July 1, 1969 B. C. MEYER ET AL 3,452,472

MOVABLE JOINT FOR USE IN FIGURE TOYS

Filed Oct. 31, 1966

Fig 1

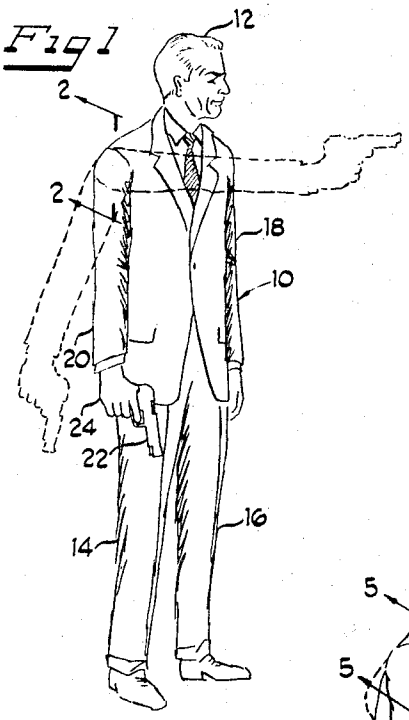


Fig 3

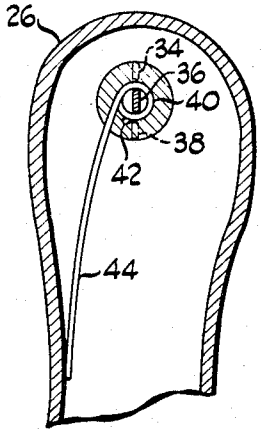


Fig 2

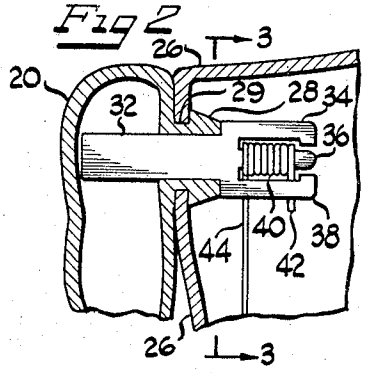


Fig 5

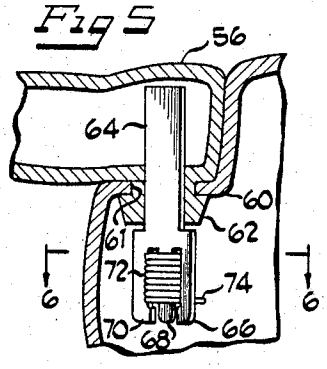


Fig 4

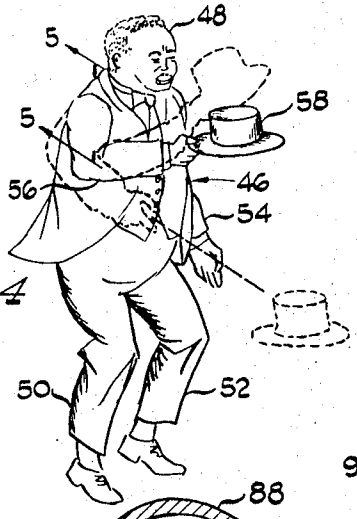
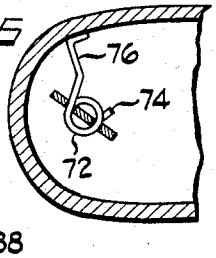


