

[54] **ANIMATED TOY DOLL**

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[22] Filed: **Sept. 23, 1974**

[21] Appl. No.: **508,488**

[52] U.S. Cl. **46/119; 46/148**

[51] Int. Cl.² **A63H 11/00; A63H 13/06**

[58] Field of Search **46/118, 119, 128, 142, 46/148**

[56] **References Cited**

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[57] **ABSTRACT**

A toy doll has one movable arm adapted to be moved automatically in a rapid downward chopping motion, and a movable leg adapted to be moved automatically in a downward and upward kicking motion. The arm is manually set in a raised position and is held cocked in such raised position under tension of a spring by means of a ratchet mechanism. Depression of an actuating button on the doll body releases the ratchet mechanism to cause the downward chopping motion of the arm by force of said spring. The leg is similarly manually set in a rearwardly elevated position under tension of the same spring by means of another ratchet mechanism which is released by depression of a second actuating button to cause the kicking motion of the leg.

10 Claims, 11 Drawing Figures

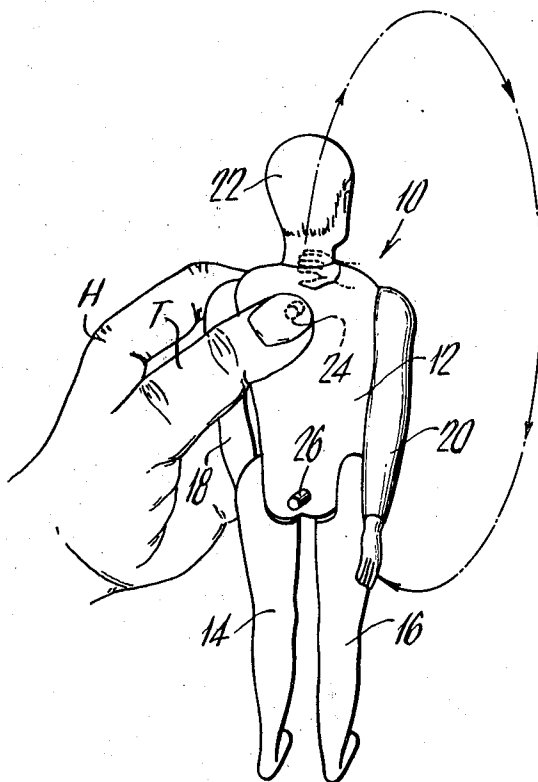


Fig. 1.

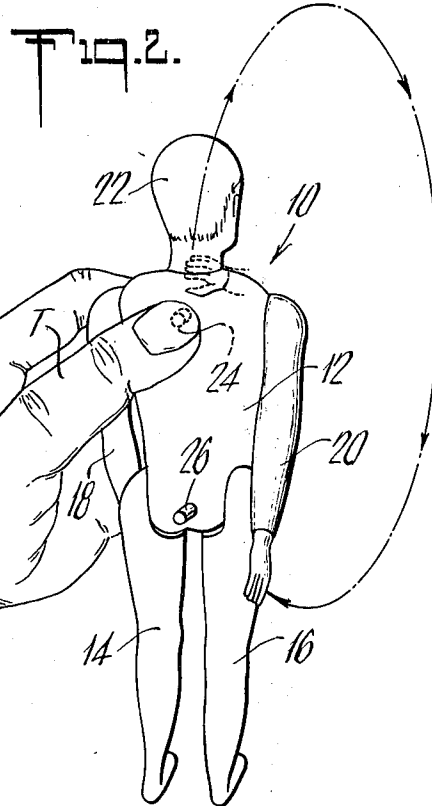
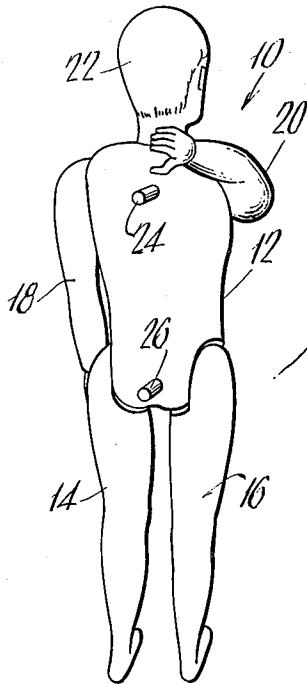


Fig. 3.

