

July 1, 1969

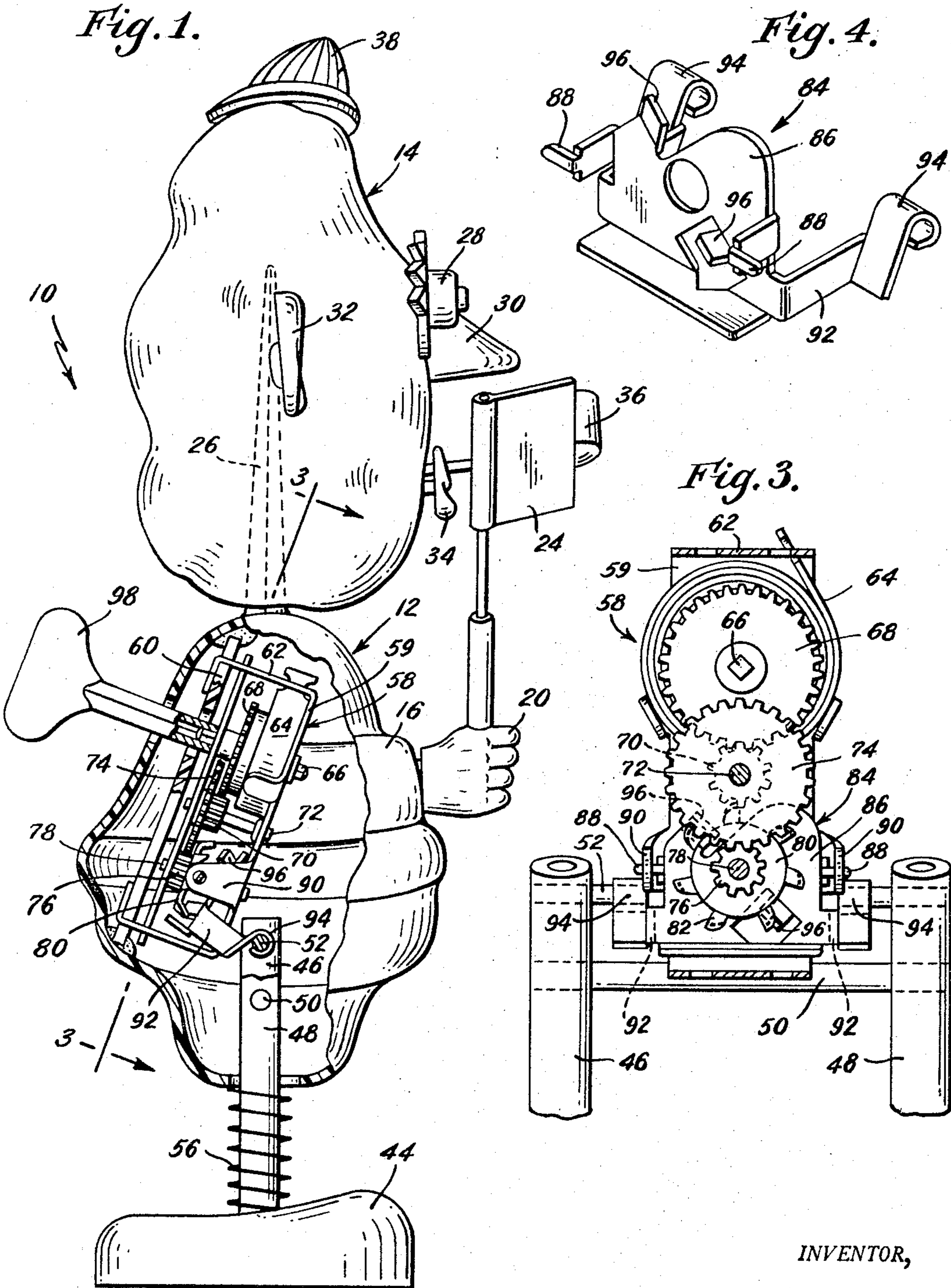
F. CONVERTINE

3,452,473

TOY FIGURE HAVING VERTICAL RECIPROCATING MOVEMENT

Filed Dec. 5, 1966

