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(54) **HUMAN FIGURE TOY HAVING A MOVABLE NOSE**

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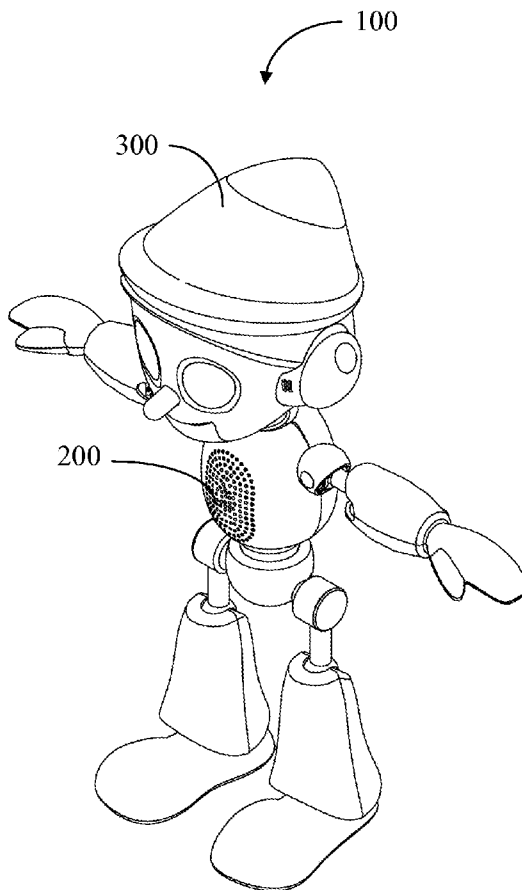
(57) **ABSTRACT**

A human figure toy is provided. The toy includes a storage unit and two pressure sensors. The storage unit stores a plurality of media files for providing audio questions and alternative answer options for each of the audio questions. Each of the two pressure sensors is associated with one of the alternative answer options respectively. The toy also includes a head portion with an aperture formed thereon. A reversible motor is secured within the head portion. A nose assembly that is driven by the reversible motor extends through the aperture. A controller controls the reversible motor to rotate in response to signals from one of the two pressure sensors, driving the nose assembly to move back and forth.

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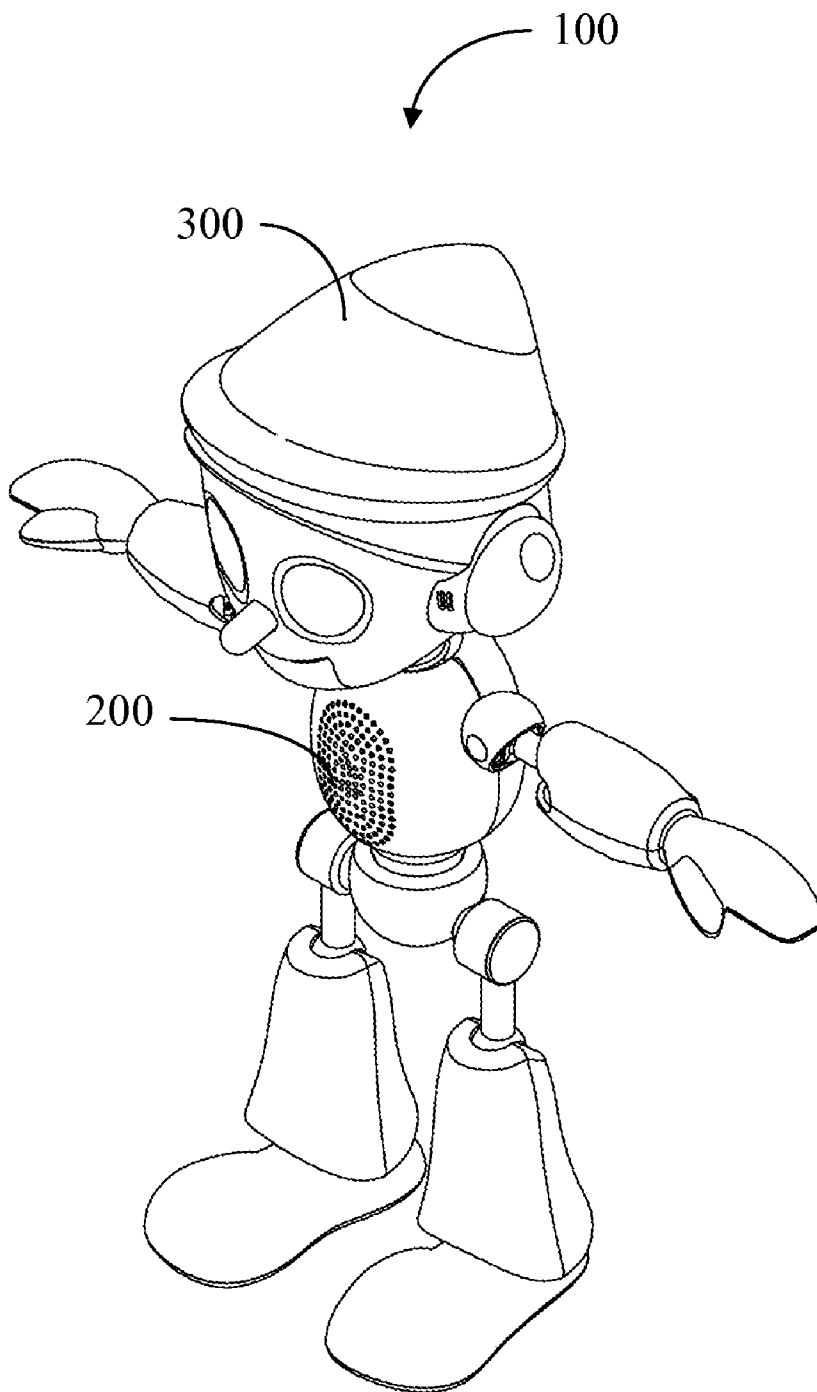