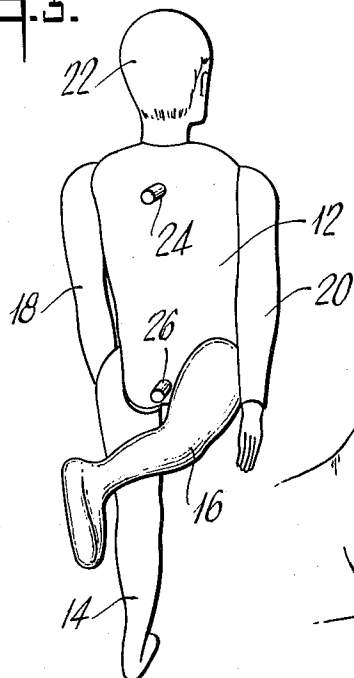
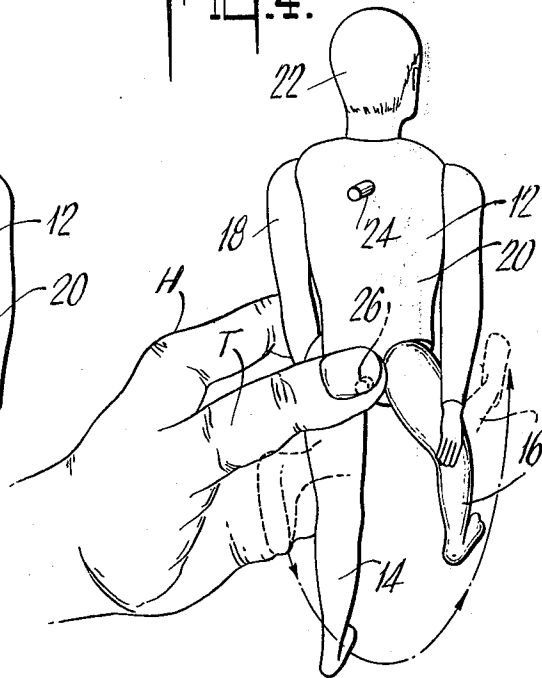
