April 23, 1957 H. COOKE 2,789,393

GROWING DOLL

Filed April 15, 1953

Fig. 1.

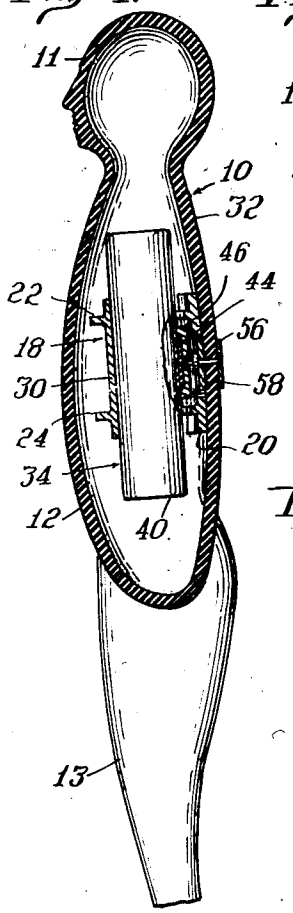


Fig. 2.

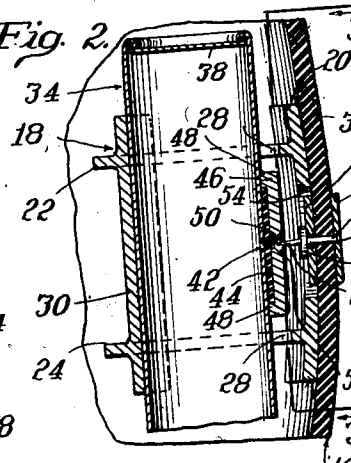


Fig. 5.

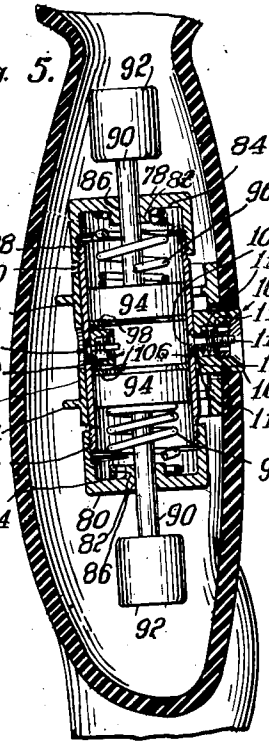


Fig. 6.

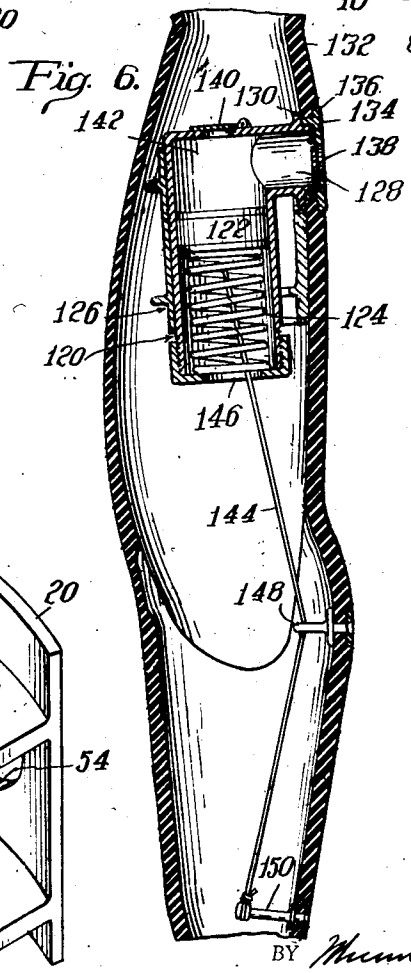


Fig. 3.

