

Sept. 7, 1943.

R. E. BIRNBAUM

2,328,704

DOLL

Filed Oct. 8, 1941

2 Sheets-Sheet 1

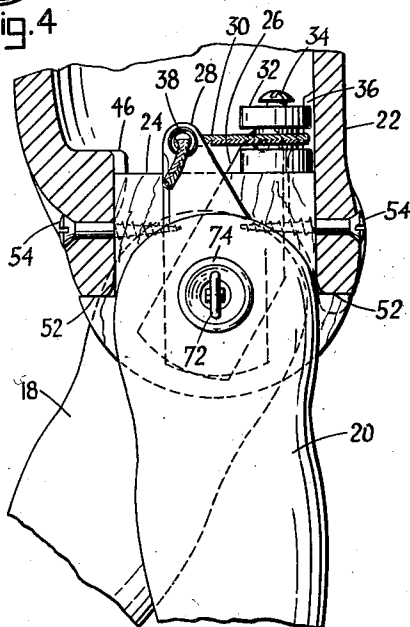
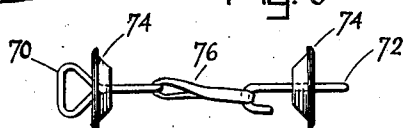
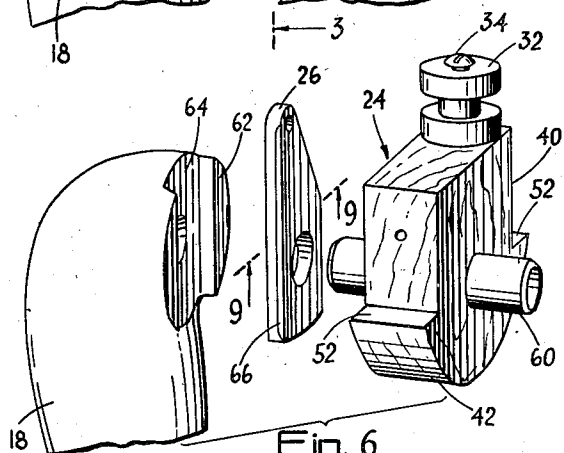
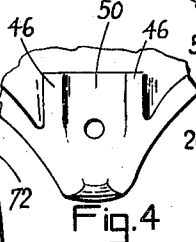
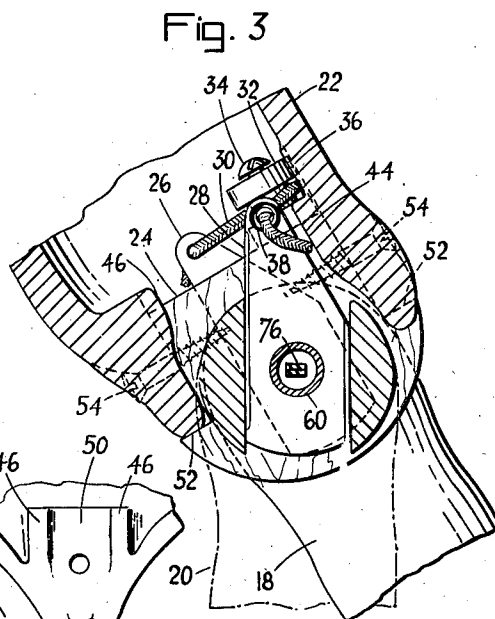
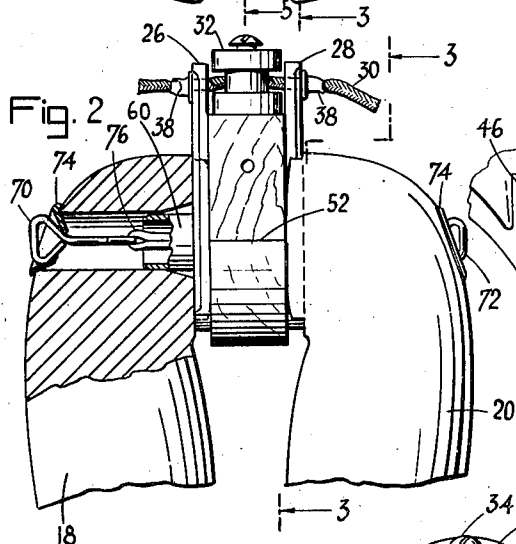
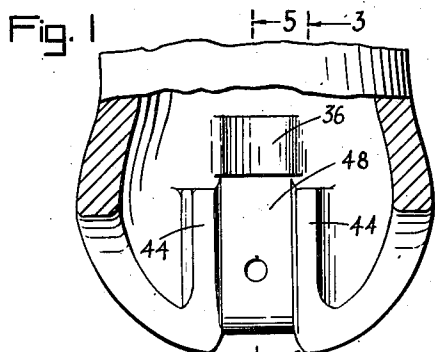