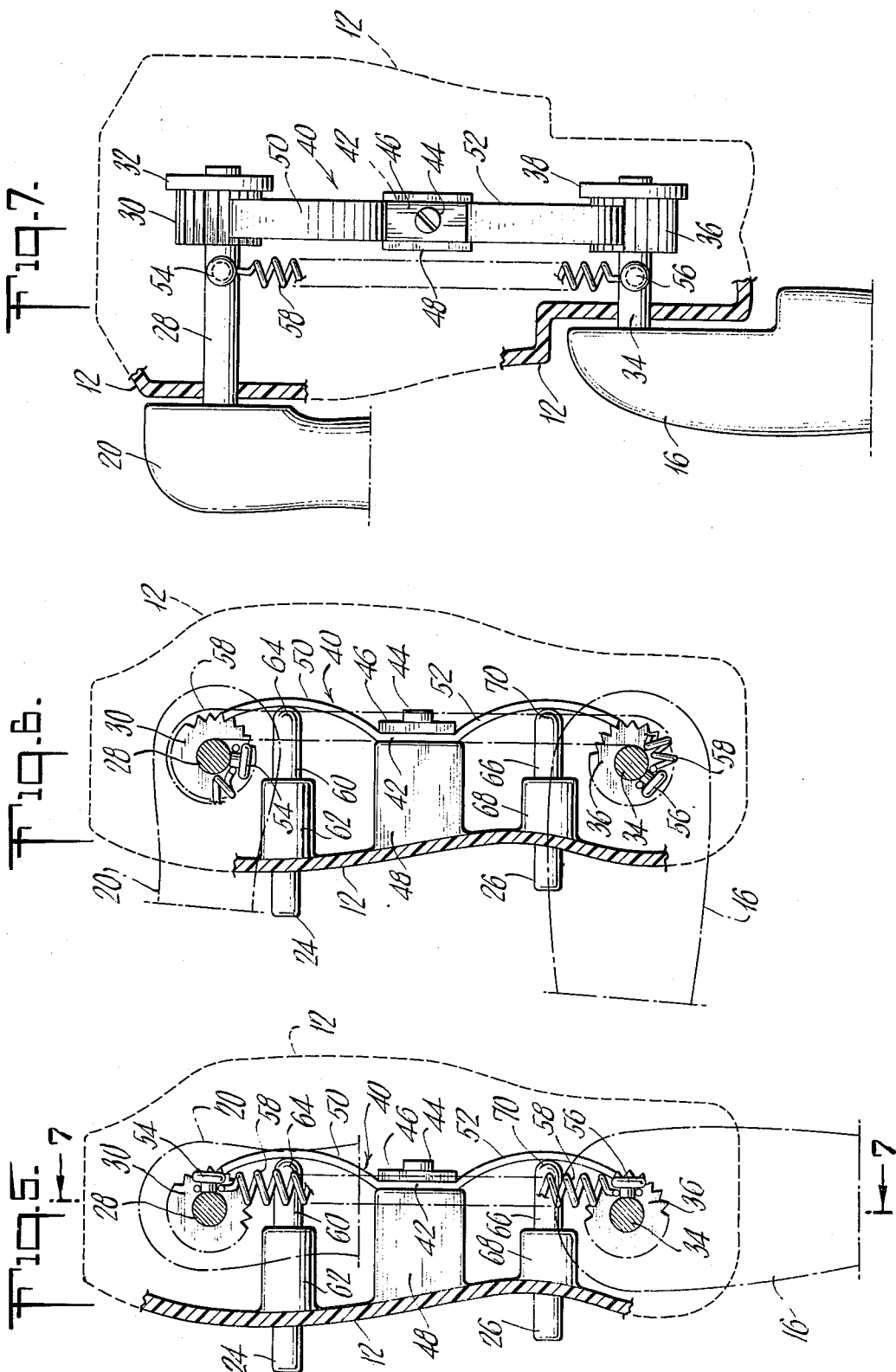
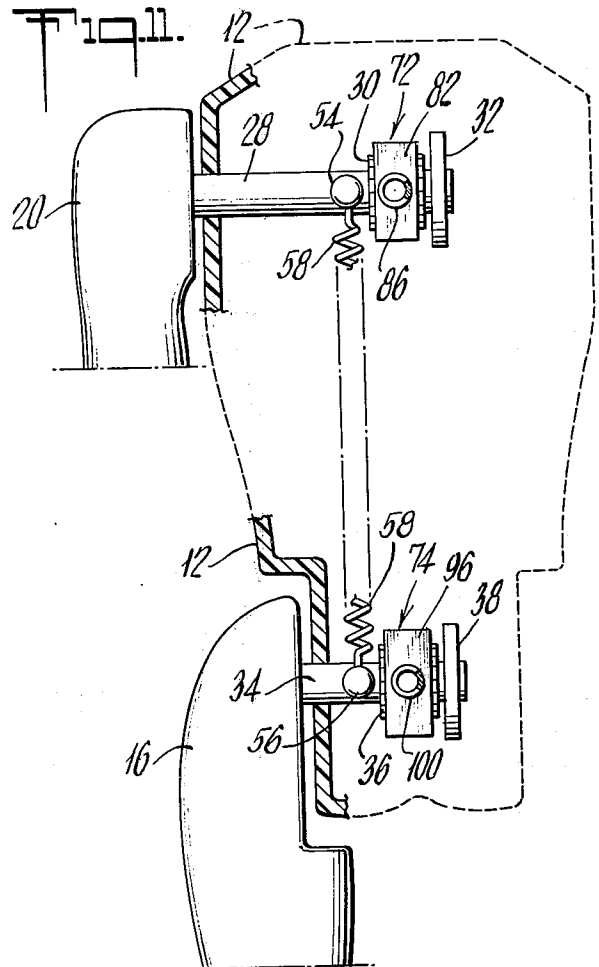
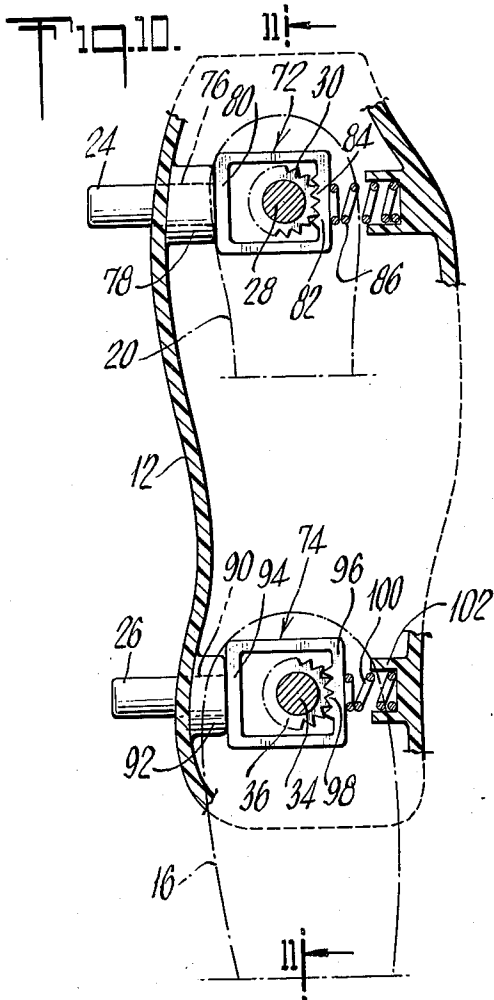