Sheet 1 of 3



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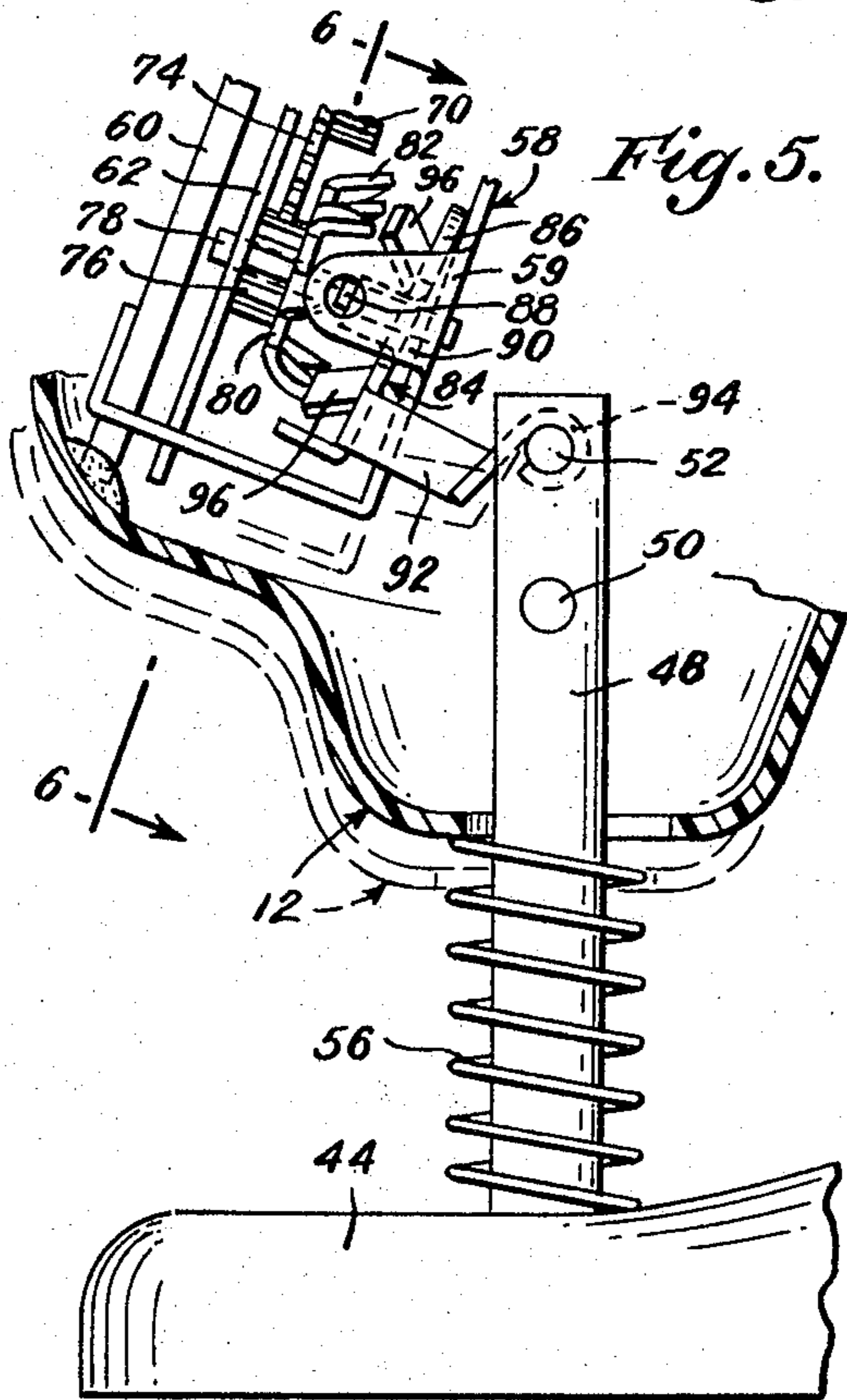
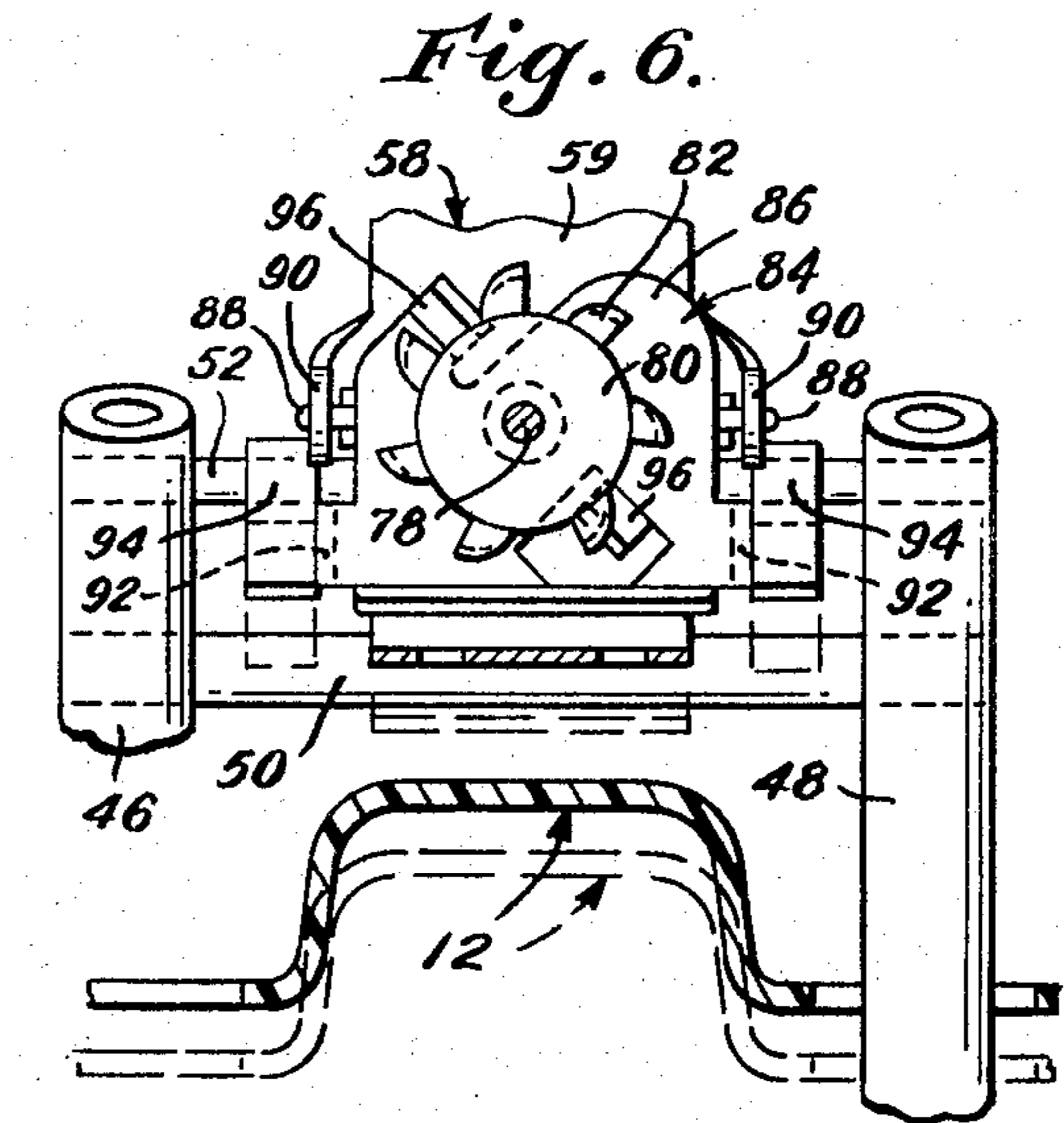