Fig 6



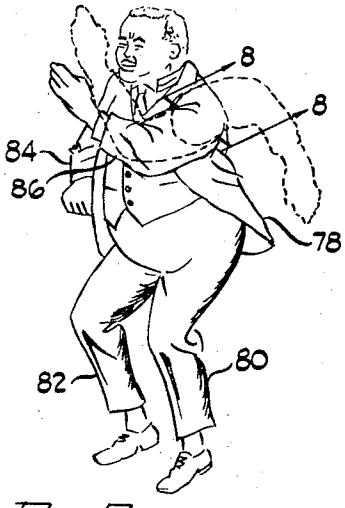


Fig 7

Fig 9

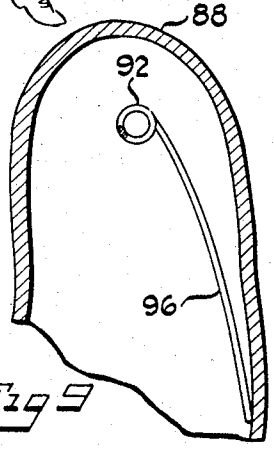
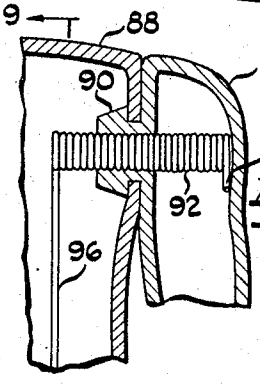


Fig 8



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MOVABLE JOINT FOR USE IN FIGURE TOYS

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U.S. Cl. 46—119 2 Claims

ABSTRACT OF THE DISCLOSURE

An arm joint for a doll figure which enables the arm to be manually moved in one direction and released to effect a quick arm movement in the opposite direction simulating an act characteristic of the represented figure.

This invention relates generally to a figure toy or doll, and in particular to a novel arm-joint for a doll. The novel arm-joint has manually operable means for producing a particular movement of the doll arm.

Toy figures or dolls having the appearances, movements, and characteristics of secret agents, detectives, cowboys, villains and the like have become exceedingly popular in recent years. In order to simulate and portray such characters, the dolls must have a quick arm movement which simulates the drawing and firing of pistols, the raising of guns to firing position, the throwing of objects, the striking of an enemy, etc.

It is the principal object of my invention to provide a simple, practical, low-cost arm-joint which will provide such quick arm movement. A further object is to provide such an arm movement which may be manually operated by a small child, with the means and manner clearly within the comprehension of such a child.

A still further object of my invention is to provide such an arm-joint which is rugged and sturdily constructed and cannot be easily damaged in normal use by a child.

These and other objects and advantages of my invention will become apparent from the following detailed description of a preferred form thereof, and from an inspection of the accompanying drawing in which:

FIGURE 1 is a perspective view of my improved doll, showing the path of movement of the right hand and arm in aiming and firing a pistol;

FIGURE 2 is a vertical cross-section of a portion of the right shoulder and upper arm of the toy figure of FIGURE 1, taken along the line **2**—**2** of FIGURE 1;

FIGURE 3 is a vertical cross-section of the right shoulder of the doll of FIGURE 1, taken along the line **3**—**3** of FIGURE 2;

FIGURE 4 is a perspective view of a doll showing the path of movement of the right hand and arm in throwing an object such as a hard hat;

FIGURE 5 is a vertical cross-section of a portion of the right shoulder and upper right arm of the doll of FIGURE 4 taken along the line **5**—**5** of FIGURE 4;

FIGURE 6 is a horizontal cross-section of a portion of the right shoulder of the doll of FIGURE 4 taken along the line **6**—**6** of FIGURE 5;

FIGURE 7 is a perspective view of a doll showing the path of movement of the right hand and arm in delivering a blow with the hand, such as a karate chop;

FIGURE 8 is a vertical cross-section of a portion of the left shoulder and upper left arm of the doll of FIGURE 7, taken along the line **8**—**8** of FIGURE 7; and

FIGURE 9 is a vertical cross-section of a portion of the left shoulder of the doll of FIGURE 7, taken along the line **9**—**9** of FIGURE 8.

Referring to the doll and arm joint shown in FIGURES 1, 2, and 3, the numeral **10** indicates a doll body having

a head **12**, legs **14** and **16**, and arms **18** and **20**. The body and arms of the doll **10** are hollow and are preferably made of a hard and durable plastic material, numerous types of which are well-known in the art.