Fig. 5

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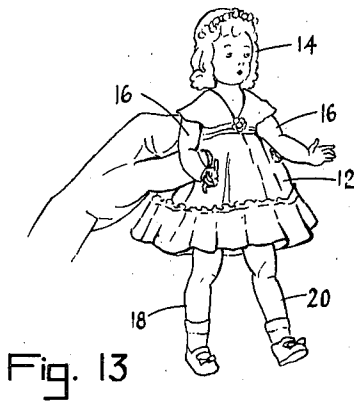
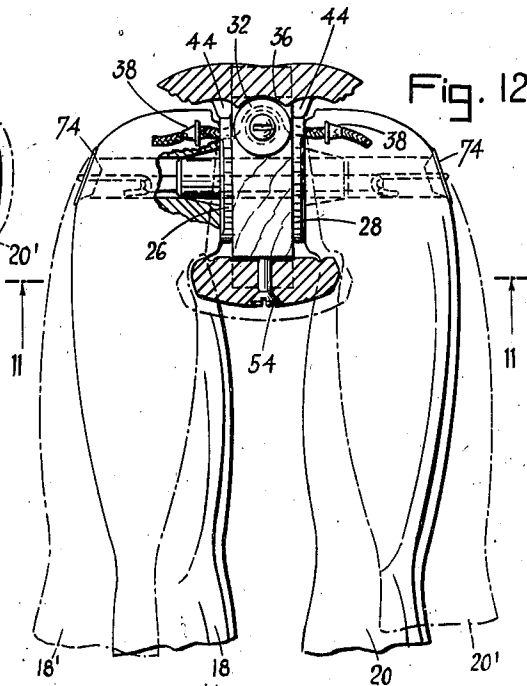
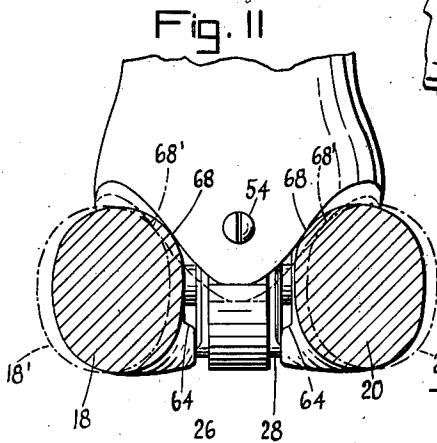
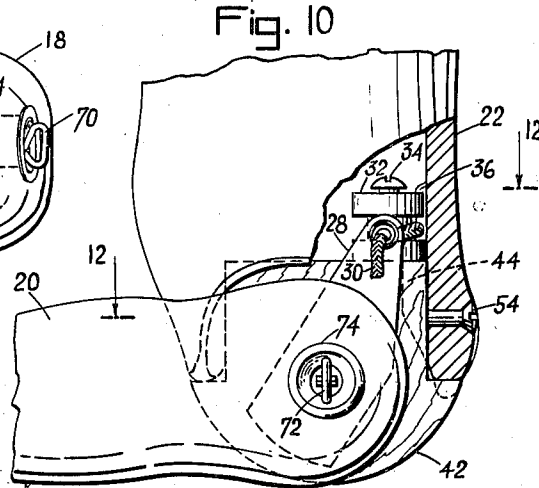
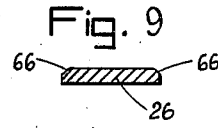
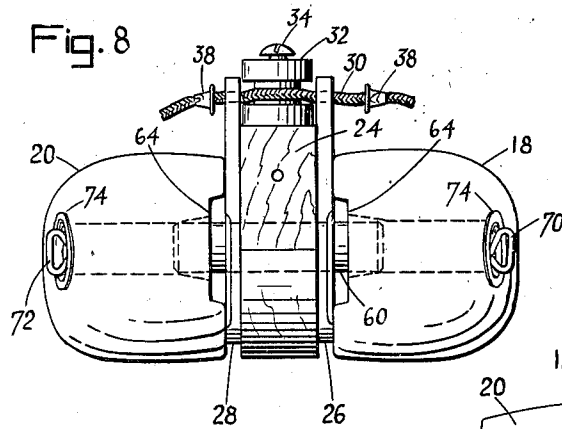
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2 Sheets-Sheet 2