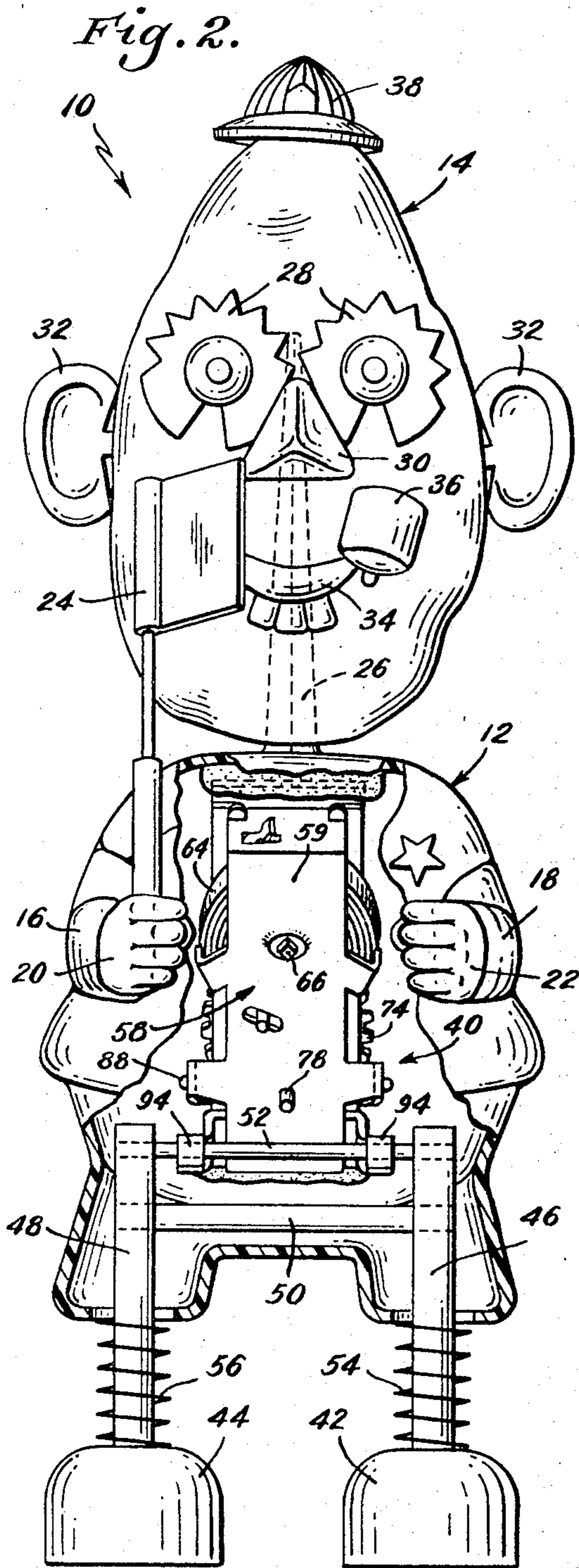
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TOY FIGURE HAVING VERTICAL RECIPROCATING MOVEMENT