The right arm **20** of the doll **10** may be manually moved rearwardly to the position shown in dotted lines in FIGURE 1, by means of the arm-joint shown in FIGURES 2 and 3 hereafter described. Upon release of the right arm **20** when it is in the rearward position shown by the dotted lines, the arm will move quickly to a forward horizontal position as shown by the dotted lines in FIGURE 1. Toy pistol **22** is grasped in the right hand **24** of the doll of FIGURE 1. The quick forward movement of the right arm and hand simulates the raising of the pistol to firing position.

The doll of FIGURE 1 is dressed to give the appearance of a secret agent or detective. A child, by pulling the right arm of the doll rearwardly and releasing it, can cause the doll to simulate the action of a secret agent in raising and firing his pistol.

The arm joint providing the arm movement above described is illustrated in FIGURES 2 and 3 of the drawing. As shown in FIGURE 2, the right shoulder portion **26** of the body of the doll has an opening in its vertical wall through which extends a flanged button **28** on the right arm **20**. The groove **29** in the button **28** receives the vertical wall of the shoulder. The button **28** is free to rotate and this rotary movement provides rearward and forward movement for the arm.

Extending through the flanged button from the interior of the arm is a blade member **32**. This blade extends through a slot in the button **28** so that rotation of the arm causes rotation of the blade **32**. The blade **32** extends into the hollow shoulder portion **26** and has an end portion in the form of a fork with three times **34**, **36** and **38**. Positioned around tine **36** is a coil spring **40**, one end of which **42** extends against tine **38** which acts as a stop therefor. The other end **44** of spring **40** extends downwardly and against the back wall of the shoulder **26**.

From the foregoing, it will be seen that when the right arm **20** of the doll of FIGURE 1 is manually moved a small distance rearwardly, from a neutral position shown in solid lines in FIGURE 1 whereat spring **40** is relaxed, to the lower dotted line position shown therein, the blade **32** and the tines **34**, **36** and **38** will be rotated. Coil spring end **42** will be moved clockwise as shown in FIGURE 3 and the end **44** of the spring will be held against the rear wall **26** of the doll shoulder. This will compress coil spring **40**. Upon release of the doll's arm **20** the coil spring **40** will be released and the spring will cause the arm to swing quickly forward through the solid line position where upon the moment of inertia of the moving arm will cause it to swing a substantial additional distance. The coil spring can be adjusted to regulate the extent of movement of the arm. As indicated in FIGURE 1, it is preferable to have the right arm move to a substantially horizontal forward position, such as shown in the upper dotted lines in FIGURE 1. Preferably, the weight of the arm causes it to return from the horizontal forward position to the vertical solid line position, although depending upon the friction at button **28**, the user may be required to manually return the arm to the vertical solid line position.

The doll figure and arm joint shown in FIGURES 4, 5 and 6 will next be described. The numeral **46** identifies the doll shown in FIGURE 4, with a head **48**, legs **50** and **52** and arms **54** and **56**. The body and arms of the doll are hollow and are preferably made of a hard, durable plastic material. The right arm **56** of the doll is bent at the elbow and extends in front of the chest of the doll. The arm **56** may be manually moved inwardly and closer to

the body as indicated in the dotted lines in FIGURE 4. Upon release of the arm **56** in this position the arm will swing quickly to an outward position as indicated in dotted lines of FIGURE 4. This quick movement may be utilized to cause an object such as the hat **58** held in the right hand to be thrown outwardly from the doll.

The doll of FIGURE 4 is dressed and has facial characteristics to give the appearance of a villain. The arm action described and the throwing of the hat simulate destructive acts by the doll character. The arm joint providing the described arm movement is illustrated in FIGURES 5 and 6 of the drawing. As shown in FIGURE 5 the right shoulder is formed with a horizontal shelf portion **60**. In this shelf portion of the shoulder is an opening **61** through which extends a flanged button **62** integral with the upper portion of the right arm **56**. The flanged button **62** and the arm **56** rotate in the opening in the shelf **60** and this rotary movement gives the arm the play or freedom to move as described above in connection with the dotted portions in FIGURE 4.