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2,328,704

DOLL

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Application October 8, 1941, Serial No. 414,084

3 Claims. (Cl. 46-149)

This invention relates to dolls.

The primary object of the present invention is to generally improve dolls. A more particular object is to improve dolls of the type shown in the United States Patent No. 2,171,281, issued to Edel Torngren, on August 29, 1939.

Specific objects of the invention are to improve the walking action; to guard against accidental dislocation of the cord connecting the leg-operating levers; to facilitate adjustment of the effective length of said cord; to so design the lower portion of the doll body as to better receive and support the bearing block for the legs; to improve the attachment of the legs to the bearing blocks while minimizing the labor of assembling the legs on the bearing block; and to improve the stability of the doll when placed in sitting position, by providing means to spread the legs of the doll somewhat when seated.

A further object is to interconnect the legs for controlled movement in one direction only, thus making it possible to move the legs while keeping them together and without disengaging the same from the leg-operating levers. This makes it possible to put the doll in a standing position, for in the standing position the doll must be balanced with the center of mass directly over the bottom surface of the feet, and this requires close adjustment of the longitudinal axis of the body relative to the longitudinal axis of the legs. When the legs are positively interconnected for movement in both directions, they can be brought together in only one position, unless they are disengaged from the levers, but that in turn is suitable only for a substantial change in angle (to the sitting position, for example), in contrast with the slight changes in angle required to balance the doll in standing position.

To the accomplishment of the foregoing objects and such other objects as will hereinafter appear, my invention consists in the doll elements and their relation one to the other, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawings, in which:

Fig. 1 is a partially sectioned front elevation of the lower portion of a hollow doll body embodying features of my invention;

Fig. 2 is a partially sectioned elevation of the bearing block and legs adapted to be received in the hollow part of the doll body;

Fig. 3 is a transverse section taken approxi-

mately in the plane of the line 3-3 of Figs. 1 and 2;

Fig. 4 is a rear elevation of the front wall of the doll body at the bearing block;

Fig. 5 is a section taken approximately in the plane of the line 5-5 of Fig. 1;

Fig. 6 is a perspective view showing the leg, lever, and bearing block in disassembled relation;

Fig. 7 is explanatory of a yieldable connection used for the legs;

Fig. 8 is a rear elevation showing the relation of the bearing block and legs when the doll is seated;

Fig. 9 is a section through one of the levers, and is taken approximately in the plane of the line 9-9 of Fig. 6;

Fig. 10 is a partially sectioned side elevation showing the doll in seated position;

Fig. 11 is a vertical section through the legs, taken approximately in the plane of the line 11-11 of Fig. 12;

Fig. 12 is a horizontal section taken approximately in the plane of the line 12-12 of Fig. 10; and

Fig. 13 illustrates a completed doll embodying the invention.

Referring to the drawings, and more particularly to Fig. 13, the doll may be conventional in comprising a body portion 12, a head 14, and arms 16. The doll is further provided with legs 18 and 20 which are operatively interconnected within the doll in such a manner that rearward movement of one of the legs causes forward movement of the other. Specifically, if the doll is moved along with the leg 18 resting on the floor, the resulting relatively rearward movement of leg 18 causes a forward movement of leg 20. Continued forward movement of the doll will bring leg 20 to the floor, with ensuing relatively rearward movement which in turn causes a forward movement of leg 18 above the floor.