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Sheet 2 of 3



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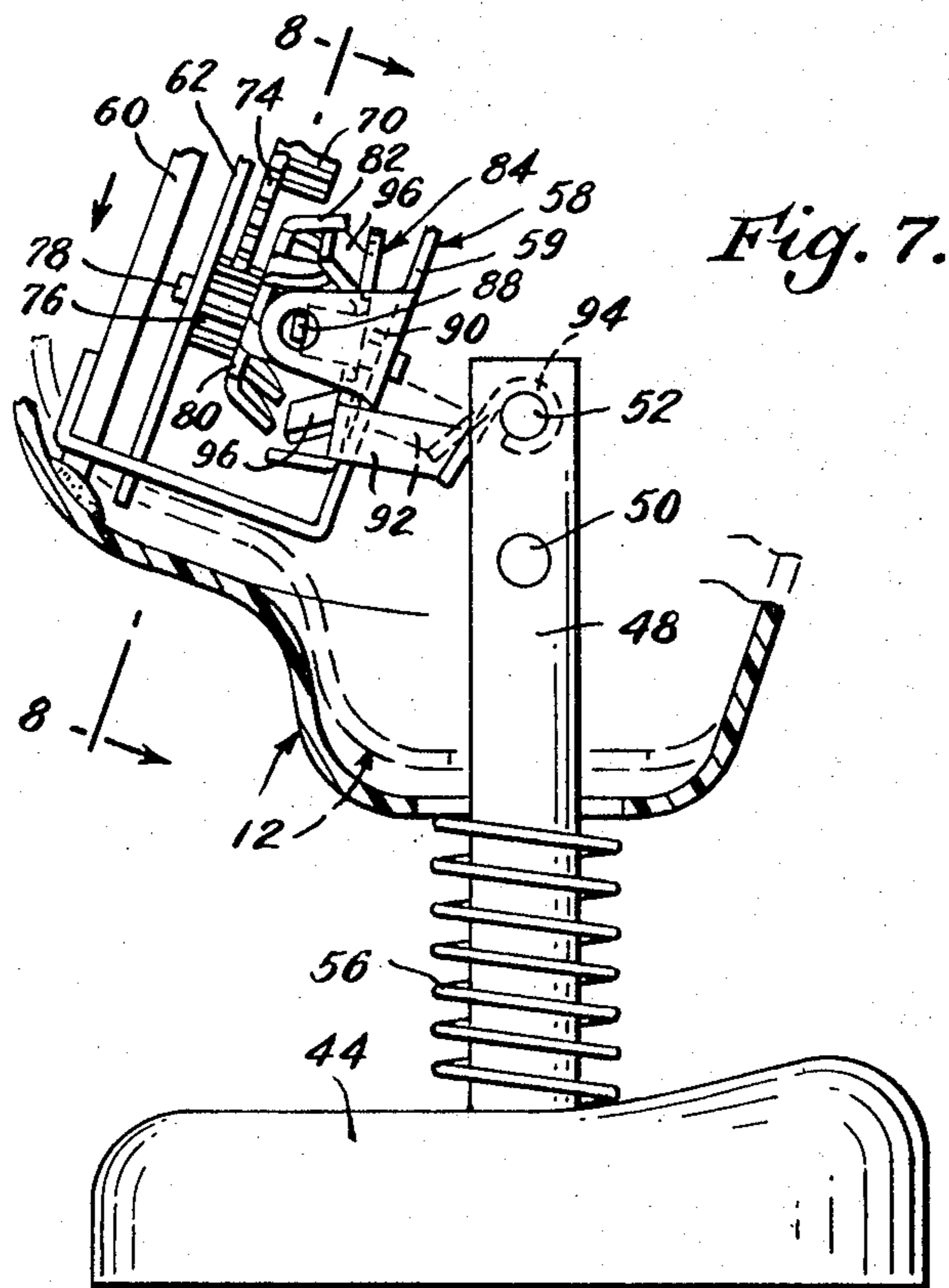
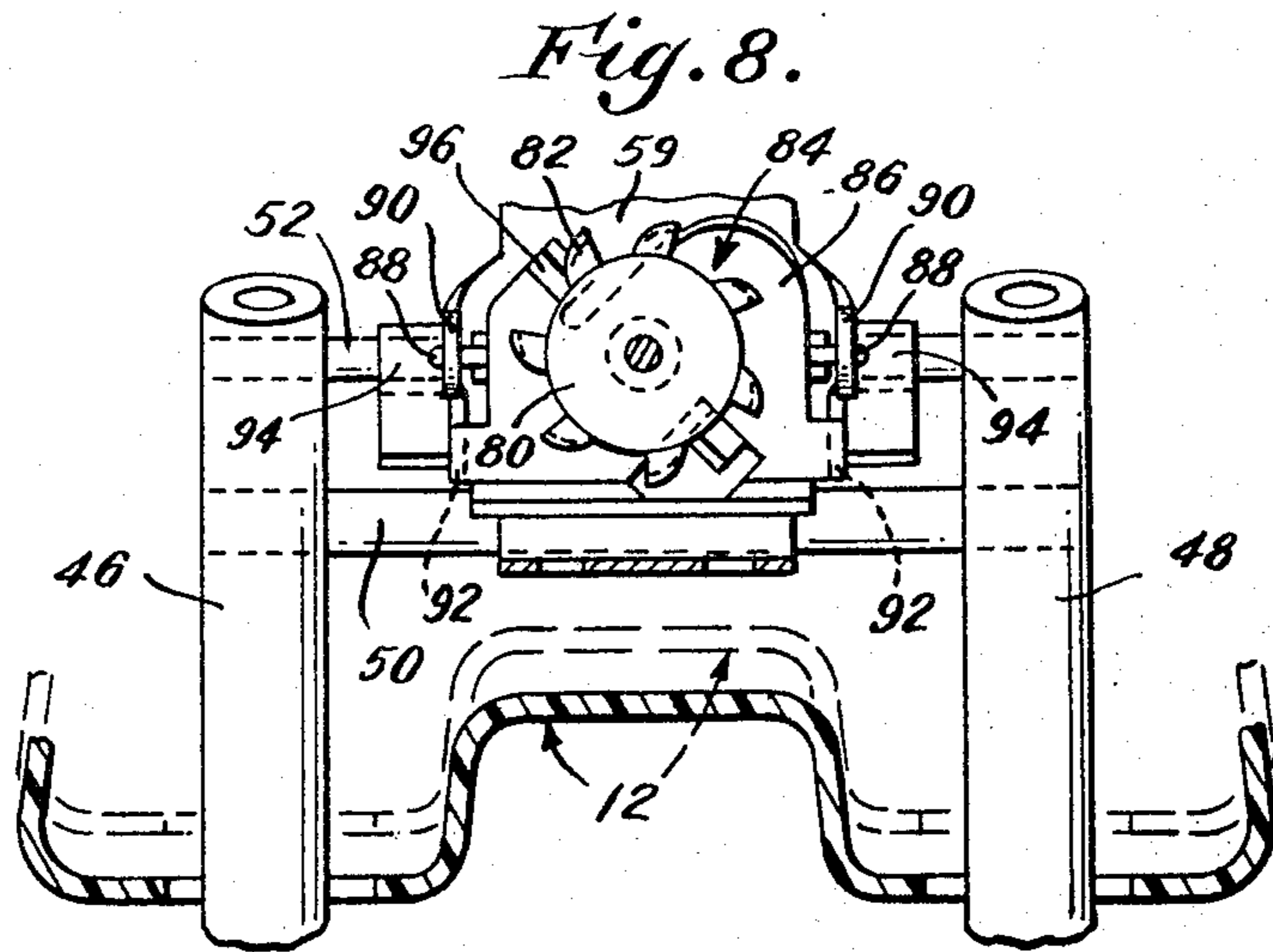
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TOY FIGURE HAVING VERTICAL RECIPROCATING MOVEMENT