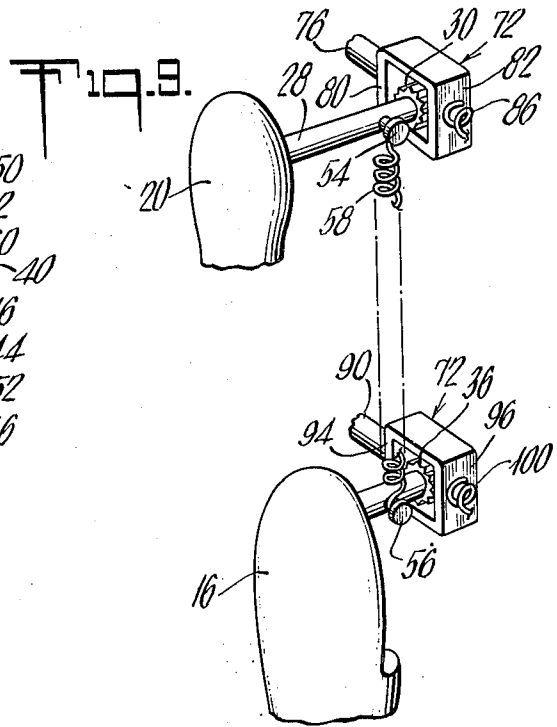
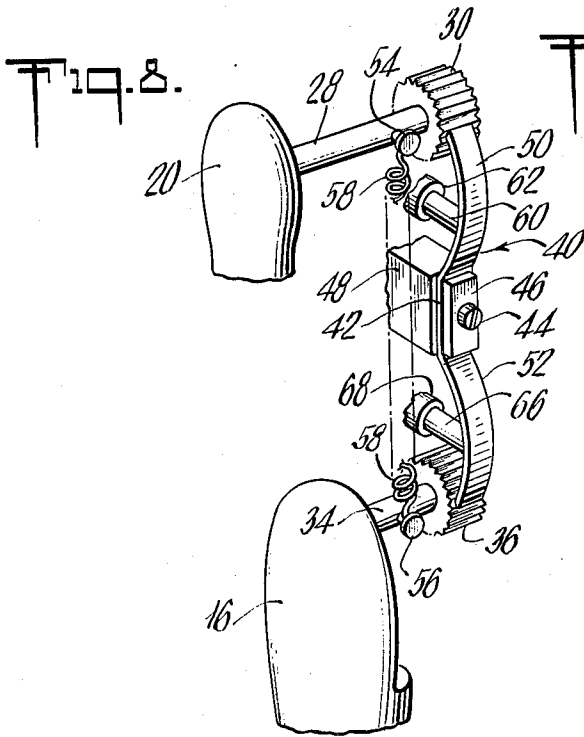