The mechanism for producing the desired walking action may be described with reference to Figs. 3 and 5 of the drawings. The doll body 22 is open at the bottom, and receives a bearing block 24. Levers 26 and 28 are oscillatably mounted on opposite sides of bearing block 24. Leg 18 is slotted to mate with lever 26, and leg 20 is slotted to mate with lever 28. The upper ends of the levers 26 and 28 are connected by a cord 30, so that forward movement of one lever pulls the other lever rearward. Inasmuch as the levers move with the legs, but in opposite direction, a rearward movement of one leg causes a forward movement of the other.

In accordance with the present invention, the levers are connected by only a single cord passing about a single guide 32. Movement of one leg relative to the body in one direction only, but not in the other direction, causes an opposite movement of the other leg. Specifically, in the present case, where the guide 32 is at the back of the bearing block, a rearward movement of one leg relative to the body causes forward movement of the other, but forward movement of one leg does not cause rearward movement of the other.

An important advantage of this arrangement is that the longitudinal axis of both legs when kept together may be adjusted relative to the longitudinal axis of the body portion over an appreciable range of movement. This facilitates standing the doll upright, because change or adjustment may be needed in order to so balance the doll as to stand erect on its feet. The adjustment needed is usually only a slight angular movement of both legs relative to the doll body after the feet have been brought together and placed on the floor.

Rearward movement of both legs relative to the body is limited by the length of cord 30, but forwardly of that limit the legs may be moved together with the levers until the levers bear against the rear wall of the body. In the intervening range of movement, the legs may be moved together with the levers, and this is an important advantage over the construction shown in the Torngren patent aforesaid, because in that patent the legs when brought together, can occupy only a fixed position relative to the body, except, of course, if wholly disengaged from the levers, but this physical disengagement, while suitable for an extreme movement such as that to the sitting position, is not suitable for a slight, delicately adjusted angular movement such as is needed to stand the doll in erect position on its own feet. In the specific case here shown, the permitted angular adjustment without disengaging the legs from the levers is a matter of approximately thirty degrees. It is only for a greater angular movement (for example, ninety degrees for the sitting position) that the legs need be disengaged from the levers.

In accordance with the present invention, the guide 32 is a relatively deeply channeled pulley. This pulley is freely rotatable on a generally upright axis. Specifically, the pulley is preferably turned out of wood, and is freely rotatable on a screw 34 which is screwed into the upper end of bearing block 24 near the rear edge thereof. The channel in pulley 32 is deep enough to fully receive the cord 30, even though it is preferably a heavy, woven cord. To prevent escape of the cord from the pulley when the cord is made slack, I provide means to close the pulley channel. Specifically, the rear wall of the doll is preferably integrally molded with an arcuate surface 36, best shown in Figs. 1, 5, and 12. This arcuate surface is so dimensioned and shaped as to fit quite closely around the pulley 32, although it is not in actual contact with the pulley, and in no way obstructs the desired free rotation of the same. The clearance between the arcuate wall 36 and the flanges of pulley 32 is, however, very much less than the diameter of the relatively heavy cord 30, and therefore effectively prevents escape of the cord from the pulley.

The ends of cord 30 pass through perforations in the upper ends of levers 26 and 28. The effective length of cord 30 is adjusted and then fixed by means of flanged metal clips 23, which

are clearly shown in Figs. 2, 8, and 12 of the drawings. When the legs are in walking position, these clips bear against the levers, as is shown in Figs. 2, 3, and 5, but when the cord is slack, the clips may move away from the levers, as is shown in Figs. 8 and 12.