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Sheet 3 of 3



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3,452,473

**TOY FIGURE HAVING VERTICAL
RECIPROCATING MOVEMENT**

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9 Claims

ABSTRACT OF THE DISCLOSURE

An animated toy figure having an operating mechanism disposed therein and that is actuated by a spring wound motor for producing an oscillating pivotal movement of an operating member, the operating member being secured to a cross bar having leg members affixed thereto, oscillating movement of the operating member being translated into reciprocating movement of the cross bar and leg members to produce a jumping effect or action of the toy figure.

The present invention relates to a toy figure having a vertically moving or jumping action. More particularly, the present invention relates to a toy figure in which a drive mechanism is located that is operable to produce a vertical reciprocating movement of the toy figure.

The present invention is directed to an animated type of toy figure wherein vertical motion is imparted to the figure to produce a jumping effect. The motion imparted to the toy figure of the present invention is generally a reciprocating vertical movement and is accomplished by use of an escapement-type drive that is located interiorly of the toy figure body. The escapement drive, which is operated by a spring wound motor, is adapted to produce an oscillating pivotal movement of an operating member, the operating member in turn being secured to the body of the toy figure and being further secured to a cross bar. The cross bar is disposed between spaced leg members and is mounted for movement with respect thereto, the leg members being fixed in position with respect to the toy figure and defining a base on which the toy figure is mounted. Thus, operation of the escapement drive produces a corresponding oscillating pivotal movement of the operating member which causes the body of the toy figure that is secured to the operating member to vertically reciprocate with respect to the leg members.

