

[54] APPENDAGE ANIMATING MEANS FOR
FIGURE TOYS

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[58] Field of Search.....46/119, 142, 148

[56] References Cited

UNITED STATES PATENTS

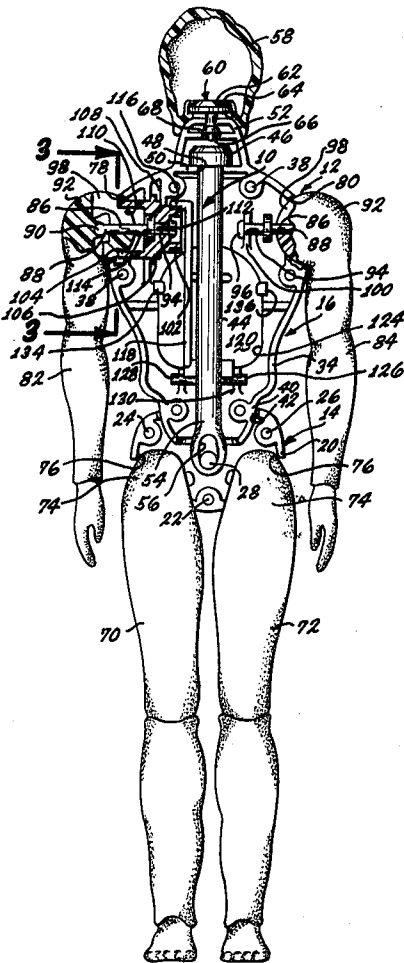
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