Another feature of the present invention centers about the method of securing the bearing block 24 within the doll body 22. Specifically, the bearing block, as is best shown in Fig. 6, is provided with an internal portion 40 having parallel front and rear edges, and an external portion 42 which is arcuately shaped on a curve suitable to complete the center part of the lower open end of the doll body. The front and rear walls of the doll body have integrally molded guide channels for receiving the internal portion 40. The rear guide channel is shown in Fig. 1, it being formed by raised guides 44. The front guide channel is shown in Fig. 4, it being formed by parallel spaced guides 46. The surface 48 between guides 44 is parallel to the surface 50 between guides 46, and the spacing therebetween is equal to the distance between the front and back edges of the bearing block 24. With this construction, it is evident that the bearing block may be slid upwardly into the lower end of the doll body until the stop surfaces 52 reach the lower ends of the doll body, as will be seen in Fig. 5. To further secure the bearing block against being pulled out of the doll body, the body is provided with countersunk screw holes and screws 54 through the front and rear walls, said screws being received in block 24, which is preferably made of wood or other material adapted to receive screws 54 as well as the bearing screw 34 previously referred to.

Referring to Fig. 6, the bearing block 24 has a hole bored transversely therethrough, said hole tightly frictionally receiving a metal bearing tube 60. Levers 26 and 28 are oscillatably received over the ends of tube 60. These levers are preferably stamped out of heavy fibre board. The legs 18 and 20 may be molded out of solid material, as is indicated in Fig. 2, and the upper ends are bored to receive the ends of bearing tube 60. The inner surface 62 (Fig. 6) of the leg is slotted or recessed at 64 to receive the lever 26. The legs are yieldably held together in the desired assembled relation so that they may be disengaged from the levers when turned to the sitting position shown in Figs. 8 through 12. Figs. 10 and 12 show how the maximum rearward movement of the levers 26 and 28 is arrested when the levers reach the rear of the doll body. This movement is far less than that through which the legs are moved to put the doll in sitting position. In the sitting position, the slots 64 of the legs are therefore disengaged from the levers, as is clearly shown in Figs. 8 and 11. To facilitate this disengagement, the edges of the levers are preferably partially beveled, as is indicated at 66 in Fig. 9, or the edges of the slots 64 are disposed at an angle, as will be seen in Figs. 8 and 11, or both, as here shown. This disengagement of the legs from the levers necessitates and is accompanied by an outward movement of the legs relative to the position which they occupy when they are interlocked with the levers, this outward movement for each leg being equal to the thickness of the lever. The connection between the legs is therefore preferably a yieldable one.

There is another reason why it is desirable to provide a yieldable connection between the legs, and that is in order to afford a spreading move-

ment of the legs for increased stability when the doll is put in sitting position. This is illustrated in Figs. 11 and 12, in which the solid line position of the legs 13 and 20 corresponds to the position occupied by the legs when they rest flat against the levers. At this time the legs are substantially parallel. It will be noted in Fig. 11, however, that the forward part of the body bears against the inner thighs of the legs at the points 68. It will be evident that by inclining the body forwardly somewhat further that the position shown in Fig. 11, the forward portion of the body will bear against and spread the legs outwardly from the solid line position 13 and 20, to the broken line position 13' and 20', the body then bearing against the legs at the points 68'. This is accompanied by an outward angular movement of the legs indicated in broken lines at 13' and 20' in Fig. 12.

The desired yieldable connection between the legs is obtained in a manner which will be clear from inspection of Figs. 2 and 7. The legs are provided with small wire hooks 70 and 72. The heads of these hooks are received substantially within and are held by recessed or conically shaped washers 74. The hooks are connected by a short endless rubber band 76. In Fig. 7 the washers have been moved in from the heads to better show these parts.

To assemble the parts, one of the legs is provided with its washer, hook, and rubber band. This is applied to the bearing block and lever assembly with the rubber band passing through the bearing tube. The other leg is placed over the opposite end of the bearing tube, and a suitable hooked instrument is passed through the leg and is used to hook the free end of the rubber band. This is then pulled through the leg far enough to enable the operator to apply the hook 72 with its washer. The rubber band when released draws the hook 72 into position.

It is believed that the construction, method of assembly, and operation of my improved doll, as well as the advantages thereof, will be apparent from the foregoing detailed description.

It will also be apparent that while I have shown and described my invention in a preferred form, many changes and modifications may be made in the structure disclosed, without departing from the spirit of the invention, as sought to be defined in the following claims.