Fig. 4.







ANIMATED TOY DOLL

The present invention relates to improvements in animated toy figures, such as dolls, and in particular to a doll having a movable arm and a movable leg, and a novel mechanism for causing the arm to describe a downward chopping motion and the leg to describe an upward kicking motion.

The doll of the present invention is intended to simulate the chopping and kicking motions which are well known in the popular martial art form of Kung Fu, thus providing entertainment and varied play value to the child user.

It is an object of the present invention to provide an animated doll of the character described which incorporates a mechanism which can be easily operated by a child through the simple manipulations of turning the arm or leg to a cocked position, and then releasing it by depression of a button.

Another object of the invention is the provision of an animated doll of the character described which is composed of few parts and is economical in manufacture.

A further object of the invention is the provision of an animated doll of the character described in which both the arm and leg movement is effected by force of a single spring, although the arm and leg are individually and selectively releasable for movement.

In accordance with the invention, there is provided an animated toy such as a doll which comprises a body including a hollow torso portion and an arm and a leg individually mounted for pivotal movement on the torso portion in such a manner that the arm may be moved between an elevated position and a depending position relative to the torso portion in a downward chopping motion, while the leg may be moved between a rearwardly elevated position and a forwardly extended position relative to the torso portion in an upward kicking motion. The arm carries a rigidly mounted pivot pin journaled in the torso portion and extending into the interior thereof, and a first ratchet wheel secured to the pivot pin within the doll body. The leg also carries a rigidly mounted pivot pin journaled in the torso and extending into the interior thereof, and a second ratchet wheel secured to the pivot pin within the doll body and aligned with the first ratchet wheel.

A coil spring is connected at one end to the pivot pin of the arm and at its other end to the pivot pin of the leg. A first pawl member is biased into engagement with the first ratchet wheel and holds the arm cocked in its elevated position against the tension of the coil spring, while a second pawl member is biased into engagement with a second ratchet wheel and holds the leg cocked in its rearwardly elevated position against the tension of the coil spring. Manually actuatable means are provided for individually and selectively moving the pawl members out of engagement with the respective ratchet wheels, whereby to release the arm and leg for return movement from their cocked positions.

Additional objects and advantages of the invention will become apparent during the course of the following specification when taken in connection with the accompanying drawings, in which:

FIG. 1 is a rear perspective view of a doll made in accordance with the invention, with the movable arm thereof shown in elevated and cocked position;

FIG. 2 is a rear perspective view similar to FIG. 1, showing the path of travel of the doll arm as it is re-

leased from cocked position to its depending position;

FIG. 3 is a rear perspective view similar to FIG. 1 but showing the movable doll leg cocked in its rearward elevated position;

FIG. 4 is a rear perspective view similar to FIG. 3 but showing the path of movement of the leg as it is released from its cocked position and moves to a forwardly-extended position;

FIG. 5 is a longitudinal section through the torso portion of the doll showing the internal structure thereof, with the movable arm and movable leg in their normal depending positions;

FIG. 6 is a longitudinal section similar to FIG. 5, but showing the positions of the doll parts with the movable arm and movable leg both cocked in their elevated positions;

FIG. 7 is a section as viewed along line 7—7 of FIG. 5;

FIG. 8 is a perspective view showing the arm and leg actuating mechanism of the embodiment of FIGS. 5—7, with portions thereof broken away for clarification;

FIG. 9 is a perspective view of an alternative embodiment of operating mechanism according to the invention, with portions thereof broken away;

FIG. 10 is a longitudinal section through a doll incorporating the mechanism shown in FIG. 9; and

FIG. 11 is a section taken along line 11—11 of FIG. 10.

Referring in detail to the drawings, there is shown in FIGS. 1—4 a toy figure or doll 10 made of a rigid plastic material with a torso portion 12, a pair of legs 14 and 16, a pair of arms 18 and 20, and a head 22. The arms and legs are normally in the position of FIG. 2 in which both arms 18 and 20 hang down straight at the sides of the doll and both legs 14 and 16 extend parallel to the longitudinal axis of the doll body and are positioned to support the doll standing on a surface.

While the left arm 18 and left leg 14 are fixed to the torso 12 in the position shown in FIG. 2, the right arm 20 and right leg 16 are movably mounted on said torso. The right arm 20 may be pivoted upwardly to a raised position above the shoulder, as shown in FIG. 1, and held cocked under spring tension, in a manner to be presently described. Upon depression of a button 24, the cocked arm 20 is released to swing in a downward arc, as shown in FIG. 2, simulating the chopping motion of Kung Fu and other martial arts. In a similar fashion, the left leg 16 may be swung rearwardly and cocked under spring tension in the position shown in FIG. 3. Upon depression of a button 26, the cocked leg 16 is released to swing forwardly and upwardly, as shown in FIG. 4, thus simulating the Kung Fu kicking motion.