Accordingly, it is an object of the present invention to provide an animated-type toy figure that is adapted to vertically reciprocate for producing an interesting jumping action.

Another object of the invention is to provide a toy figure that is mounted for vertical reciprocating movement on leg members that define a base for the toy figure, the reciprocating movement of the toy figure being accomplished by the use of an escapement drive mechanism.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated for carrying out the present invention:

FIG. 1 is a side elevational view of the toy figure embodied herein with portions broken away for illustrating the drive mechanism located therein;

FIG. 2 is a front elevational view of the toy figure shown in FIG. 1 with portions broken away and shown in section;

FIG. 3 is a sectional view taken along lines 3—3 in FIG. 1;

FIG. 4 is a perspective view of the operating member that produces the required movement of the toy figure;

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FIG. 5 is an enlarged fragmentary view of the lower portion of the toy figure showing the location of the escapement drive for moving the body of the toy figure to an upper position during the reciprocating movement thereof.

FIG. 6 is a sectional view taken on lines 6—6 in FIG. 5;

FIG. 7 is a view similar to FIG. 5 and showing the lower position of the toy figure body during the reciprocating vertical movement thereof; and

FIG. 8 is a sectional view taken along lines 8—8 in FIG. 7.

Referring now to the drawings and particularly to FIGS. 1 and 2, the toy figure embodied in the present invention is generally indicated at 10 and includes a body portion generally indicated at 12 and a head member generally indicated at 14 that is mounted on the body portion 12, as will be described. The body portion 12 is hollow in construction and simulates in distorted form the human body, including arms 16 and 18 to which hands 20 or 22 may be formed with an opening therein for receiving an article, such as a flag 24, thereby adding interest to the toy figure when it is in use. Fixed to the uppermost end of the body portion 12 and extending upwardly therefrom is a tapered prong 26 that is adapted to be inserted into a tapered opening formed in the underside of the head member 14. Although forming no part of the present invention, the head member 14 includes a plurality of appropriately located openings for receiving pins or prongs on the ends of which are mounted facial members and other articles such as eyes 28, a nose 30, ears 32, lips and teeth 34, a pipe 36, and a hat 38. It is understood that the facial members, the pipe 36 and the hat 38 may be replaced by other articles and facial members having different characteristics and appearances to vary the appearance of the head member 14.

Aside from being able to vary the facial characteristics of the head member 14 by changing the facial members as indicated hereinabove, one of the unique features of the invention is to provide for a jumping action of the body portion 12. In order to accomplish this purpose, an actuating mechanism generally indicated at 40 is secured inside the body portion 12 in engagement therewith and thus is not normally visible. In order to provide a base on which the body portion 12 is movable, foot members 42 and 44 are provided and have secured thereto elongated rods 46 and 48 that define the leg members of the toy figure. The leg members 46 and 48 are interconnected by a cross rod 50, while engaging the leg members 46 and 48 at the uppermost end thereof is a cross bar 52 that has oscillating movement relative to the leg members and, as will be described, is operatively interconnected to the actuating mechanism 40. Thus, the actuating mechanism 40 through the cross bar 52 is movable relative to the leg members 46 and 48, and, in operation of the actuating mechanism 40, the toy figure, as represented by the body portion 12 and head member 14, is movable in a reciprocating vertical movement relative to the leg members 46 and 48 that are normally maintained stationary with their respective foot members 42 and 44 on the surface of which the toy figure rests.

Springs 54 and 56 are interposed between the foot members 42 and 44 and the lowermost end of the body portion 12, the springs 54 and 56 encircling the rod-like members 46 and 48, respectively, and providing for increased vertical motion of the body portion 12 during the operation of the actuating mechanism 40. As will be further described, the springs 54, 56 function to neutralize or counter-balance the weight of body portion 12 thus facilitating upward movement of the latter.

In order to mount the actuating mechanism 40 within the interior of the body portion 12, a main bracket generally indicated at 58 is fixed to a rear plate 60 that is, in turn, joined to the inner surface of the body portion