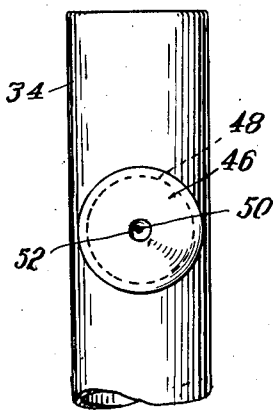
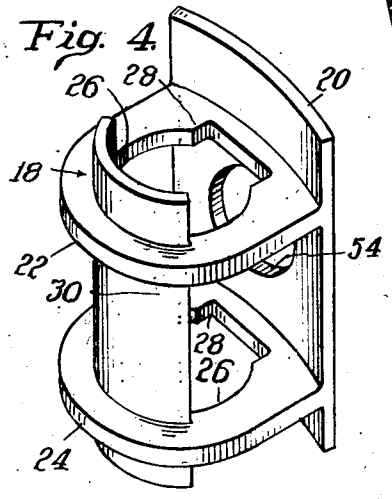


Fig. 4.



INVENTOR

Helen Cooke

BY Munn Liddy & Nathans

ATTORNEYS

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GROWING DOLL

Helen Cooke, Arlington, Va.

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5 Claims. (Cl. 46—90)

This invention relates in general to toys, such as dolls or the like, but as will appear more particularly hereinafter, the invention has other ramifications than use for toys.

Specifically, the invention pertains to articles such as a doll or similar toy which will increase in size over a period of time. Thus, if considered with respect to a doll, the invention relates to a growing doll. Today the nation's shops contain numerous varieties and kinds of toys and dolls such as toy dogs, toy bunnies, toy bears. Many of these toys can walk, talk, and accomplish other attributes of the animal they represent. The present invention, however, comprehends an advance over such art which so far as known has not heretofore been possible; the first object of the invention is the provision of a toy which will grow, that is, increase in size, over a length of time.

Of consideration in producing a doll of this type for the commercial market, is the need for obtaining a desired degree of growth and for maintaining the rate at which the doll or similar object grows. It is accordingly a further object of this invention to provide a means for adjusting the rate of growth of the toy.

It is also one of the objects of the invention to provide a toy having a self-contained supply of a medium for effectuating growth, and a means for initiating the release of such medium at a desired time. Such a toy is illustrated in one of the modifications of the invention described below comprising a container supported within a doll, and a device attached to the surface of the doll body which can be moved to puncture the container to effect release of the medium.

Another object of the invention is to provide as an alternative, a toy in which the growth will be a function of and bear relation to the amount of manipulation or handling of the toy.

Some alternative modifications may include pumps or similar devices situated within the body of the toy, and operable under movement of the toy to pump a suitable growth inducing medium into the interior of the toy.

These and other objects and advantages will become apparent from the following description and the accompanying drawing, in which:

Figure 1 is an elevational view partly in section showing a doll and a tank containing a pressurized medium mounted therein.

Figure 2 is an enlarged view of a portion of Figure 1.

Figure 3 is a view taken along line 3—3 of Figure 2.

Figure 4 is a perspective view of a support forming part of my invention.

Figure 5 is a view of a modified form of the invention.

Figure 6 is a view of yet another modified form of the invention.

Similar reference characters represent similar parts in the several figures.

Referring more particularly to the drawings, reference character **10** generally indicates a doll. The doll is formed of a flexible material which is substantially impervious to air and similar gases or mixtures thereof and may be of elastic material. The doll comprises a head **11**, trunk **12**, legs **13** and arms which are not shown. It is preferred to have the entire interior of these members in communication with each other, and to have all the members form a closed hollow interior.

As illustrated in Fig. 2, there is provided a supporting member **18** which comprises a curved rear flange **20**, a laterally extending upper flange **22** attached at one side to the rear flange **20**, and a similar bottom flange **24**. Both flanges **22** and **24** have a generally circular shaped opening **26**. The upper flange **22** in addition has a further opening **28** extending therethrough and communicating with opening **26**. Flanges **22** and **24** support and are connected to a vertically extending curved flange **30**.