FIG. 1



310

FIG. 2

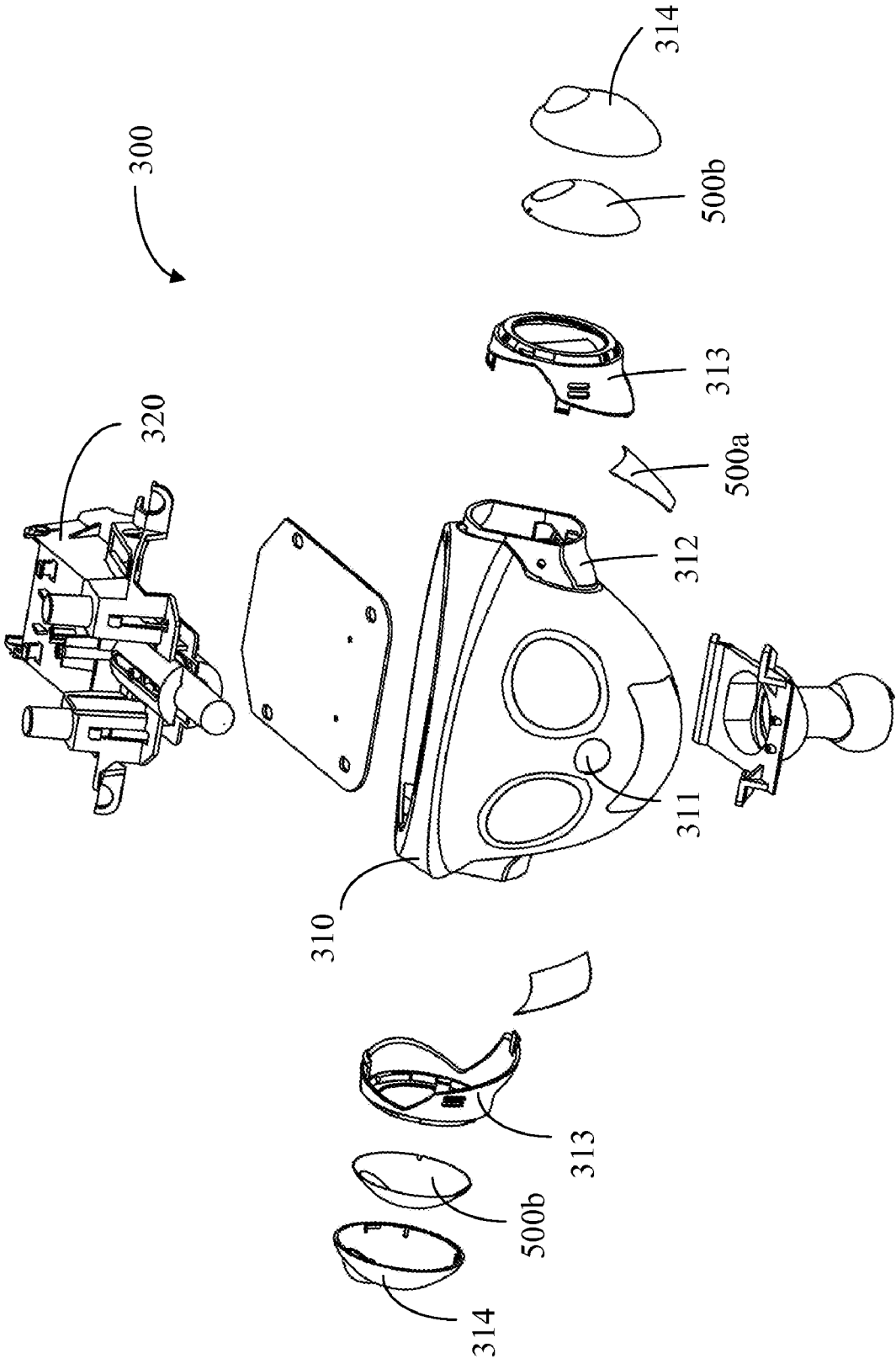


FIG.3

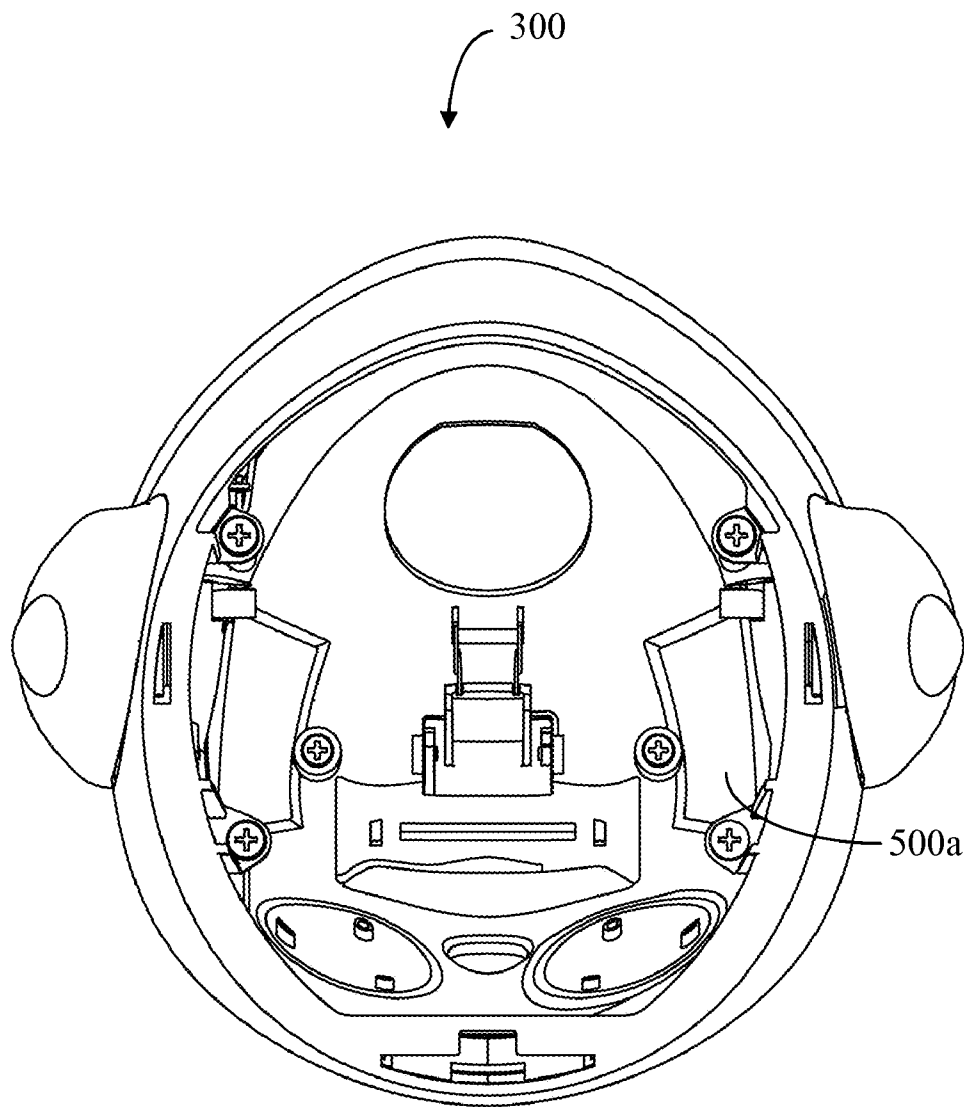


FIG. 4

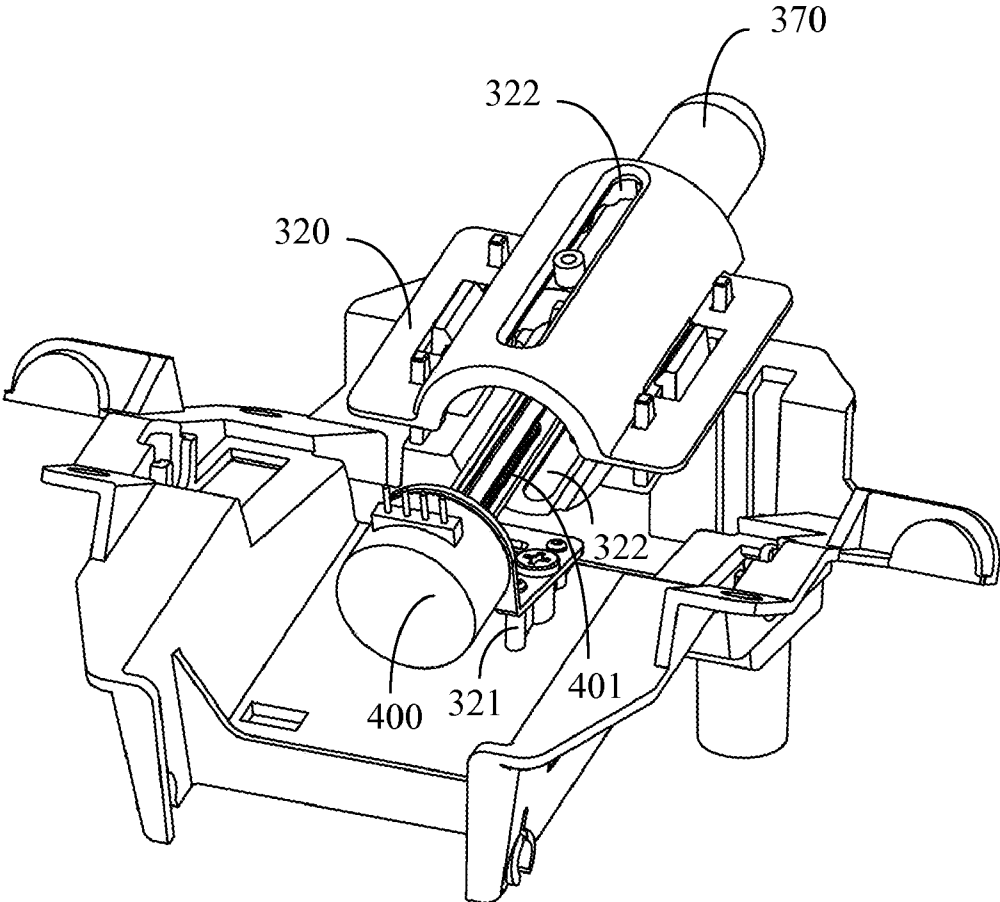


FIG. 5

330

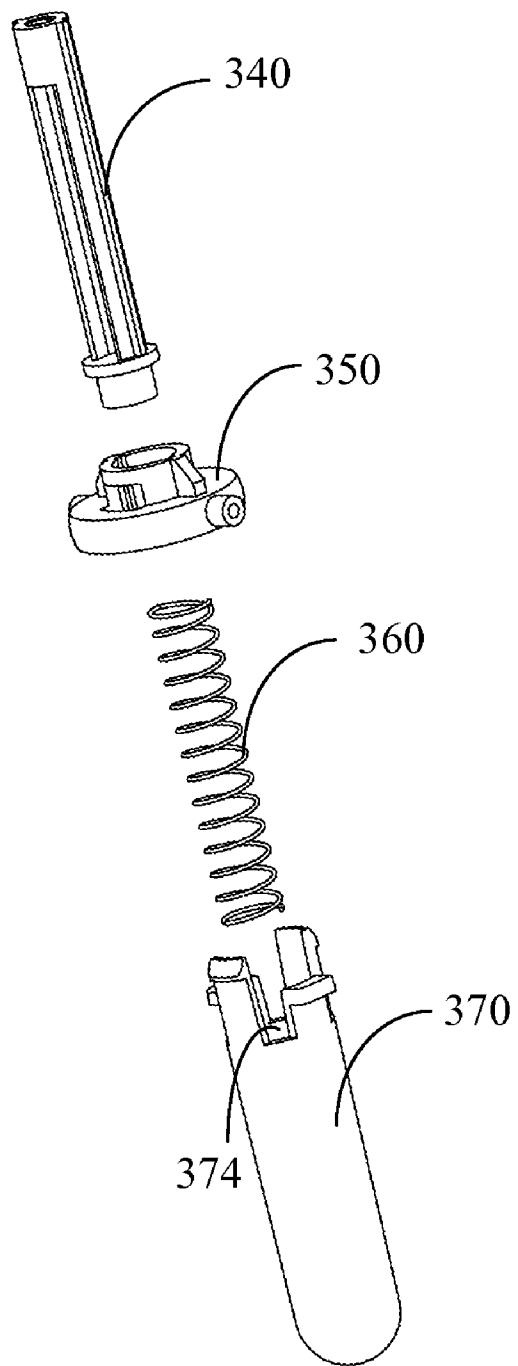


FIG. 6

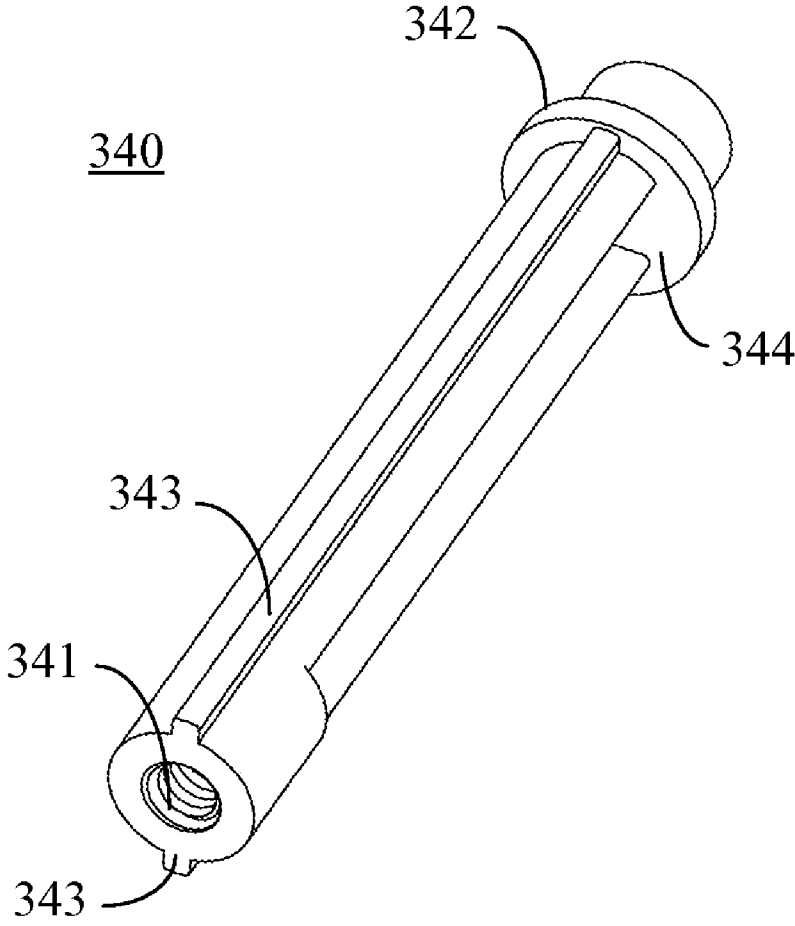


FIG. 7

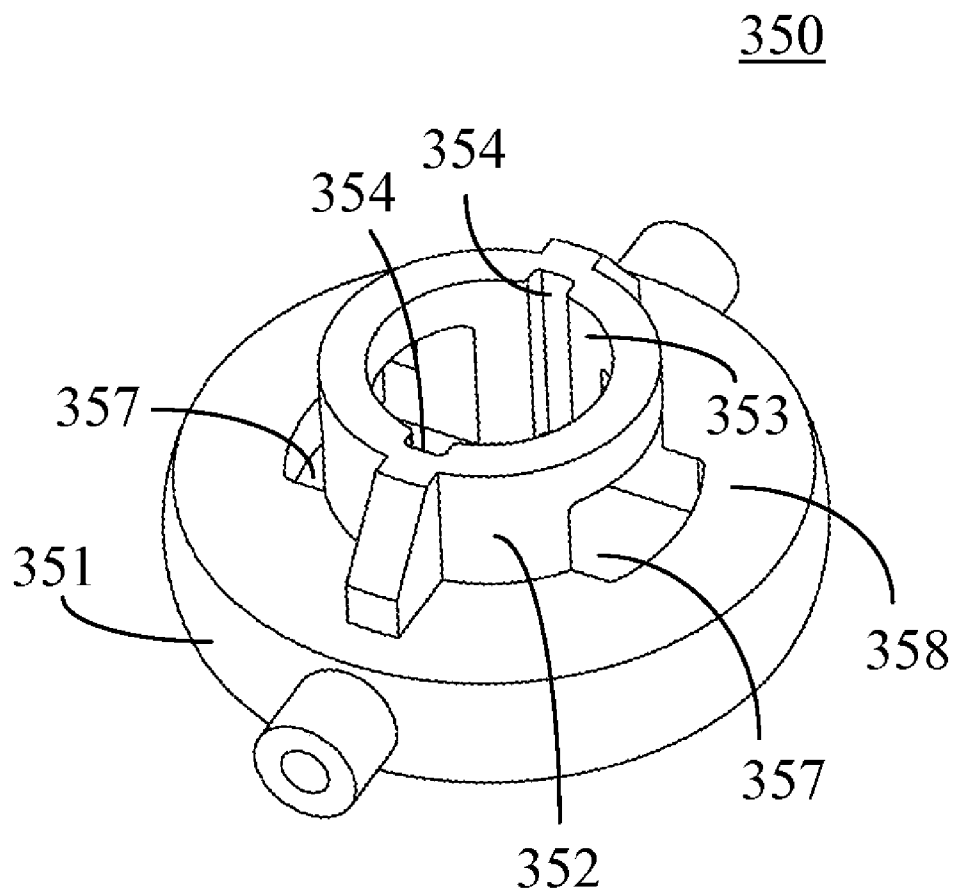


FIG. 8

350

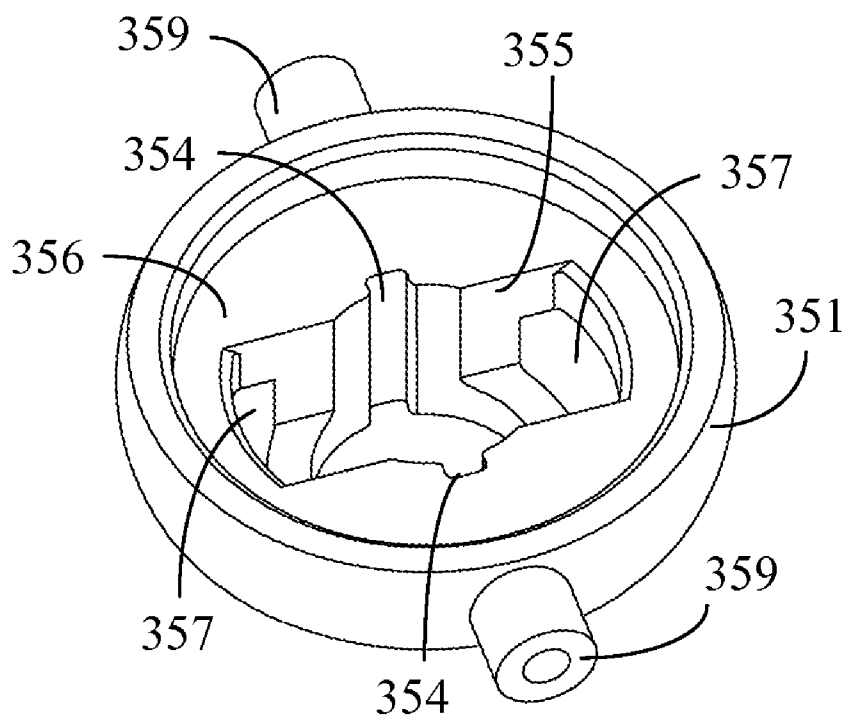


FIG. 9

370

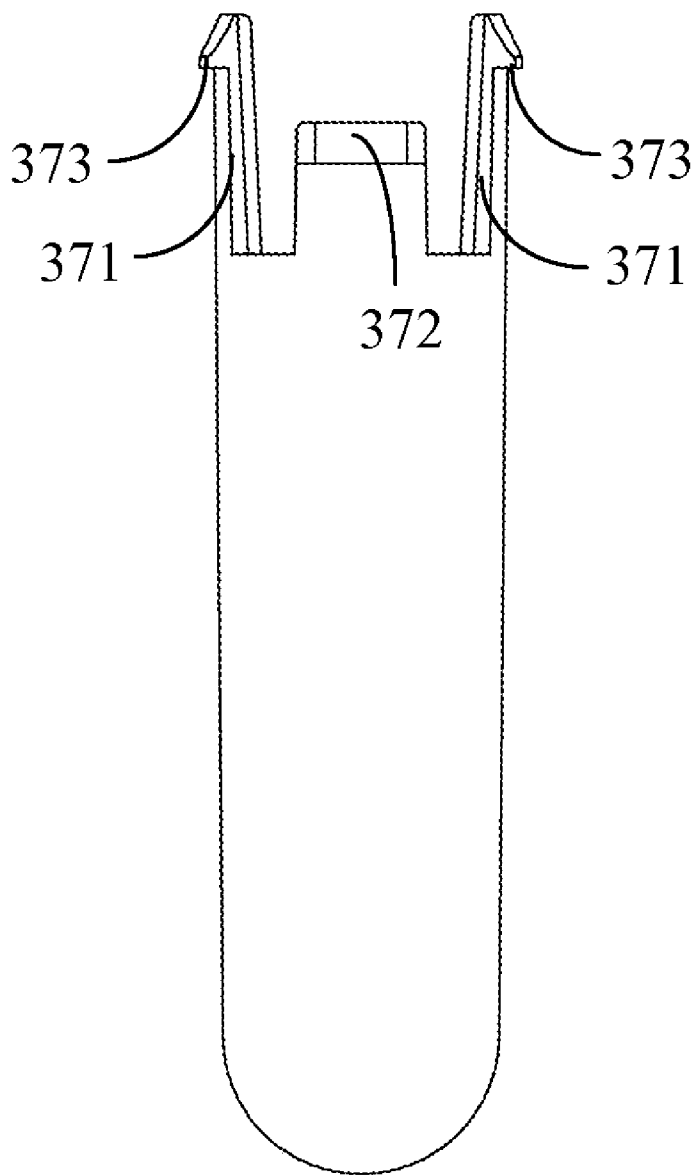


FIG. 10

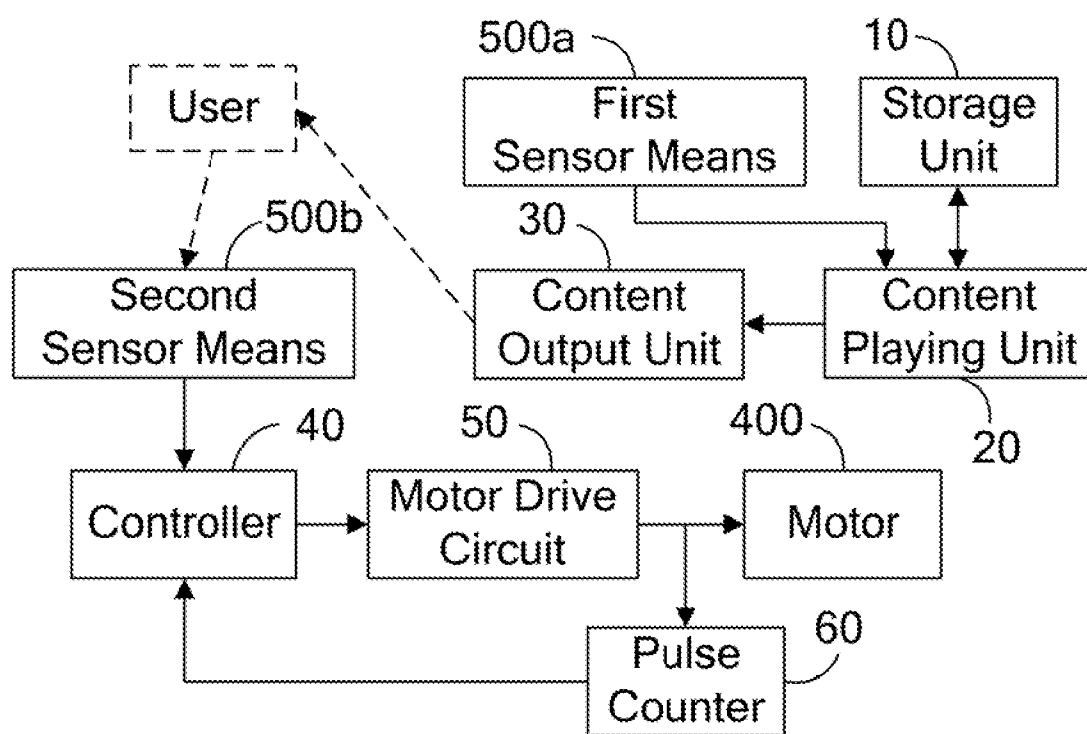


FIG. 11

HUMAN FIGURE TOY HAVING A MOVABLE NOSE

RELATED APPLICATIONS

[0001] This application is one of the related co-pending U.S. patent applications as listed. Such cases have the same assignee as the current application and have been concurrently filed. The disclosures of the applications listed in Table 1 are incorporated by reference in their entirety.

TABLE 1

Attorney Docket No.	Title	Inventors
US16995	HUMAN TOY FIGURE HAVING A MOVABLE NOSE	Chuan-Hong Wang Hsiao-Chung Chou Tsu-Li Chiang Kuan-Hong Hsieh Han-Che Wang