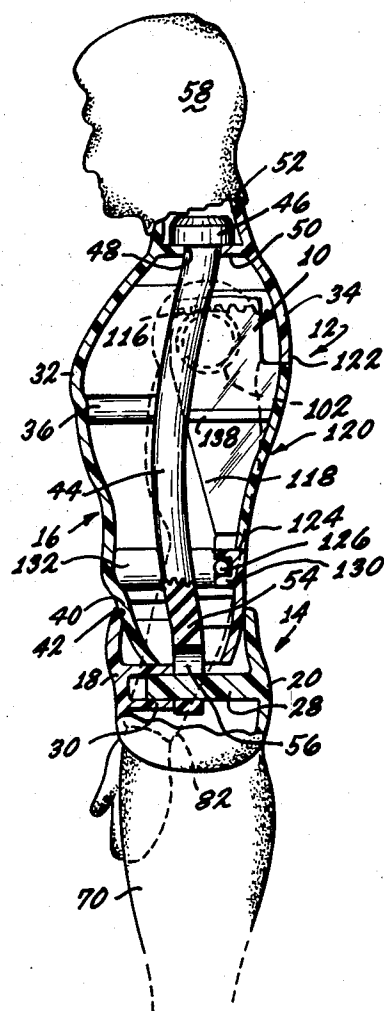
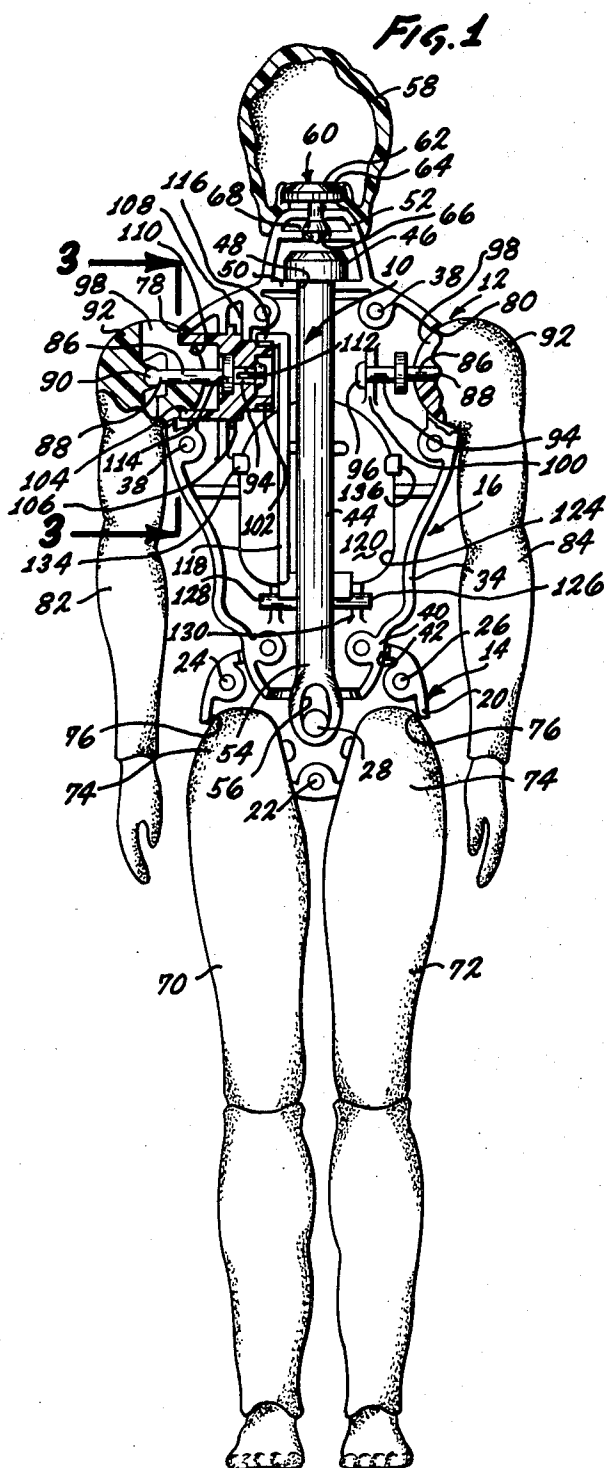
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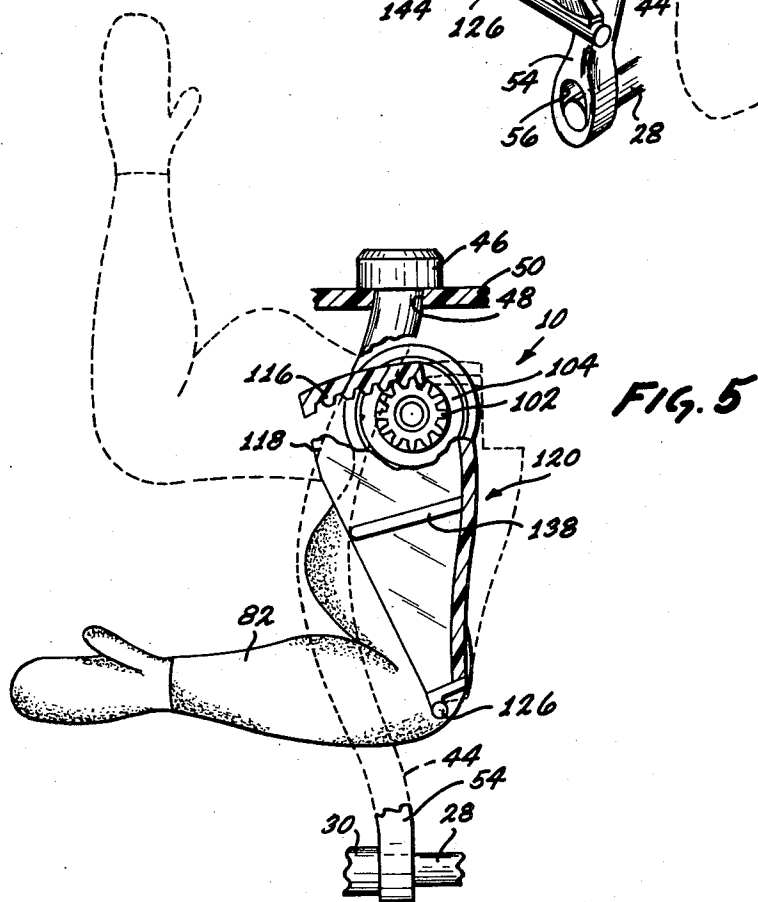
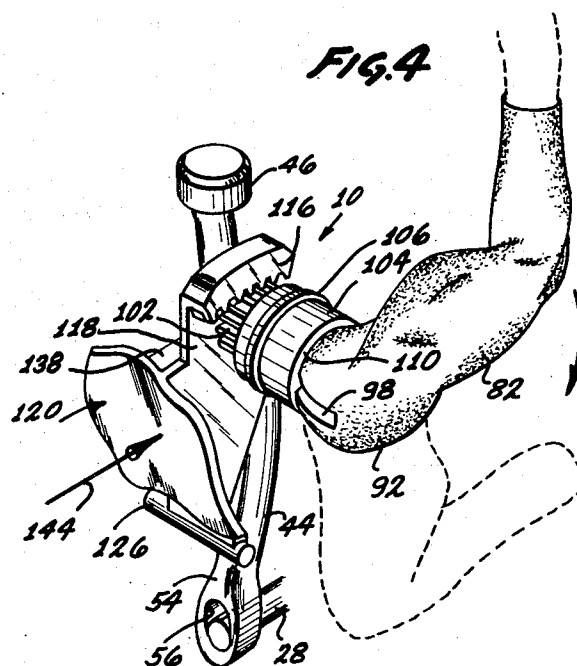
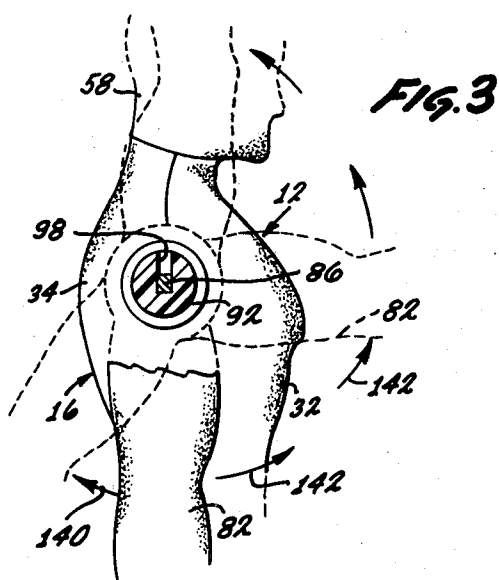
[57] ABSTRACT