12 in any suitable manner. Located parallel to the plate 60 and joined to the upper and lower walls of the bracket 58 and spaced from a front wall 59 thereof is a mounting plate 62 that cooperates with the front wall 59 of the bracket 58 to locate the component parts of the actuating mechanism 40 in position. As shown in FIG. 1, a spring motor 64 is mounted on the bracket 58 and is interconnected to a shaft 66 that is mounted for rotation in the front wall 59 and the mounting plate 62. Also mounted on the shaft 66 is a gear 68 that is movable therewith, the gear 68 engaging the gear 70 that is mounted on a shaft 72. Located on the shaft 72 for rotation therewith is a gear 74 that engages a gear 76 mounted on a shaft 78, a drive wheel 80 also being mounted on the shaft 78 for rotation therewith. As shown in FIGS. 6 and 8, the drive wheel 80 is provided with a plurality of spaced teeth 82 which are adapted to operatively engage projections that are formed on a pivotally mounted operating member generally indicated at 84. As shown in FIG. 4, the operating member 84 includes a plate 86 to which opposed fingers 88 are fixed. The fingers 88 extend through openings located in ears 90 that are formed on the bracket 58 and that are bent at right angles with respect to the forward wall 59. The fingers 88 are thus received in the openings in the ears 90 for pivotally mounting the operating member 84 on the bracket 58. Fixed to the plate 86 and located at right angles with respect thereto are spaced arms 92 that also extend in perpendicular relation with respect to the fingers 88. Mounting elements 94 are joined to the arms 92 and are turned inwardly at the ends thereof for receiving the cross bar 52 therein. The operating member 84 is thus fixed to the cross member 52, and the cross bar 52 is movable in accordance with the movement of the operating bracket 84.

Located diagonally on the plate 86 of the operating member 84 are projections 96 that are adapted to be engaged by the teeth 82 of the drive wheel 80. As seen in FIGS. 5 and 7, the operating member 84 is pivotally movable on the ears 90, and as each projection 96 engages a tooth 82 of the drive wheel 80, the operating member 84 will be pivoted in an opposite direction to cause the other projection 96 to engage a tooth 82. Thus, as the drive wheel 80 is rotated, engagement of the teeth 82 with the diagonally opposed projections 96 will cause the operating member 84 to be oscillated in pivotal relation in a continuous manner.

The motion or movement of the drive wheel 80 and the engagement of the teeth 82 with the projections 96 defines an escapement-type drive which, in effect, produces the oscillating pivotal movement of the operating member 84. Movement of the operating member 84, in the manner as described, further produces an oscillating movement of the cross bar 52 that is fixed to the arms 92 of the operating bracket 84. With reference to FIGS. 5 and 7, it is seen that as the cross bar 52 oscillates due to the motion of the escapement drive, as represented by the drive wheel 80 and the operating member 84, the body portion 12 that is interconnected to the escapement drive will be caused to move upwardly and downwardly with respect to the leg members 46 and 48. It is understood that the operation of the escapement drive is initiated by winding the shaft 66 of the spring motor 64 by a key such as indicated at 98.

As illustrated in FIGS. 1, 5 and 7, the bracket 58, together with the escapement drive, including the drive wheel 80 and the operating member 84, are all disposed within the body portion 12 such that the longitudinal axis of the bracket 58 is inclined with respect to the vertical. The axes of the various shafts 66, 72 and 78 are also inclined with respect to the horizontal, which positioning of the components of the operating mechanism 40 including the escapement drive locates the leg members 46 and 48 substantially vertical so as to provide for proper vertical motion of the body portion 12 on the leg members 46 and 48 as described.

In use of the toy figure 10, the spring motor 64 is wound by turning the key 98, and the toy figure is then placed on a flat surface with the foot members 42 and 44 in engagement therewith as illustrated in FIGS. 1 and 2. It will be assumed in the first instance that the body portion of the toy figure, as illustrated in FIGS. 5 and 6, is in the upper position as shown in full lines when the spring motor is released for operation. In this position, the lower projection 96 of the escapement drive operating member 84 is disposed in engagement with a tooth 82 of the escapement drive wheel 80 by reason of the inclined position of the operating member 84. As the spring motor 64 operates the gear drive to the escapement drive wheel 80, the lower projection 96 is forced toward the forward wall 59 of the bracket 58 to the position illustrated in FIG. 7, thereby carrying therewith the operating member 84 to which the arms 92 are joined. Pivotal movement of the operating member causes the arms 92 to move in a direction that rocks the cross bar 52 with respect to the leg members 46 and 48. Upon pivotal movement of the operating member 84 to the position shown in FIG. 7, the upper projection 96 is moved into engagement with one of the teeth 82 of the escapement drive wheel 80. Continued rotation of the escapement drive wheel 80 forces the upper projection 96 rearwardly together with the operating member 84 so that the operating member 84 returns to the position illustrated in FIG. 5. This forward pivotal movement of the operating member 84, carries the arms 92 joined therewith for rocking the cross bar 52 to the original position thereof. Thus, as the spring motor 64 rotates the escapement drive wheel 80, the operating member 84 will be pivotally moved back and forth between the positions illustrated in FIGS. 5 and 7 and thereby causing the cross bar 52 to oscillate in a corresponding manner. Since the operating member 84 is connected to the bracket 58, which is in turn connected to the body portion 12, pivotal movement of the operating member 84 in the manner as described will cause the body portion 12 to reciprocate in a vertical direction from the positions shown in dotted and full lines in FIGS. 5 and 7. The body portion 12 thus reciprocates vertically with respect to the leg members 46 and 48.