A blade **64** extends from the interior of the arm **56** downwardly through a slot in button **62**. The lower end of the blade **64** is in the form of a fork with tines **66**, **68** and **70**. The blade and fork tines are similar to those described above in connection with FIGURE 2. A coil spring **72** is positioned around the center tine **68** with one end **74** of the coil spring resting against tine **66** which forms a stop therefor. The other end **76** of spring **72**, as best seen in FIGURE 6, extends against the back wall of the right shoulder.

When the right arm **56** of the doll of FIGURE 4 is manually moved rearwardly against the chest of the doll as shown by the upper dotted lines of FIGURE 4, the blade **64** and its tines, **66**, **68** and **70** are rotated counter-clockwise, as viewed in FIGURE 6. This moves the spring end **74** counter-clockwise while the other end of the spring **76** is held by the rear wall of the doll's shoulder. This action will compress coil spring **72**. Upon the release of arm **56** the spring will cause the arm to swing quickly and forcibly outwardly of the doll's body. This action will cause the hat **58** to be released from the doll's hand and forcibly thrown in a direction away from the doll.

Next, the doll and arm joint shown in FIGURES 7, 8 and 9 will be described. The doll in FIGURE 7 is generally indicated by the numeral **78** with legs **80** and **82** and arms **84** and **86**. The body and arms of the doll **78** are hollow and preferably made of a hard and durable plastic material. The left arm **86** of the doll may be manually moved upwardly as shown by the upward dotted lines in FIGURE 7. Upon release of the arm in the upper position the arm and hand will move rapidly and forcibly downwardly to simulate a karate chop.

Like the doll of FIGURE 4 it has the appearance and characteristics and dress of a villain. The arm joint providing the karate chop of the left arm and hand is shown in FIGURES 8 and 9. The construction is similar to that shown in FIGURES 2 and 3. The left shoulder **88** has an opening in the outside vertical wall thereof through which extends a flanged button **90** integral with the upper left arm **86**. The flanged button **90** rotates within the opening in the shoulder wall and this flanged head not only secures the arm to the shoulder, but permits the arm to rotate to provide the path of arm movement (karate chop) described above in connection with FIGURE 7. A coil spring **92** extends through an opening in the button **90** with one end **94** of the spring positioned against the outside wall of the arm **86** and the other end **96** positioned against the back wall of the shoulder **88**, as best seen in FIGURE 9. Manual movement of the left arm **86** to the upper position shown in FIGURE 7 will cause coil spring **92** to be compressed. Upon release of the arm the spring **92** will cause the arm to move rapidly and forcibly downwardly to the dotted line position shown in FIGURE 7 to simulate a karate chop.

Many changes and variations in the arm movement and the simulated effects may be achieved with the arm joint mechanism above described. Various modifications and changes in design and construction will be apparent to those skilled in the art and it is not intended to be restricted to the details of the preferred form shown and described herein, except as defined in the appended claims.

What is claimed is:

1. In a toy figure, an arm joint comprising

(1) a shoulder portion with a hollow interior,

(2) a rotary arm,

(3) a flanged button extending from said arm into the hollow portion of said shoulder, said flanged button having a groove receiving the wall of the shoulder portion to provide support for said arm and to permit rotary movement of said arm,

(4) a blade fixed to said arm and extending through said button into said hollow shoulder portion,

(5) a spring member fixed to said blade within said hollow shoulder for imparting to said arm a quick movement through a substantial distance in a given direction when the arm is manually moved a small distance in the opposite direction and released.

2. In a toy figure, an arm joint comprising

(1) a shoulder portion with a hollow interior,

(2) a rotary arm,

(3) a flanged button extending from said arm into the hollow portion of said shoulder, said flanged button having a groove receiving the wall of the shoulder portion to provide support for said arm and to permit rotary movement of said arm,

(4) a blade fixed to said arm and extending through said button into said hollow shoulder portion, said blade having three tines on its end within said shoulder portion,

(5) a coil spring mounted on the middle tine of said blade, with one end of said spring positioned against another tine and the other end of said spring positioned against a wall of said shoulder portion, said spring providing a quick movement to said arm in a given direction when the arm is manually moved in the opposite direction and released.

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