US16996	HUMAN TOY FIGURE HAVING A MOVABLE NOSE	Shin-Hong Chung Chuan-Hong Wang Hsiao-Chung Chou Tsu-Li Chiang Kuan-Hong Hsieh Han-Che Wang
US17001	HUMAN TOY FIGURE HAVING A MOVABLE NOSE	Shin-Hong Chung Chuan-Hong Wang Hsiao-Chung Chou Tsu-Li Chiang Wen-Sheng Tsai Hai-Sen Liang
US17002	HUMAN TOY FIGURE HAVING A MOVABLE NOSE	Han-Che Wang Chuan-Hong Wang Hsiao-Chung Chou Tsu-Li Chiang Kuan-Hong Hsieh Wen-Sheng Tsai
US17003	HUMAN TOY FIGURE HAVING A MOVABLE NOSE	Han-Che Wang Chuan-Hong Wang Hsiao-Chung Chou Tsu-Li Chiang Kuan-Hong Hsieh Hai-Sen Liang Han-Che Wang

BACKGROUND

[0002] 1. Technical Field

[0003] The present disclosure relates to a human figure toy, more specifically, to a human figure toy having a movable nose.

[0004] 2. General Background

[0005] Throughout the years, a wide variety of toy figures and dolls have been created for entertainment purpose. Such toy figures and dolls have