May 3, 1960 R. E. BIRNBAUM 2,934,857

DOLL WITH ROTATABLE HEAD AND LIQUID RESERVOIR

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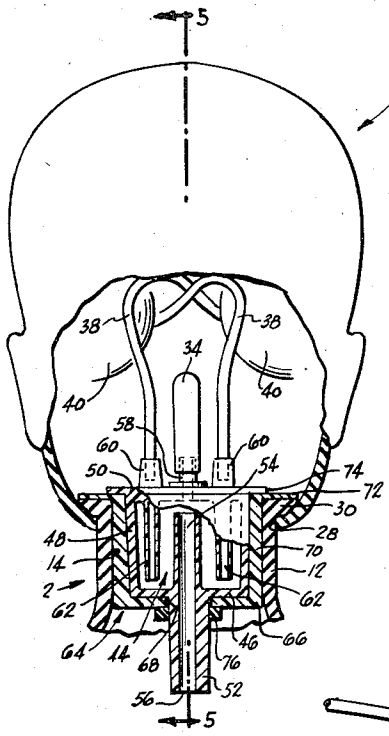


Fig. 1.

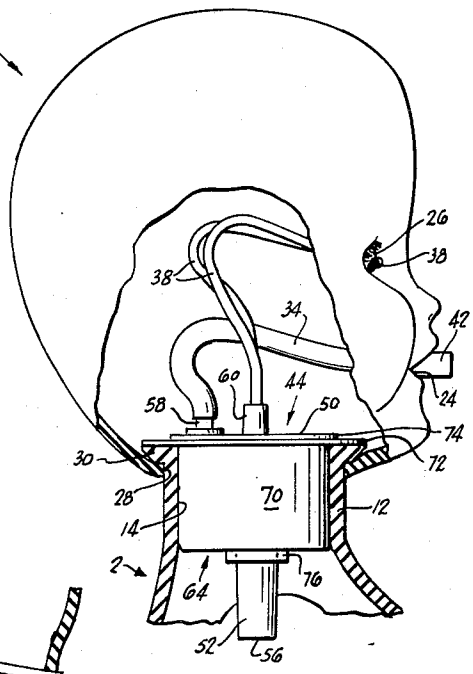


Fig. 2.

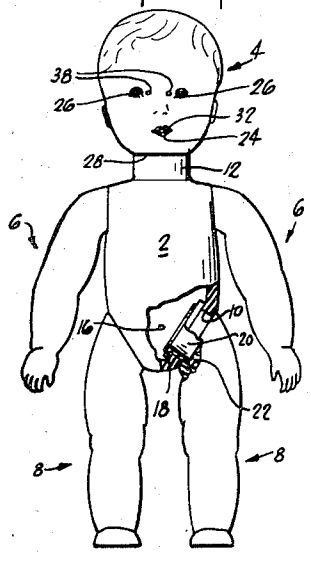


Fig. 3.

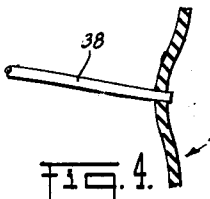


Fig. 4.

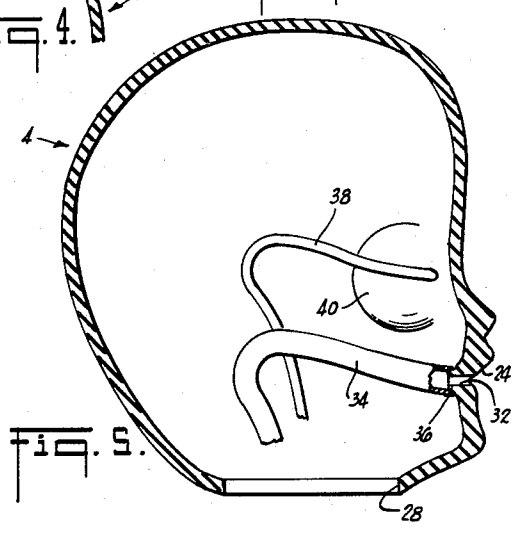


Fig. 5.