I claim:

1. A walking doll comprising a body portion, a bearing block, levers oscillatable on said bearing block, legs carried on said bearing block and levers, and means for operatively connecting said levers together within the body portion, said means comprising a single cord extending around a single pulley at the rear end only of the bearing block, whereby rearward movement of one leg relative to the body causes forward movement of the other, but forward movement of one leg does not cause rearward movement of the other, and the longitudinal axis of both legs when kept together may be adjusted together with the levers relative to the longitudinal axis of the body portion for desired reason, as for example, in order to help balance the doll for erect or standing position, the back wall of the body portion being shaped to closely surround a portion of the periphery of the flanges of the pulley in order to prevent escape of the cord from the pulley when the cord is slack.

2. A walking doll comprising a body portion, a bearing block, levers oscillatable on said bear-

ing block, legs carried on said bearing block and levers, and means for operatively connecting said levers within the body portion, said means including a pulley rotatably mounted on an upright axis at the top of the bearing block immediately adjacent the body portion, a cord extending around said pulley to the upper ends of said levers, the wall of the body portion at the pulley being shaped to closely surround a portion of the periphery of the flanges of the pulley in order to prevent escape of the cord from the pulley when the cord is slack.

3. A walking doll comprising a body portion, a bearing block, levers oscillatable on said bearing block, legs carried on said bearing block and levers, and means for operatively connecting said levers within the body portion, said means including a pulley rotatably mounted on an upright axis at the top of the bearing block immediately adjacent the back of the body portion, a cord extending around said pulley and through perforations in the upper ends of said levers, metal clips on said cord outside said levers to fix the effective length of the cord, the back wall of the body portion being shaped to closely surround a portion of the periphery of the flanges of the pulley in order to prevent escape of the cord from the pulley when the cord is slack.

4. A walking doll comprising a hollow body portion which is open at the bottom, a bearing block adapted to be received in the open bottom end of the body portion, said bearing block having internal and external portions, the internal portion having parallel upright front and rear edges, and the external portion being curved to complete the configuration of the body portion, levers oscillatable on said bearing block, legs carried on said bearing block and levers, and a cord operatively connecting the levers, the front and rear walls of the body portion at the open lower end thereof being provided with integrally molded channels adapted to slidably receive the parallel vertical edges of the bearing block.

5. A walking and sitting doll comprising a body portion, legs pivotally mounted thereon, means interconnecting the legs for opposite or walking movement, and means operative when the doll is put in sitting position to spread the legs apart angularly and outwardly to give the doll increased stability in the sitting position.

6. A walking and sitting doll comprising a body portion, a bearing at the bottom of the body portion, levers oscillatably mounted on the bearing, legs pivotally mounted on the bearing, the inside surfaces of the legs at the bearing being slotted to mate with the levers, means connecting said levers for the desired walking movement, said slots and levers being separable and disengaged when the doll is put in sitting position, and means operative when the doll is put in sitting position to spread the legs apart angularly and outwardly to give the doll increased stability in the sitting position.

7. A walking and sitting doll comprising a body portion, levers oscillatably mounted at the bottom of the body portion, legs pivotally mounted at the bottom of the body portion, the inside surfaces of the legs at the levers being slotted to mate with the levers, the levers being movable out of the slots when the doll is put in sitting position, the front wall of the lower end of the body being tapered and so dimensioned as to bear against the inner thighs of the legs when the doll is put in sitting position and to thereby cam or

spread the legs apart somewhat to give the doll increased stability in the sitting position.

8. A walking and sitting doll comprising a hollow body portion which is open at the bottom, a bearing block partially received in the body portion, levers oscillatably mounted on the bearing block, legs pivotally mounted on the bearing block, the inside surfaces of the legs at the bearing block being slotted to mate with the levers, said slots or/and levers being beveled to permit

5 the levers to move out of the slots when the doll is put in sitting position, the front wall of the lower end of the body being tapered and so dimensioned as to bear against the inner thighs of the legs when the doll is put in sitting position and to thereby cam or spread the legs apart somewhat to give the doll increased stability in the sitting position.

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