assumed shapes replicating humans, human infants, animals as well as a variety of frictional characters. In their efforts to increase the amusement and entertainment value of such toy figures and dolls, practitioners in the art have created a variety of toy figures and dolls having movable features and articulated bodies and limbs.

[0006] U.S. Pat. No. 4,516,951 issued to Saigo et al. sets forth a movable toy animal having a toy figure resembling a bunny or the like supporting a motor driven internal movement mechanism. The movement mechanism is operatively coupled to a pair of movable ears and a movable nose. When operated, the ears and nose undergo a predetermined movement cycle.

[0007] U.S. Pat. No. 5,304,087 issued to Terzian et al. sets forth a SOFT STUFFED TOY WITH MANUALLY

DRIVEN HEAD, EARS AND/OR TONGUE carried in a flexible sling with the head of the figure exposed. The head includes animatable ears driven by rotation of the head relative to the body. In addition, the protruding movable tongue is driven by an actuator that also provides rotation of the head relative to the body.

[0008] While the foregoing described related art devices have to some extent improved the art and have in some instances enjoyed commercial success, there remains nonetheless a continuing need in the art for evermore improved, interesting and amusing toys having movable components.

SUMMARY

[0009] The disclosure relates to a human figure toy that has a moveable nose. In one exemplary embodiment, the toy includes a storage unit and two pressure sensors. The storage unit stores a plurality of media files for providing audio questions and alternative answer options for each of the audio questions. The two pressure sensors are secured within the toy and each of the two pressure sensors is associated with one of the alternative answer options respectively.

[0010] Additionally, the toy also includes a head portion with an aperture formed thereon. A reversible motor is secured within the head portion. A nose assembly that is driven by the reversible motor extends through the aperture. After one of the audio questions is provided, a controller controls the reversible motor to rotate in response to signals from one of the two pressure sensors, driving the nose assembly to move forward or backwards.

[0011] Other features and advantages will be or become apparent to one with ordinary skill in the art upon examination of the accompanying drawings and detailed description. It is intended that all such additional features and advantages be included within this description, be within the scope of the present disclosure, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The components of the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of a human figure toy. Moreover, in the drawings, like reference numerals designate corresponding parts throughout several views.