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DOLL WITH ROTATABLE HEAD AND LIQUID RESERVOIR

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4 Claims. (Cl. 46—141)

The present invention relates to a doll construction having a reservoir which is operatively connected to the head of the doll and adapted to receive and contain liquid. The invention is particularly adapted to such a doll in which the head is freely rotatably mounted on the body, the reservoir and the operative connections thereto in no way inhibiting the freedom of rotatability of the head.

So-called "crying" and "wetting" dolls have been produced in the past. In order to provide the desired degree of realism, such dolls are so constructed that a liquid such as water is adapted to be taken into the doll body through the mouth thereof, the doll thereby simulating drinking from a nursing bottle or the like, means being provided, either under the control of the user or otherwise, for causing the liquid to escape from the doll through appropriately positioned apertures so as to simulate the natural functions of "wetting" and "crying." While the liquid could be introduced directly into the doll body, particularly where only the "wetting" function is involved, it is usually desired to provide some intermediate reservoir which will at the very least produce a time delay between the taking in of water and the escape thereof from the doll body, and which usually also produces the effect that "wetting" occurs only after water has been taken into the doll in excess of a predetermined amount. In the case of "crying" dolls the reservoir performs another function, to wit, providing a supply of water independent of the "wetting" water and available to produce simulated tears whenever desired.

The reservoir structures of the prior art have taken many forms, but have all been characterized by being fixedly attached to the doll body, flexible tubes being provided between the reservoir and the mouth of the doll (and the eyes, if "crying" is a feature) in order to conduct the water to and from the reservoir. This structure has the obvious drawback that it greatly limits the degree to which the head may be rotated relative to the body. The tubes not only exert resistance to any movement of the head away from its normal position, but act to positively limit the extent to which the head may be rotated relative to the body. As is well known, dolls of this type are subject to extreme handling by their youthful users, and it is the rule rather than the exception that an attempt to turn the doll head beyond its safe extent of motion will result in rupture of the tubes or separation of the tubes from the head or the reservoir, thus destroying the desired mode of functioning of the doll. In addition, the problem of securing such reservoirs to the doll body has placed certain limitations upon the nature of the material to be used for the doll body, and has presented problems of assembly quite significant from a production point of view.

The present invention avoids these disadvantages by providing a reservoir of novel construction which is rotatably mounted in the doll body in such a manner that it will follow any rotation of the head, even through many complete revolutions of the head, without offering any appreciable resistance thereto. The reservoir of the present invention is very readily and inexpensively produced, and may be assembled into and secured to the doll body in a simple manner well adapted to quantity production. In addition, the detailed structure of the reservoir adapts it exceedingly efficiently for use in a combination "crying" and "wetting" doll.

The reservoir body, the inlets to which are connected to appropriate points on the doll head by means of flexible tubing or the like, is mounted directly in the upper part of the neck portion of the doll body, thus facilitating assembly. It and its supporting member, where provided, serve to close the open neck of the doll and thus, in conjunction with the more or less conventional plugs closing the arm and leg holes of the doll body, serves to ensure that water which enters the doll body will remain therein, except as it should be permitted to escape to simulate "wetting," and will not run into the doll head even if the doll should be inverted. Because the reservoir is mounted at the top of the neck of the doll body, no limitation whatsoever is placed upon the material of which the doll body is constructed, and consequently flexible material such as rubber or vinyl resin can be employed therefor.

When a "wetting" function is to be simulated, the reservoir is provided with an overflow pipe leading from a point near the top of the reservoir and emptying into the doll body. When a "crying" effect is to be simulated, the water conduits leading to the eyes of the doll start in the reservoir at a point close to the bottom thereof. Air-pressure-transmitting means, which may be constituted in part by the overflow pipe previously mentioned, are provided for exerting air pressure on the upper level of the water contained within the reservoir, the reservoir being sealed and the air pressure thus forcing water out through the conduits leading to the eyes of the doll, thus producing tears whenever that is desired.

