when out of such predetermined position to pivot said legs from such vertical standing position upon rotation of said member;

another means engageable with at least one of said crank throws and operative to position said two crank throws in said predetermined position and thereby position said legs in said vertical standing position; and a control element depending from said puppet body and extending upwardly within said puppet body for such operating of said last mentioned means.

12. A mechanical puppet comprising:

a hollow puppet body having a pair of legs, said body and legs simulating a human form;

pivot means pivotally supporting said legs from within said puppet body;

a relatively thin wheel member rotatably carried by and partially enclosed and partially hidden within the lower portion of said puppet body and extending between said legs, the lowermost portion of which wheel member is located adjacent to and substantially horizontally opposite the lower ends of said legs;

and coupling means interconnecting said legs and said wheel member and operative upon rotation of said wheel member to swingingly pivot said legs about said pivot means.

13. A mechanical puppet comprising:

a hollow puppet body having a pair of legs; means pivotally supporting said legs from within said puppet body;

a first wheel member rotatably carried by and partially enclosed within the lower portion of said puppet body and extending downwardly between said legs, the lower portion of which first wheel member is located adjacent and at substantially the same level as the lower ends of said legs and adapted to make rolling engagement with an upwardly facing supporting surface;

a second wheel rotatably carried within said body and rotatably supported therein for continuous driving engagement with said first wheel member;

and coupling means interconnecting said legs and said second wheel, whereby rotation of said first wheel member effects rotation of said second wheel which, in turn, through said coupling means effects swinging movement of said legs about said pivot means.

14. In a mechanical puppet generally simulating a human form, apparatus comprising:

a hollow body simulating a human torso, said body having an opening at its lower end;

a pair of legs with feet attached to the lower end thereof, extending downwardly through said opening;

pivot means separately pivotally connecting said legs adjacent the upper ends thereof to pivot support means within the lower portion of said body, whereby said legs are separately swingable about said pivot means in a vertical plane a limited distance forwardly and rearwardly of said body;

a first wheel member for movingly supporting said puppet body upon a surface, said wheel member being rotatably attached to the interior of said body and positioned between said legs for rotation in a plane parallel with said vertical plane, with the upper portions thereof extending upwardly through said opening and into said body, and the lower edge thereof being located substantially horizontally opposite the lower ends of said feet;

a leg lever member fixed to the upper portion of each of said legs and extending upwardly in said body above said pivot means;

an elongated, longitudinally extending guide slot in each said leg lever member;

a second wheel member enclosed and rotatably supported within said body, said second wheel being in driving engagement with said first wheel member; and crank means attached to said second wheel member including rotationally opposite crank throws, one each of said throws slidingly drivingly engaging one each of said guide slots in said lever means, whereby rotation of said second wheel member by said first wheel member imparts opposite swinging movement to said levers and thence to said legs.

15. A mechanical puppet in accordance with claim 14 in which said legs include:

an upper leg portion, a lower leg portion, and a foot portion, said upper and lower leg portions being jointed together with limited freedom for swinging motion of the lower leg portion relative to its upper leg portion in said vertical plane for a limited distance rearwardly of substantial longitudinal alignment therewith in a manner simulating a knee joint, and said lower leg portion and said foot portion being jointed together for permitting simultaneous limited motion of said foot portion in the direction of the longitudinal axis of said lower leg portion.

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