[0013] FIG. 1 is an isometric view of a human figure toy in accordance with one embodiment of the present disclosure.

[0014] FIG. 2 is an isometric view of a head of the human figure toy of FIG. 1.

[0015] FIG. 3 is an exploded view of the head of FIG. 2 with certain parts omitted for clarity purpose.

[0016] FIG. 4 is a top view of the head of FIG. 2 with certain parts omitted for clarity purpose.

[0017] FIG. 5 is an isometric view of a nose assembly attached to a support member, both of which are shown in FIG. 3.

[0018] FIG. 6 is an exploded view of the nose assembly shown in FIG. 5.

[0019] FIG. 7 is an isometric view of a first rod of the nose assembly shown in FIG. 6.

[0020] FIG. 8 is an isometric view of attachment means of the nose assembly shown in FIG. 6.

[0021] FIG. 9 is another isometric view of the attachment means of the nose assembly shown in FIG. 6.

[0022] FIG. 10 is an isometric view of a second rod of the nose assembly shown in FIG. 6.

[0023] FIG. 11 is a block diagram for controlling a motor of the human figure toy that is shown in FIG. 5.

DETAILED DESCRIPTION

[0024] Referring to FIG. 1, a human figure toy 100 includes a torso 200 and a head 300 attached to the torso 200. The human figure toy 100 also includes two legs and two arms that are attached to the torso 200.

[0025] Referring to FIGS. 2 through 4, the head 300 includes a hollow housing 310. The housing 310 is formed to resemble a human face. An aperture 311 is formed on the front side of the housing 310.

[0026] As will be better understood from the following description, the toy 100 includes a first sensor means 500a and two second sensor means 500b, which are used for detecting a user's action to the toy 100. In the embodiment shown in FIGS. 3 and 4, the first sensor means 500a and the two second sensor means are pressure sensors. However, when needed, other type of sensors may be used and may be mounted at any suitable portion on the toy 100.

[0027] The first sensor means 500a is mounted on the interior surface of the housing 310. The two pressure sensors 500b are mounted on the left side and right side of the housing 310, respectively. More specifically, the housing 310 includes two ear bases 312 (one not shown) that protrude out of the outer surface thereof on the left side and right side, respectively. Each ear base 312 is used for supporting an ear support 313, and each is used for supporting an ear cap 314. Each of the two pressure sensors 500b is mounted on the interior surface of one ear cap 314.

[0028] Referring to FIG. 5, the head 300 also includes a support member 320 secured within the housing 310. The support member 320 can be formed by plastic injection molding, in one exemplary fabrication process, and includes two posts 321 (one not shown) onto which a reversible motor 400 is secured. The motor 400 includes a threaded motor shaft 401. Two guide grooves 322 are formed on the support member 320 and extend along a direction that is approximately parallel to the axis of the aperture 311 on the housing 310.

[0029] Referring to FIG. 6, the head 300 also includes a nose assembly 330 that is driven by the motor 400. In one embodiment, the nose assembly 330 includes a first rod 340, attachment means 350, a spring 360, and a second rod 370.

[0030] Referring to FIG. 7, a threaded bore 341 is formed at one end of the first rod 340 and extends longitudinally. A flange 342 is formed near another end of the first rod 340. The first rod 340 also includes a pair of guide ribs 343 on an outer surface thereof. The guide ribs 343 are formed opposite to each other and extend all the way from the threaded bore end to a side surface 344 on the flange 342.

[0031] Referring to FIGS. 8 and 9, the attachment means 350 is used for slidably attaching the second rod 370 to the first rod 340. In the embodiment shown in FIGS. 8 and 9, the attachment means 350 is of a flanged cylindrical shape and includes a flange portion 351 and a cylindrical portion 352.

[0032] A circular hole 353 is formed on the attachment means 350 and extends along the entire length of the attachment means 350. A pair of guide grooves 354 is formed on the inner circumferential surface of the circular hole 353. The guide grooves 354 are positioned opposite to each other and extend along the entire length of the circular hole 353.

[0033] A chamber 355 is formed on the flange portion side, extending from a first end surface 356 of the flange portion 351 toward the cylindrical portion, which forms two openings 357 on a cylindrical outer surface of the cylindrical portion 352 and a second surface 358 of the flange portion 351. The openings 357 are formed opposite to each other. The attachment means 350 also includes a pair of guide posts 359 formed opposite to each other on an outer circumferential surface of the flange portion 351.

[0034] Referring to FIG. 10, the second rod 370 includes a chamber 374 (shown in FIG. 6) that extends longitudinally and is used for receiving the spring 360 therein. A pair of long tabs 371 and a pair of short tabs 372 are formed at the open end of the chamber 374. The long tabs 371 are positioned opposite to each other and angled slightly away from each other. Each of the long tabs 371 includes a hook portion 373 that extends outwardly at a distal end thereof.

[0035] After the nose assembly 330 has been constructed, the attachment means 350 is slidably attached to the first rod 340. More specifically, the first rod 340 is received in the circular hole 353 of the attachment means 350 with the guide grooves 354 engaging with the guide ribs 343 respectively. The first rod 340 is pushed against the attachment means 350 by the spring force of the spring 360, and specifically, the side surface 344 of the flange 342 on the first rod 340 engages the first end surface 356 of the flange portion 351 of the attachment means 350.

[0036] After the nose assembly 330 has been constructed, the second rod 370 is attached to the attachment means 350 with the two long tabs 371 in a first position and the two short tabs 373 in a second position. More specifically, in the first position, the two long tabs 371 are received in the two openings 357 respectively with the two hook portions 373 engaging the second end surface 358 of the flange portion 351.

[0037] Because the long tabs 371 are slightly outwardly angled, the long tabs 371 are slightly deformed in the first position and a spring force that springs back the long tabs 371 to its original shape pushes the long tabs 371 tightly against edges of the openings 357, thereby preventing the long tabs 371 from disengaging the openings 357.