The above described elements may be formed of a plastic material or a metallic material. Flange **20** is curved complementary to rear wall **32**, and is fastened thereto by fusion of the two elements together, by rivets or other suitable means.

Flanges **22** and **24** support a cylindrically shaped tank or container **34**. Container **34** has a side member **36** and end members **38** and **40**, although obviously the construction of the tank might be varied considerably. The tank may be formed of metal, plastic or other suitable material. The tank is dimensioned so as to have a force-fit connection with flanges **22**, **24** and **30**. Of course, the tank may be fused or otherwise secured to the flanges, if desired, and other means of support provided.

One side of the tank is pierced so as to form an aperture **42**. The aperture **42** is covered by a circular shaped piece of rubber or plastic or similar material **44**. Element **44** is considered to be a cover, and is fastened to the tank by an adhesive or by fusion. A metal or plastic protective cover **46** having a circular shaped flange **48**, is fastened to tank **34** and receives sealing element **44** so as to support the same and maintain a seal contact between sealing element **44** and tank **34**. The depth of flange **48** is less than the thickness of the cover **44** and thus cover **46** faces the sealing element against the tank.

Protective cover **46** is provided with a central aperture **50** illustrated in Fig. 3. Aperture **50** forms the apex of a conical opening **52** and is in alinement with aperture **42** of tank **34**.

Flange **20** is provided with a circular opening **54** which extends substantially the distance between flanges **22** and **24**. Thus rear wall **32** of the toy can flex inwardly within opening **54**. Attached to the rear wall there is a puncturing device comprising a flange **56** affixed to the outer side of the toy, a flange **58** attached to the inner side, a pin **59** extending through wall **32** and secured to flange **56** at **60**, and fastened to flange **58** by collar **62**. The pin is sharpened to a point, as indicated at **64** and lies in alinement with opening **50**. It will be seen that by pressing flange **56** inwardly toward the front of the doll, pin **54** will enter opening **50** and pierce sealing element **44**. When the flange **56** is released the pin will spring back and fluid, such as compressed air, maintained in tank **34**, can then escape outwardly into the doll through opening **28** in flange **22**. A hermetic connection is provided between pin **59** and its associated mounting elements. Opening **28**, incidentally, provides for inserting cover **46** through flange **22** when assembling container **34** and flanges **22** and **24**.

By variation of the size of opening **50** and the size of pin **59**, the size of the opening formed by puncturing sealing element **44** can be varied. Thus, the length of time required for a given quantity of fluid to escape from tank **34** can be varied. By employing suitable quantities of air or other gases, and suitable pressure, within tank **34** and by properly choosing the aperture

in cover 46, and pin 59, a desirable rate of growth of the toy can be achieved. It is seen that with the device of Fig. 1 the doll remains of minimum size until the sealing member is punctured. The period of growth can be initiated when desired.

It should be noted that when the sealing element 42 is pierced, the fluid will emerge and flow to all portions of the toy. Thus, the doll will increase in size in all portions. The arms, legs, head and trunk will enlarge proportionately to retain the general size relationship between the parts. A screen or filter such as a padding of pervious material can be placed on the interior of the tank in line with aperture 42 to retard the flow of fluid from the tank.

The modified form illustrated in Fig. 5 comprises a cylindrical element 70 mounted within flanges 72, 74 and wall 76 in a manner similar to that in which cylinder 34 is mounted. In this case however, the cylindrical element is provided with two end caps 78 and 80. Each of the end caps comprises a boss 82, a spring seat 84, a central bore 86 and a sleeve having threads 88 which cooperate with corresponding threads on the cylindrical element 70.

A piston rod 90 is slidingly received in bore 86. At one end the piston rod has attached thereto or formed thereon, a weight 92. At its opposite end the piston rod is provided with a piston 94. Compression spring 96 seats on the bottom of piston 94 and on spring seat 84 so as to urge piston 94 inwardly of cylinder 70. Stops such as a circular ring 98, limit the inward movement of piston 94. The stops may be of a resilient material, such as rubber, and fastened to the walls of cylinder 70 by suitable flanges or other means, not shown. The two pistons 94 therefore do not come in contact with each other.