FIGS. 5 to 8 show a preferred embodiment of the internal doll mechanism which provides the aforementioned arm and leg motions. As shown in FIG. 7, the arm is secured to a cylindrical pivot pin 28 which is journaled in the wall of torso portion 12 and extends inwardly of the hollow interior of said torso portion. Secured to the pin 28 and located centrally within the interior of the torso portion 12, is a ratchet wheel 30, and a flange 32 is affixed to the free end portion of pin 28, in abutment with the ratchet wheel 30.

The leg 16 is similarly provided with a pivot pin 34 which is journaled in the wall of torso portion 12. A ratchet wheel 36 is secured to the pin 34 and is centrally located within the interior of the torso portion, in

alignment with the ratchet wheel 30. A flange 38 is affixed to the free end portion of pin 34 and abuts the ratchet wheel 36.

A flat strip 40 of spring material is provided to control the movement of the ratchet wheels 30 and 36, and the respective pivot pins 28 and 34 to which they are affixed. The spring strip 40 has a planar central portion 42 which is rigidly mounted by a screw 44 and overlying washer 46 on a boss 48 which is formed integrally with the inner wall surface of torso portion 12. The strip 40 has a curved upper portion 50, the free end edge of which engages the teeth of ratchet wheel 30. The curved spring portion 50 acts as a pawl which permits the ratchet wheel 30 to rotate in a counterclockwise direction, as viewed in FIGS. 5 and 6, but restrains the ratchet wheel 30 from turning in a clockwise direction. The strip 40 also has a curved lower portion 52, the free end edge of which engages the teeth of ratchet wheel 36, and serves as a pawl to permit the ratchet wheel 36 to turn in a clockwise direction but to restrain it from turning in a counterclockwise direction.

The pivot pins 28 and 34 are integrally formed with respective aligned studs 54 and 56 which project perpendicularly and horizontally from the perspective pins 28 and 34 when the arm 20 and leg 16 are in their normal depending positions shown in FIGS. 7 and 8. The studs 54 and 56 are connected under slight tension by a coil spring 58, the ends of which are affixed to said studs.

The upper button 24 has an integral, elongated extension shank 60 of cylindrical shape which extends slidably through a sleeve 62 formed integrally on the inner wall surface of torso portion 12. The shank 60 has a rounded tip 64 which engages the curved upper portion 50 of the spring 40. Similarly, the lower button 26 has an integral extension shank 66 extending slidably through a sleeve 68 formed integrally on the inner wall surface of torso portion 12, the shank 66 having a rounded tip 60 which engages the curved lower portion 52 of spring 40.

In operation of the doll 10, the movable arm 20 is manually turned in counterclockwise direction from its normal depending position through an angle of approximately 270° to the position shown in FIG. 1 in which it overlies the shoulder of the doll. This position of the arm 20 is also shown in FIG. 6, wherein it will be seen that the stud 54 has carried the end of spring 58 around the pivot pin 28, so that the spring 58 is highly tensioned. The edge of the curved portion 50 of flat spring 40 engages a tooth of ratchet wheel 30 to prevent reverse rotation of the latter, and thus holds the arm 20 in a cocked elevated position against tension of the coil spring 58.

To release the arm 20, the button 24 may now be manually depressed, causing the tip 64 of extension shank 60 to press the curved spring portion 50 out of engagement with the ratchet wheel 30. The ratchet wheel 30 is thus freed for rotation in a clockwise direction, under the force of tensioned coil spring 58, and the arm 20 turns rapidly in a clockwise direction back to its normal depending position. In such rapid movement, the arm describes a sharp downward chopping motion, indicated by the arrow in FIG. 2, which motion resembles a Kung Fu chop.

To obtain a kicking motion, the movable leg 16 is manually turned rearwardly and upwardly in a clockwise direction to the elevated position shown in FIG. 3.