[0038] In the second position, the short tabs 373 contact the surface of the attachment means 350. The movement of the attachment means 350 is thus limited by the long tabs 371 and the short tabs 373, and as a result, the second rod 370 is held in position.

[0039] The spring 360 is a coil spring and is slightly compressed in the second rod 370. One end of the spring 360 engages one end of the first rod 340. The second rod 370 is thus biased to a furthest position relative to the first rod 340 and can slide along the guide ribs 343 of the first rod 340. During sliding of the second rod 370, the spring 360 is compressed, which is used for absorbing shocks, such as shock generated when the toy 100 falls with the second rod 370 hitting the ground. As a result, significant damages to the toy 100 can be avoided.

[0040] After the nose assembly 330 has been attached to the threaded motor shaft 401, the second rod 370 extends through the aperture 311 on the housing 310. The guide posts 359 on the attachment means 350 are received in the guide grooves 322 on the support member 320, thereby limiting a rotation of the attachment means 350.

[0041] The thread engagement of the motor shaft 400 and the threaded bore 341, the engagement of the guide ribs 343 and the guide grooves 354, and the engagement of the guide

posts 359 and the guide grooves 322 cooperate to constitute a rotation/translation conversion mechanism. Therefore, a rotation of the motor shaft 401 is converted into translation movement of the nose assembly 330 and the second rod 370 can thus move back and forth.

[0042] Referring to FIG. 11, in one embodiment, the motor 400 is a stepper motor. In this embodiment, the toy 100 includes a storage unit 10, a content playing unit 20, and a content output unit 30. The toy 100 also includes a motor control system that includes a controller 40, a motor drive circuit 50, and a pulse counter 60.

[0043] The storage unit 10 stores a plurality of media files that are used for providing audio questions to a user. The audio questions can be math questions and common sense questions, among other types of questions. In one embodiment, audio questions provided by the media files provide alternative answer options, such as a question asking, "... which do you think is the suitable answer, A or B?"

[0044] Each of the alternative answer options to each audio question corresponds to one of the second sensor means 500b, respectively. Specifically, the user can select one answer option by initiating the second sensor means 500b. The relationship between the audio questions, the answer options and the second sensor means 500b are defined in a database stored on the storage unit 10. The database also defines which of the alternative answer options is the correct answer to each audio question.

[0045] Each of the audio questions also includes a prompt that is used for prompting the user to initiate one pressure sensor 500b, such that an answer option is selected. The prompt can be in a form like "... For option A, please press my left ear. For option B, please press my right ear". When the "left ear" or "right ear" has been pressed, the pressure sensor 500b placed in the left or right side of the housing 310 is initiated.

[0046] The content playing unit 20 is used for playing one of the media files in response to a signal from the first sensor means 500a. The content output unit 30 is used for outputting the media files in response to signals from the content playing unit 20.

[0047] When initiated, one of the two pressure sensor 500b sends a signal to the controller 40. The controller 40 determines whether the user's response is correct according to the database on the storage unit 10. In one embodiment, the controller 40 generates a control signal that is used for controlling the motor 400 to rotate in a positive direction when the user's response is correct. When the user's response is incorrect, the controller 40 generates a control signal that is used for controlling the motor 400 to rotate in a negative direction.

[0048] The motor drive circuit 50 receives the control signals from the controller 40 and provides a series of motor drive pulses to the motor 400. The pulse counter 60 counts the number of the motor drive pulses generated by motor drive circuit 50. When the number of the motor drive pulses reaches a preset value, the pulse counter 60 sends a signal to the controller 40. The controller 40 reverses the motor 400 according to the signal from the pulse counter 60. The nose assembly 330, which is driven by the motor 400, can thus move back after reaching a limit position. In this embodiment, the motor 400 can continue running for a predeter-

mined time after which the motor 400 stops running and awaits the next signal from the second sensor means 500b.

[0049] Although the present disclosure has been specifically described on the basis of an exemplary embodiment, the disclosure is not to be construed as being limited thereto. Various changes or modifications may be made to the embodiment without departing from the scope and spirit of the disclosure.

What is claimed is:

1. A human figure toy comprising:

a storage unit storing a plurality of media files for providing audio questions and alternative answer options for each of the audio questions;

two pressure sensors secured within the toy, each of the two pressure sensors being associated with one of the alternative answer options respectively;

a head portion with an aperture formed thereon;

a reversible motor secured within the head portion;

a nose assembly driven by the reversible motor extending through the aperture; and

a controller for controlling, after one of the audio questions is provided, the reversible motor to rotate in response to signals from one of the two pressure sensors, driving the nose assembly to move forward or move backwards.

2. The human figure toy according to claim 1 further comprising a support member placed within the head portion, wherein the reversible motor comprises a threaded motor shaft and is secured to the support member, the nose assembly comprises:

a first rod comprising a threaded bore for engaging with the threaded motor shaft;

a second rod extending through the aperture on the head portion;

an attachment means configured for slidably attaching the second rod to the first rod;

a shock absorbing means placed between the first rod and the second rod biasing the second rod to a furthest position relative to the first rod; and

a rotation stop means placed on the attachment means and the support member for limiting a rotation of the second rod and allowing a translation of the second rod.

3. The human figure toy according to claim 2, wherein the second rod comprises a chamber for receiving the shock absorbing means.

4. The human figure toy according to claim 2, wherein the attachment means comprises a guide post that protrudes from an outer surface thereof, the support member comprises a guide groove, and the guide post cooperates with the guide groove to form the rotation stop means.

5. The human figure toy according to claim 2, wherein a circular hole is formed on the attachment means for receiving the first rod, a guide groove is formed on an inner circumferential surface of the circular hole and extends longitudinally, the first rod comprises a rib that extends longitudinally on an outer surface thereof, and the guide groove engages the rib to limit a rotation of the attachment means relative to the first rod and allow a translation of the attachment means relative to the first rod.

6. The human figure toy according to claim 2, wherein the shock absorbing means is a coil spring.

* * * * *