To the accomplishment of the above, and to such other objects as may hereinafter appear, the present invention relates to a doll structure and to the structure of a reservoir useable therein, as defined in the following claims and as described in this specification, taken together with the accompanying drawings, in which:

Fig. 1 is a rear elevational view, partially broken away, showing the doll head and reservoir in position on the neck of a doll body according to a preferred embodiment of the present invention;

Fig. 2 is a side elevational view, partially broken away, of the doll structure of Fig. 1;

Fig. 3 is a front elevational view, on a reduced scale and partially broken away, of a doll with the head mounted thereon;

Fig. 4 is a fragmentary cross sectional view taken at a point through the doll head close to one of the eyes thereof and showing the manner in which a tear conduit is incorporated thereinto; and

Fig. 5 is a side cross sectional view of the doll head of Fig. 1 taken along the line 5—5 of Fig. 1.

But a single embodiment of the present invention is here disclosed, that embodiment performing both "wetting" and "crying" functions, both the doll body and the doll head being formed of a soft and resiliently deformable material such as rubber or vinyl resin, since that embodiment is deemed to best disclose the advantages inherent in the present invention. It will be understood, however, that various aspects of the present invention, and modifications thereof, could be incorporated into specifically different doll structures.

The doll comprises a body 2, a head 4, arms 6 and legs 8, as is conventional. The body 2 is molded from a resiliently flexible material such as rubber or vinyl plastic, is hollow, is provided with apertures for receiving the

arms 6 and legs 8, one leg aperture 10 being shown in Fig. 3, and has a neck portion 12 having a central opening 14 at the top thereof which opens into the hollow body. In addition, a small appropriately positioned leakage aperture 16 may be provided near the lower end of the body 2 through which water may escape to simulate "wetting." The arms 6 and legs 8, which in this embodiment are formed of rubber or the like and molded in hollow form, have resilient flanged ends 18 which firmly frictionally grasp the interior of the receiving apertures 10 so as to permit manual rotation of the arms 6 or legs 8 relative to the body 2 but at the same time prevent leakage of water at the joints. Plugs 20, preferably of some rigid molded plastic material, may be provided to seal the openings of the inner extremities of the arms 6 and legs 8 so as to prevent water from entering thereinto, and also so as to rigidify the joints between the limbs and the body 2 so that the limbs cannot be removed from the body once they have been placed in position thereon. If desired the legs 8 and arms 6 may be internally rigidified by means of stuffing 22 or the like.

The head 4 may be made in any conventional manner, and is here disclosed as molded from rubber or vinyl resin into a resiliently flexible unitary structure having a mouth 24, eyes 26 of any desired type, and an open bottom 28 adapted to snap over the neck portion 12 of the body 2, being retained in position by the flange 30 at the top of that neck portion, the head 4 thus being freely rotatable with respect to the body 2. The head 4 is provided with an aperture 32 at the mouth portion thereof, and a flexible tube 34 communicates therewith by being fitted over a boss 36 on the interior of the head 4. Smaller flexible tubes 38 are molded directly into the wall of the head 4 adjacent the eyes 26, as may best be seen from Fig. 4, the open ends of the tubes 38 communicating with the exterior of the head 4. If any special form of eye 26 is employed, it may be molded directly into the head 4, the material of which the head 4 is formed completely sealing that eye at the interior of the head, as indicated at the areas 40. A removable plug 42 may be provided to seal the mouth aperture 32.

The reservoir, generally designated 44, is defined by a hollow member having a bottom wall 46, a tapered cylindrical side wall 48 and a top wall 50, the cross section of the reservoir 44 being circular so as to permit free rotatability. Preferably integrally formed with the bottom wall 46 is an overflow pipe 52 the upper end 54 of which opens close to the top wall 50 and the lower end 56 of which terminates at a point below the bottom wall 46. A nipple 58 extends upwardly from the top wall 50, opens in to the upper portion of the interior of the reservoir 44, and the inner end of the mouth tube 34 fits over the nipple 58. A pair of nipples 60 extend up from the top wall 50 and communicate with integral pipes 62 which project downwardly into the interior of the reservoir 44 and terminate at points close to the bottom wall 46 thereof. The inner ends of the eye tubes 38 are fitted into the nipples 60.