A figure toy appendage, such as an arm, is rotatably connected to a pinion gear having a hollow hub frictionally engaged by an appendage portion so that a rack, which is swingably mounted in the figure toy body in driving engagement with the pinion, may be used to swing the appendage by rotating the pinion while leaving the appendage free to be manually swung to different posed positions by overcoming the frictional drag between the hollow hub and the hub-engaging appendage portion.

5 Claims, 5 Drawing Figures







APPENDAGE ANIMATING MEANS FOR FIGURE TOYS

BACKGROUND OF THE INVENTION

The background of the invention will be set forth in two parts.

FIELD OF THE INVENTION

The invention pertains generally to appendage animating means for figure toys and more particularly to a simple, inexpensive device for swinging a doll's arm upon actuation of an arm-swinging button.

DESCRIPTION OF THE PRIOR ART

U.S. Pat. No. 2,974,440 discloses an exemplary animating means for figure toys wherein a clown's arms may be caused to swing by pressing buttons to pull bell cranks connected to the arms.

The present invention exemplifies improvements over appendage animating means of this type.

OBJECTS AND SUMMARY OF THE INVENTION

In view of the foregoing, it is a primary object of the present invention to provide a new and useful appendage animating means for figure toys.

It is another object of the present invention to provide an animating means of the type described for swinging a doll's arm upon actuation of an arm-swinging button including means for overriding the arm-swinging means so that the doll's arm may be manually swung to different posed positions.