In moving to this elevated position, the leg 16 turns the ratchet wheel 36 in a clockwise direction, causing stud 56 to draw the lower end of coil spring 58 around the pivot pin 34 and thus tension coil spring 58. The edge of the curved portion 52 of flat spring 40 engages a tooth of ratchet wheel 36 to prevent reverse rotation thereof, and the leg 16 is thus held in cocked elevated position against tension of the coil spring 58. When the lower button 26 is subsequently depressed, the tip 70 of extension shaft 66 presses the curved spring portion 52 out of engagement with ratchet wheel 36, thus freeing the ratchet wheel 36 for rotation in a counterclockwise direction under the force of the tensioned coil spring 58. The leg 16 thus turns rapidly in a counterclockwise direction back to its normal depending position, and the momentum of such rapid movement carries the leg 16 through said depending position to an elevated position forwardly of the doll body as shown by the arrow in FIG. 4. The rapidly moving leg therefore describes an upwardly kicking motion simulating a Kung Fu kick.

FIGS. 9 to 11 illustrate an alternative embodiment of actuating mechanism which may be incorporated in the doll 10. In this embodiment, the spring 40 is eliminated, and individual pawl members 72 and 74 are associated with the respective ratchet wheels.

In the embodiment of FIGS. 9 to 11, the upper button 24 has a shorter extension shank 76 which extends slidably through a sleeve 78 and is secured or formed integrally with the pawl member 72. The latter comprises a rectangular housing having an end wall 80 secured to the shank 76, and an opposite end wall 82 having teeth 84 formed on the inner surface thereof. The pivot pin 28 extends through the rectangular housing of pawl member 72, and the ratchet wheel 30 is contained therein. A coil spring 86 is mounted at one end in a seat 88 formed integrally with the wall of torso portion 12, the other end of spring 86 abutting the end wall 82 of pawl member 72 and normally urging the latter in a left-hand direction, as viewed in FIG. 10, so that the teeth 84 engage the teeth of ratchet wheel 30.

The lower button 26 is also provided with a short extension shank 90 which extends slidably through a sleeve 92 and carries the pawl member 74. The latter comprises a rectangular housing having an end wall 94 secured to the shank 90, and an opposite end wall formed with teeth 98. The pivot pin 34 extends through the interior of the rectangular housing of pawl member 74, with the ratchet wheel 36 contained within said housing. A coil spring 100 is mounted at one end in a seat 102 formed integrally with the wall of torso portion 12, the opposite end of said spring 100 abutting the end wall 96 of pawl member 74 and normally urging the latter in a left-hand direction, as viewed in FIG. 10, so that the teeth 98 engage the teeth of ratchet wheel 36.

In the normal depending position of the arm 20, the latter may be turned manually in a counterclockwise direction to the elevated position shown in FIG. 1, in which it overlies the shoulder of the doll. In such movement, the ratchet wheel 30 is also turned in a counterclockwise direction, the rectangular housing or frame 82 of pawl member 72 moving slightly to the right, as viewed in FIG. 10, against the tension of spring 86, to permit passage of the teeth of ratchet wheel 30 past the teeth 84 of frame 82. If desired, the button 24 may be depressed while the arm 20 is turned, to release the

ratchet wheel 30 from the teeth 84 and thereby facilitate such turning movement. When the arm 20 is fully elevated, the spring 86 urges the frame 82 in a left-hand direction to cause teeth 84 to grip the teeth of ratchet wheel 30, thereby holding the arm 20 cocked in the elevated position of FIG. 1. To produce the downward chopping motion of the arm, the user depresses the button 24, causing the extension shaft 76 to carry the housing or frame 82 in a right-hand direction until the teeth 84 are out of engagement with the ratchet wheel 30. The tensioned spring 58 now operates to return the arm 20 rapidly to its depending position.

In turning the leg 16 manually to its rearwardly elevated position of FIG. 3, the leg is turned in a clockwise direction, and the housing or frame 96 yields slightly to the right, as viewed in FIG. 10, against the action of spring 100 to permit the teeth of ratchet wheel 36 to pass the teeth 98 of frame 96. In the cocked condition of the leg 16, the teeth 98 grip the teeth of ratchet wheel 36 under tension of spring 100, retaining the leg elevated until it is released by depression of button 26.

While preferred embodiments of the invention have been shown and described herein, it is obvious that numerous omissions, changes and additions may be made in such embodiments without departing from the spirit and scope of the invention.