A supporting member 64 is provided into which the reservoir 44 is receivable and within which the reservoir 44 is freely rotatable. The supporting member 64 comprises a bottom wall 66 having a central aperture 68, side walls 70 adapted to snugly fit into and close the opening 14 at the neck 12 of the body 2, and a rim flange 72 adapted to rest on the top of the doll body neck flange 30. The inner dimensions of the supporting member 64 are such that the reservoir 44 will snugly fit therein, the lower portion of its overflow tube 52 passing through the aperture 68. If desired, the reservoir 44 may be provided with a flange 74 which fits over the flange 72 of the supporting member 64 so as to prevent the entry of foreign matter between the reservoir 44 and the supporting member 64, since such foreign matter would have a tendency to restrict the free rotatability of the reservoir 44 within the supporting member 64. A ring 76 is pressed over the portion of the overflow pipe 52 which extends through the aperture 68 in the bottom wall 66 of the supporting member 64, the ring 76 being close to the bottom wall 46 so as to prevent the reservoir 44, when once assembled with the supporting member 64, from separating therefrom.

Assembly of the doll of the present invention is an extremely simple matter. With the head 4 removed, the arms 6 and legs 8 are snapped into place into appropriate body apertures 10 and the plugs 20 are then inserted from the inside of the doll body 2 into the open inner ends of the limbs. The eye tubes 38 are secured to the head 4, as here disclosed, during the molding thereof. The mouth tube 34 is fitted over the boss 36. The inner ends of the tubes 34 and 38 are connected to the nipples 58 and 60 respectively, the reservoir 44 having previously been formed and assembled in any appropriate manner. The reservoir 44 is then slipped into the supporting member 64 via the open top thereof, the ring 76 is forced into place on the overflow pipe 52, and the supporting member 64 is then forced into the open top 14 of the doll body neck 12, where it fits snugly and preferably is secured in place by means of cement or in some other appropriate manner. This step is accomplished while the head 42 is not yet secured to the body 2, the tubes 34 and 38 being provided with slack which permits this operation. Thereafter the opening 28 at the bottom of the head 4 is expanded and snapped over the doll body neck 12 and its rim flange 30. This completes assembly of the doll.

The mode of operation of the doll is as follows: The doll will "drink," or take in water, via the mouth opening 32. Water can either be poured into the mouth opening 32 or suction can be applied by compressing the resilient body 2, closing the aperture 16 by applying a finger to the exterior thereof, and then permitting the doll body 2 to expand while the nipple of a bottle is inserted into the mouth opening 32. When this is done the suction generated by the expansion of the body 2 will be transmitted via the overflow pipe 52 to the interior of the reservoir 44 and then, via the tube 34, to the mouth opening 32. When no water is in the reservoir 44, some of this suction will also be exerted through the eye tubes 38, but because of their slenderness not much loss of suction will result therefrom. If this loss of suction should be deemed excessive, the use of fingers to close the open outer ends of the eye tubes 38 adjacent the doll eyes 26 will eliminate this disadvantage. When the reservoir 44 contains sufficient water so that the water level in the reservoir is above the lower ends of the tubes 62, all of the suction will be exerted through the mouth tube 34 to the mouth opening 32. The application of suction may be carried out for as many times as is desired, making sure only that when the doll body 2 is compressed the mouth opening 32 is open.

As water is thus caused to enter the reservoir 44, the water level will rise but the water will remain therein until the water level reaches the upper end 54 of the overflow tube 52. Any additional water sucked or poured into the reservoir 44 will then overflow through the tube 52 into the hollow doll body 2, and the water which accumulates in the doll body will slowly seep out through the aperture 16 so as to simulate "wetting." It will therefore be appreciated that the reservoir 44 not only provides a time delay between the taking in of water and "wetting," but also increases the realistic action of the doll by substantially preventing "wetting" until a predetermined minimum amount of water has been taken in by the doll. Of course, if the reservoir should contain some water and the doll should be moved from upright position, some water might escape through the overflow pipe 56 into the doll body 2, but this is not considered undesirable. On the contrary, it further sim-

ulates realism by enhancing the possibility of the doll "wetting" its bed.