A chamber 100 is provided intermediate the two pistons by virtue of the above described structure. The chamber is provided with inlet and outlet valves 102 and 103. Each of these valves comprises a casing 104, a seat 106, a valve 108 having cooperating engagement with the seat and stem 110 connected to the valve, which stem is loosely received in a passageway 112, a projecting pin 114 mounted in stem 110 and a compression spring 116. Compression spring 116 is seated on casing 104, and is in contact with pin 114 so as to urge valve 108 to closed position on valve seat 106. The valves are each provided with flanges 117 adapted to seat on cylindrical member 70 and to be secured thereto by soldering, fusion or other suitable means.

A suitable opening is provided in flanges 72 for connecting valve 104 after cylinder 70 is in position. The rear valve 104 extends through an opening 118 in the rear of the doll and can be fastened thereto by use of flanges, heat or other methods. It should be noted that casing 118 could also be threadingly engaged with cylinder 70.

In the modification shown in Fig. 5, the weights 92 will move in such a manner as to cause movement of pistons 94 outwardly of a cylinder 70 whenever the doll's motion in a direction substantially parallel to the axis of shafts 90 is suddenly arrested. For example, should the doll or toy be placed on the floor with the usual abruptness of a child, the lower weight 92 will move downwardly, overcoming the spring 96 due to the inertia of weight 92. As soon as the weight 92 reaches its outermost point, piston 94 will return to its normal and neutral position, as shown in Fig. 5, by virtue of the stored energy of spring 96.

On the outward movement of piston 94 the rear valve 108 will unseat, because of the reduction in pressure in chamber 100, and admit atmospheric air into the cylinder 70. Upon the return movement of piston 94 the inner valve 108 will open outwardly of chamber 100 and permit the passage of air into the interior of the toy, whereas the outer valve 100 will be seated.

Thus, the doll or toy will begin to grow as soon as the child starts to play with it. The growth will continue until the pump springs 96 can no longer force air into the interior of the doll.

The modified form of the invention illustrated in Fig. 6 comprises a cylindrical element 120 which forms a pump cylinder, a piston 122, a coil spring 124 and flange supporting means 126 constructed similar to the supporting means described hereinbefore.

At its upper end the piston is provided with a laterally extending conduit 128 having a flange 130 adapted to cooperate with wall 132 of a toy. A flanged element 134 is threadingly engaged with conduit 128 so as to receive the material 132 between flanges 130 and 136.

A flap valve 138 of a commonly known construction can be provided in flange cover 134. A similar flap valve 140 is provided at the upper end of chamber 142 formed in a cylinder 126. Flap valve 138 is constructed to admit air into chamber 142 and flap valve 140 is constructed to permit air to flow outwardly of chamber 142 into the interior of the toy. Valve 140 normally closes the outlet passageway through which air moves from chamber 142 into the interior of the toy.

Cable 144 is connected to piston 122 and extends downwardly through an opening 146 in the bottom of cylinder 126. Cable 144 extends through a guide 148 mounted on the interior of the toy and down to an anchor 150 also mounted on the interior of the doll. Guide 146 is positioned at approximately the buttocks of a doll, as illustrated.

Anchor 150 is positioned at approximately the knee and the piston 122 normally positioned approximately at the chest. It is seen that when the doll or similar toy is flexed at approximately the point of the guide 148, as would occur when the doll would be seated, piston 122 will be drawn downwardly in its cylinder. When the doll is again raised and the legs extended, the piston will move upwardly in the cylinder under the influence of spring 124. Thus, air will be brought from the atmosphere into the interior of the doll as the doll is handled by a child.