What is claimed is:

1. An animated toy comprising a doll body including a hollow torso portion, an arm and a leg mounted for pivotal movement on said torso portion and characterized in said arm being moveable between a retracted forward projecting elevated position and a depending advanced position relative to said torso portion in a downward chopping motion, said leg being moveable between a rearwardly, retracted elevated position and an advanced forwardly extended position relative to said torso portion in an upward forwardly kicking motion, spring means biasing said arm and said leg to their respective advanced positions, first retaining means adapted to releasably hold said arm cocked in its retracted elevated position against the tension of said spring means, said retaining means adapted to releasably hold said leg cocked in its retracted rearwardly elevated position against the tension of said spring means, first manually-actuable release means for selectively disengaging said first retaining means to release said arm for movement to its advanced depending position under the force of said spring means, and said manually-actuable release means for selectively disengaging said second retaining means to release said leg for movement to its advanced forwardly extended position under the force of said spring means.

2. An animated toy according to claim 1 in which said arm has a rigidly mounted pivot pin journaled in said torso portion and extending into the interior thereof, and a first ratchet wheel secured to said pivot pin within the doll body, and said leg has a rigidly mounted pivot pin journaled in said torso portion and extending into the interior thereof, and a second ratchet wheel secured to said pivot pin within said doll body and aligned with said first ratchet wheel.

3. An animated toy comprising a doll body including a hollow torso portion, an arm and a leg mounted for pivotal movement on said torso portion and characterized in said arm being movable between an elevated retracted position and a depending advanced position relative to said torso portion in a downward chopping mo-

tion and having a rigidly mounted pivot pin journaled in said torso portion and extending into the interior thereof and a first ratchet wheel secured to said pivot pin within said doll body, said leg being moveable between a rearwardly retracted elevated position and a forwardly extended advanced position relative to said torso portion in an upward, forwardly kicking motion and having a rigidly mounted pivot pin journaled in said torso portion and extending into the interior thereof and a second ratchet wheel secured to said latter pivot pin within said doll body and substantially aligned with said first ratchet wheel, spring means biasing said arm and said leg toward respective retracted positions, first retaining means adapted to hold said arm cocked in its elevated position against the tension of said spring means and including said first ratchet wheel and a first pawl member having a biased engagement with said first ratchet wheel, said retaining means adapted to hold said leg cocked in its rearwardly elevated position against the tension of said spring means and including said second ratchet wheel and a second pawl member having a biased engagement with said second ratchet wheel, first manually actuable for selectively disengaging said first pawl member from said first ratchet wheel to release said arm for movement to its depending position under the force of said spring means, and second manually actuable release means for selectively disengaging said second pawl member from said second ratchet wheel to release said leg for movement to its forwardly extended position under the force of said spring means.

4. An animated toy according to claim 3 in which said spring means comprises a coil spring connected at one end to the pivot pin of said arm, and at the other end to the pivot pin of said leg.

5. An animated toy according to claim 4 in which said first release means comprises a first finger piece projecting from said torso portion and slidable mounted therein, said finger piece having an extension portion extending within the interior of said doll body and engaging said first pawl member, and in which said second release means comprises a second finger piece projecting from said torso portion at a point remote from said first finger piece and slidably mounted in said torso portion, said second finger piece having an extension portion extending within the interior of said doll body and engaging said second pawl member.

6. An animated toy according to claim 4 in which the ends of said coil spring are mounted tangentially on the respective pivot pins, whereby movement of either said movable arm or movable leg to its elevated position will cause the adjacent end of said coil spring to wind around its respective pivot pin to tension said coil spring.

7. An animated toy according to claim 5 in which said first and second pawl members each comprise a curved strip spring rigidly mounted at one end on the torso portion of said doll body and having a free end normally engaged with the respective ratchet wheel.

8. An animated toy according to claim 7 in which the extension portions of said finger pieces engage the respective curved strip springs in positions to push the free ends of said springs out of engagement with said ratchet wheels when said finger pieces are depressed.

9. An animated toy according to claim 5 in which said first and second pawl members each comprise an open frame having teeth on one surface thereof, a respective ratchet wheel being located within each of said frames, and means biasing said frames in a direction to engage said teeth with the ratchet wheel therein.

10. An animated toy according to claim 9 in which the extension portions of said finger pieces are connected to said frames.

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