When the "crying" function is to be simulated, the mouth opening 32 is closed by means of the plug 42. Indeed, in order to prevent escape of water from the reservoir 44 when the doll is moved about, the plug 42 will normally be in the mouth opening 32, to be removed therefrom only when "feeding" is to take place. Because of the slenderness of the eye tubes 38, no substantial amount of leakage from them will occur even if the doll is held in inverted position for an appreciable period of time. The tendency of leakage through the eye tubes 38 is further minimized by reason of the fact that the tubes 62 with which they communicate terminate close to the bottom wall 46 of the reservoir 44.

With the mouth plug 42 in place, if the body 2 should be compressed, air pressure will be generated within the body 2. Because of the smallness of the aperture 16 it will not militate to any appreciable degree against the attainment of this pressure, particularly if the doll should be diapered, but finger pressure on the outside of the aperture 16 will completely eliminate this drawback if desired. The thus generated air pressure is transmitted via the overflow pipe 52 to the upper level of the water in the reservoir 44, any tendency of the pressure to escape via the mouth tube 34 being positively prevented by the plug 42. This pressure will therefore force water through the eye pipes 38 and out on to the exterior of the doll head 4 adjacent the eyes 26, thus simulating tears. Because of the slenderness of the eye tubes 38, the development of even an appreciable amount of air pressure will only result in a slow escape of water in the form of tears.

If the doll head 4 should be rotated on the doll neck 12, the tubes 38 and 34, preferably connected to the reservoir 44 at points spaced radially from the center of rotation thereof, will cause the reservoir 44 to rotate within the supporting member 64 to a substantially equal extent, and without imposing excessive strains upon the tubes 34 and 38. Therefore the operating structure of the doll will be unimpaired even if the doll head 4 be rotated rapidly through a large number of successive complete rotations.

While but a single embodiment of the present invention has been here disclosed, it will be apparent that many variations may be made therein, all within the spirit of the invention as defined in the following claims.

I claim:

1. A doll comprising a hollow body having a neck opening, a head rotatably mounted on said body at said neck opening, a supporting member fixed to said doll body and substantially closing said neck opening, a reservoir resting on and supported by said supporting member, said reservoir being rotatable relative to said member while supported thereby, liquid-conducting means extending between said head and said reservoir, means operatively connected between said head and said reservoir to cause said reservoir to rotate substantially with said head, said supporting member provided with an aperture, said reservoir being mounted on said supporting member so as to cover said aperture, an overflow pipe in said reservoir depending therefrom and passing through the aperture in said supporting member into the interior of said doll body so as to extend below said supporting member, and an element secured to said overflow pipe below and adjacent said supporting member and larger than the aperture in said supporting member, thereby securing said reservoir and said supporting member in proper relative position and preventing said reservoir from escaping from said supporting member.

2. A doll comprising a hollow body having a neck opening, a head rotatably mounted on said body at said neck opening, a supporting member fixed to said doll body and substantially closing said neck opening, said supporting member having an upwardly opening recess with a bottom wall, a reservoir rotatably received in said recess and resting on said bottom wall, liquid-conducting means extending between said head and said reservoir, and means operatively connected between said head and said reservoir to cause said reservoir to rotate substantially with said head.

3. The doll of claim 2, in which said bottom wall is provided with an aperture, said reservoir being mounted on said bottom wall so as to cover said aperture, and an element operatively connected between said reservoir and said supporting member securing the two in proper relative position and preventing the former from escaping from the latter.

4. The doll of claim 2, in which said bottom wall is provided with an aperture, said reservoir being mounted on said bottom wall so as to cover said aperture, an overflow pipe in said reservoir depending therefrom and passing through the aperture in said bottom wall into the interior of said doll body so as to extend below said bottom wall, and an element secured to said overflow pipe below and adjacent said bottom wall and larger than the aperture in said bottom wall, thereby securing said reservoir and said bottom wall in proper relative position and preventing said reservoir from escaping from said bottom wall.

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