Various details such as the supporting flanges, valves, etc. are merely illustrative of the invention. Obviously there are many different ways of accomplishing the results obtained by applicant, all of which are within the scope of the invention. It is pointed out that elements 34, 70 and 120 are all tanks or containers for pressurized fluid.

While I have shown and described the preferred form of my invention, it will be understood that variations in details of form may be made without departure from the invention as defined in the appended claims.

I claim:

1. A toy comprising a hollow flexible body substantially impervious to air, a container for pressurized air supported in said body and having an outlet opening for the passage of air from said container to said body, said container having means providing an inlet opening for the entrance of air into said container, said inlet opening being extended to the exterior of said body, said container including a piston mounted therein, and means for moving said piston within said container to pump air from the exterior of the body to the interior thereof.

2. A toy comprising a hollow flexible body substantially impervious to air, a container for pressurized air supported on the interior wall thereof, said container having means providing an inlet opening connected to the exterior of said toy and a valve means mounted in said opening and operable to open for the passage of air into said container, said container having a second opening for passage of air from said container to the interior of said toy, a second valve in said second opening operable to open for the passage of air from said container to the interior of the toy, a piston mounted in said container, a spring supported on said container and urging

said piston inwardly of said cylinder, a piston rod connected to said piston, a weight connected to said piston rod and operable through influence of kinetic energy acquired by said weight upon movement of said toy to cause movement of said piston within said container to compress said spring to pump air from the exterior of said toy into said container, said spring being operable to absorb said energy during said movement of said piston and to move said piston to pump air from said container into the interior of said toy when said energy is absorbed by said spring.

3. A toy comprising a hollow flexible body substantially pervious to air, a container for pressurized air supported within said body having an inlet opening connected to the exterior of said body and normally closed by a valve, said container having an outlet opening for the passage of air from said container to said body connected to the interior of said body normally closed by a second valve, a piston mounted within said container, means urging said piston inwardly of said container, a piston rod connected to said piston, a weight connected to said piston rod, a second piston mounted in said container having means urging said piston inwardly of said container, a second piston rod and a second weight connected to said second piston, said weights being capable of causing movement of said pistons outwardly of said container upon movement of said toy in directions longitudinally of said piston rods accompanied with a sudden arresting of such movement, said valves being operable upon reciprocating movement of said pistons, said pistons being operable through influence of kinetic energy applied to said weights to pump air from the exterior of said toy into said container, both means urging the piston inwardly of the container being operable to absorb kinetic energy from said weights during movement of their associated pistons, and to move their associated pistons to pump air from said containers into the interior of said toy when kinetic energy is absorbed by said means urging the pistons.

4. A toy comprising a hollow impervious flexible body, a container mounted within said body, said container having means forming a conduit connecting said container to the exterior of the body and normally closed by

a valve operable to admit air into said container, an outlet opening connecting the interior of said container to the interior of said toy normally closed by a valve operable to admit air from said container into the interior of said toy, a piston mounted in said container, and means urging said piston inwardly of said container, said body comprising a main portion and a portion movably connected to said main portion, an element connecting said piston to the second memtioned portion, said element extending through a guide secured to said toy at a point generally intermediate said two portions, said piston being movable within said container upon movement of the first mentioned portion with respect to the second mentioned portion to cause entrance of air into the container and into the interior of said toy.

5. A toy comprising a hollow flexible body substantially impervious to air, a container for pressurized air supported in said body and having an outlet opening for the passage of air from said container to said body, said container having means providing an inlet opening for the entrance of air into said container, said inlet opening being extended to the exterior of said body, said container including a piston mounted therein, and means for moving said piston within said container to pump air from the exterior of the body to the interior thereof comprising a resilient means normally urging said piston in one direction, and a weight connected to said piston, said weight being operable upon movement of said toy to move said piston in a direction opposite the direction in which said means for urging said piston urges said piston under the influence of kinetic energy acquired by said weight through movement of said toy.

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