As the body portion 12 moves downwardly in response to the drive of the escapement drive wheel 80 and the operating member 84, the springs 54 and 56 which encircle the leg members 46 and 48 are compressed. As the body portion 12 is moved upwardly, the spring members 54 and 56 add impetus to the upward movement of the body portion 12, thereby causing the body portion to effect a jumping action. It is seen that as the spring motor 64 drives the escapement drive wheel 80, the toy figure will appear to jump up and down, thereby creating an interesting animated effect.

Another feature of the invention that is inherent from the structural embodiment thereof is that the device is operable only if the foot members 42 and 44 are located in engagement with a surface. Thus when the device is lifted from the surface on which it rests, the actuating mechanism will be rendered inoperative and key 98 may then be turned to wind the spring motor 64 without the escapement drive operating. It is seen that once the foot members are lifted from the surface on which they rest, the body portion 12 including the actuating mechanism 40 is moved upwardly with respect to the bar 52. The escapement drive is then rendered inoperative and the spring motor 64 may be wound without the device operating. When the foot members are placed on a surface, the escapement drive will operate to move the body portion 12 vertically as described hereinabove. It is also understood that the arms 92 of the operating member 84 may be loosely mounted on the cross bar 52 since it is only necessary that the arms 92 pivotally oscillate with respect to the leg members 46 and 48. With the arms 92 mounted loosely on the cross bar 52, they will pivot with respect thereto

to correspondingly move the operating member 84 and body portion 12.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept, and that the same is not limited to the particular forms herein shown and described, except insofar as indicated by the scope of the appended claims.

What is claimed is:

1. In a toy, a hollow body portion defining the body of a toy figure, leg members projecting from the lower end of said body portions in spaced relation and defining a base on which said figure is mounted, and an actuating mechanism located in said body portion and being operatively interconnected thereto, said actuating mechanism including a bracket that is secured to said body portion, an operating member mounted for pivotal movement on said bracket and being interconnected to said leg members for pivotal movement with respect thereto, and an escapement-type drive including a drive wheel mounted for rotation on said bracket, opposed projections being secured to said operating member and being adapted to be alternately engaged by said drive wheel to produce an oscillating pivotal movement of said operating member and a corresponding reciprocating vertical movement of said body portion with respect to said leg members.

2. In a toy as set forth in claim 1, spring members encircling said leg members and engaging the underside of said body portion, thereby providing resistance to the downward vertical movement of said body portion and positively urging the body portion upwardly in the upward movement thereof to cause the body portion to effect a jumping action.

3. In a toy as set forth in claim 2, a cross bar extending into said leg members adjacent to the inner ends thereof, and being rotatable with respect thereto said operating member having spaced arms joined thereto that are secured to said cross member and are movable in accordance with the pivotal movement of said operating member, wherein operation of said escapement drive produces a corresponding oscillating pivotal movement of said operating member and said arms and cross bar joined thereto to cause said body portion to move in a reciprocating vertical direction.

4. In a toy, a hollow body portion defining the body of a toy figure, leg members projecting from the lower end of said body portion in spaced relation and defining a base on which said figure is mounted, a cross bar projecting into said leg members, and an actuating mechanism located in said body portion and being operatively connected

thereto, said actuating member including an operating member that is mounted for oscillating pivotal movement and that is interconnected to said cross bar, and an escapement drive operatively engaging said operating member for producing an oscillating pivotal movement thereof, wherein said operating member is moved relative to said leg members to produce a corresponding reciprocating vertical movement of said body portion.

5. In a toys as set forth in claim 4, said escapement drive including a spring wound motor and a toothed wheel that is drivingly interconnected to said motor, said operating member having diagonally opposed projections formed thereon that are alternately engageable with said toothed wheel for producing the oscillating pivotal movement of said operating member.

6. In a toy as set forth in claim 5, each of said leg members having a spring located therearound and disposed in engagement with the underside of said body portion, said spring resisting downward movement of said body portion on said leg members and urging upward movement thereof to cause said body portion to effect a jumping action.

7. In a toy as set forth in claim 6, a detachable head member removably mounted on said body portion and movable therewith during the reciprocating vertical movement thereof.

8. In a toy as set forth in claim 6, a foot member fixed to the lower end of each leg member and being of sufficient size to retain said leg members and toy figure thereon in a stabilized upright position.

9. In a toy as set forth in claim 6, said actuating mechanism including said operating member being movable with respect to said leg members when said foot members are lifted from a surface on which they rest, to render said actuating mechanism inoperative and to prevent the movement of said body portion with respect to said leg members, wherein said spring motor may be wound without operation of the actuating mechanism.

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