According to the present invention, a doll's arm is rotatably connected to a pinion gear having a hollow hub rotatably mounted in an arm opening. The shoulder portion of the arm frictionally engages the hollow hub so that the arm may be swung by rotating the pinion gear with a rack which is swingably mounted in the doll's torso in driving engagement with the pinion gear.

The rack is carried by a plate which comprises a portion of the rear wall of the doll torso and which is swingably mounted in the torso. Resilient means engage the rack-carrying rear wall portion for biasing it into a position where it lies flush with the remaining portion of the rear torso wall. The rack-carrying rear wall portion may be depressed to swing the rack and rotate the pinion gear for swinging the doll's arm. The doll's may be manually posed by overcoming the frictional drag between the shoulder portion and the hollow hub.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings in which like reference characters refer to like elements in the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view, with parts broken away to show internal construction, of a figure toy having an appendage animating means of the present invention;

FIG. 2 is a partial, side elevational view, with parts broken away to show internal construction, of the figure toy of FIG. 1;

FIG. 3 is a partial cross-sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is an enlarged, partial perspective view of the appendage animating means of FIG. 1; and

FIG. 5 is an enlarged cross-sectional view of the appendage animating means of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

Referring again to the drawings, and more particularly to FIGS. 1 and 2, an appendage animating means constituting a presently preferred embodiment of the invention, generally designated 10, is shown in combination with a figure toy 12 having a lower torso portion 14 and an upper torso portion 16.

The lower torso portion 14 includes a front half 18 and a rear half 20 which are connected together by a plurality of pins 22, 24 and 26 on rear half 20 which engage suitable sockets (not shown) on front half 18. Rear half 20 also carries a larger pin 28 which is engaged in a socket 30 on front half 18.

The upper torso portion includes a front half 32 and a rear half 34 which are connected together by a plurality of pins, like the ones shown at 36 on the front half 32, which engage sockets 38 provided on the rear half 34.

The upper torso portion 16 includes a reduced-diameter, midriff portion 40 engaged in the open top 42 of lower torso portion 14 and these portions are connected together by a resilient, rubber-like connector 44 having a headed upper end 46 engaged in an aperture 48 provided in a partition 50 disposed in the upper torso portion 16 at the base of a cylindrical neck 52. Connector 44 includes a lower end 54 which is provided with an aperture 56 which, in turn, may be engaged over pin 28 before it is inserted into cavity 30.

Figure toy 12 also includes a head 58 which is connected to neck 52 by a mushroom pin 60 having a head 62 seated in a cavity 64 provided at the base of head 58 and a button-connector 66 seated in annular channel 68 provided in neck 52. Additionally, figure toy 12 includes a pair of legs 70, 72 having upper ends 74 articulately mounted in leg openings 76 provided in the lower torso portion 14.

Upper torso portion 16 includes a pair of arm openings 78, 80 in which arms 82, 84, respectively, are rotatably mounted by shoulder pins 86 each having a first end 88 which carries a cross-bar, like the one shown at 90 for arm 82, embedded in a bulbous shoulder portion 92 thereof. Each pin 86 includes a second end 94 which is bifurcated and which carries a head 96. Each shoulder 92 is provided with an arcuate slot 98 through which an associated one of the pins 86 extends so that the arms 82, 84 may be swung laterally outwardly away from the upper torso portion 16. Shoulder portion 92 for arm 84 frictionally engages arm opening 80 and is maintained in engagement therewith due to the tensioning of pin 86 by trapping head 96 against a vertical web 100 affixed to the upper torso half 34.

Appendage animating means 10 includes a pinion gear 102 carried by a boss 104 journaled in shoulder

opening 78 by a flange 106 trapped in an annular channel 108 provided in upper torso portion 16. Boss 104 includes an open cylindrical portion 110 which is frictionally engaged by shoulder 92 on arm 82 due to the force exerted by pin 86 which passes through an aperture 112 in boss 104 and is maintained therein by head 96. Pin 86 carries a disc 114 serving as a thrust bearing for pinion gear 102.

Appendage animating means 10 also includes a rack 116 carried by an arm 118 formed integrally with an actuating plate 120, best seen in FIG. 4. Plate 120 is shaped to form a continuation of the rear wall 122 of upper torso portion 16 and is swingably mounted in an opening 124 provided therein. Plate 120 carries a trunion 126 journaled in vertical plates 128, 130 on rear wall 120 and maintained in position therein by suitable fingers, like the one shown at 132 in FIG. 2 extending from front, upper torso half 32.

Plate 120 carries a pair of stops 134, 136 (FIG. 1) which bottom out against rear wall 122 preventing plate 120 from passing beyond rear wall 122 under the influence of the bias imparted by connector 44 due to its engagement with a shelf 138 extending inwardly from plate 120.

Referring now more in particular to FIG. 3, arm 82 may be manually swung rearwardly in the direction of arrow 140 or counterclockwise in the direction of arrows 142 for 360° of rotation by exerting enough force to overcome the friction between shoulder 92 and boss 104, which remains stationary due to the engagement of pinion 102 with rack 116. Thus, it will be apparent to those skilled in the art that the appendage animating means 10 does not interfere with the normal play value of a figure toy wherein the child-user desires to manipulate the arms and legs to different posed positions where the arms and legs will remain until they are again acted upon by an outside force.

Referring now to FIGS. 4 and 5, the appendage animating means 10 may be used to cause figure toy 12 to simulate karate chops by first manually positioning arm 82 in the raised position shown in FIG. 4. Plate 120 may then be moved in the direction of arrow 144 overcoming the bias exerted by connector 44 and moving rack 116 to rotate pinion gear 102 sufficiently to swing arm 82 to the broken line position shown in FIG. 4. The individual parts of appendage animating means 10 will then be in the position shown in solid lines in FIG. 5 whereupon plate 120 may be released and will be returned to the position shown in solid lines in FIG. 4 by connector 44.

While the particular appendage animating means herein shown and described in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of a presently preferred embodiment of the invention and that no limitations are intended to the details of construction or design herein shown and

described other than as defined in the appended claims, which form a part of this disclosure.

What is claimed is:

1. In a figure toy having appendages, a body and an appendage opening in said body, appendage animating means, comprising:

manually swingable rack means pivotally mounted in said body;

gear means engaged by said rack means for rotation thereby;

socket means rotatably mounting said gear means in said appendage opening;

pin means rotatably connecting one of said appendages to said gear means;

shoulder means on said one appendage, said pin means drawing said shoulder means into frictional engagement with said socket means, whereby said appendage will be rotated by said gear and socket means about a first axis; and

an arcuate slot provided in said shoulder through which said pin extends, whereby said appendage may be swung about a second axis relative to said socket means, said second axis being generally perpendicular to said first axis.

2. An appendage animating means as stated in claim 1 wherein said rack means includes a push plate forming a continuation of an outer surface of said body.

3. An appendage animating means as stated in claim 2 including elastic means biasing said push plate to a position where said push plate lies in the same plane as said outer surface.

4. In a figure toy having appendages, a hollow body and an appendage opening in said body, appendage animating means, comprising:

rack means swingably mounted in said body;

gear means engaged by said rack means for rotation thereby;

socket means rotatably mounting said gear means in said appendage opening;

pin means rotatably connecting one of said appendages to said gear means; and

shoulder means on said one appendage, said pin means drawing said shoulder means into frictional engagement with said socket means, whereby said appendage will be rotated by said gear means;

a push plate swingably mounted in said body and forming a continuation of an outer surface of said body and means connecting said rack means to said push plate; and

elastic means biasing said push plate to a position where said push plate lies in the same plane as said outer surface, said body comprising an upper torso portion and a lower torso portion, said elastic means comprising a connector connecting said torso portions together.

5. An appendage animating means as stated in claim 4 wherein said appendage comprises an arm of a doll.

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