Dec. 7, 1937. E. G. SCHAEFFER 2,101,102

DOLL

Filed July 9, 1935 2 Sheets-Sheet 1

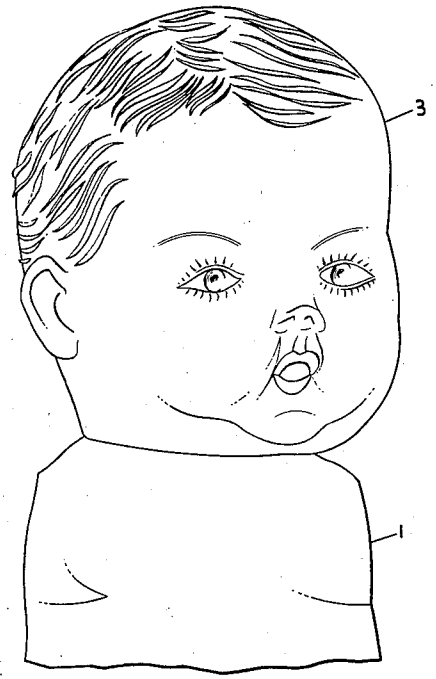


FIG. 1



FIG. 2

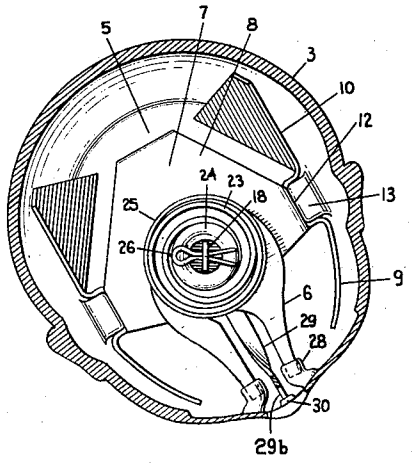


FIG. 3

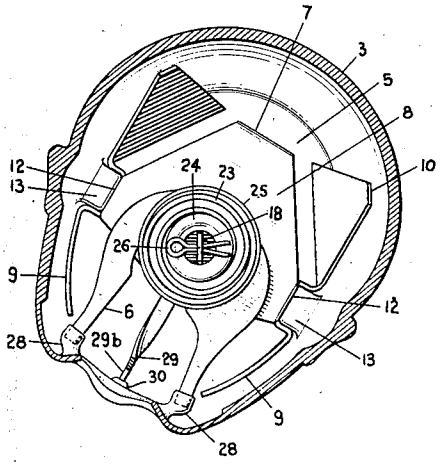


FIG. 4

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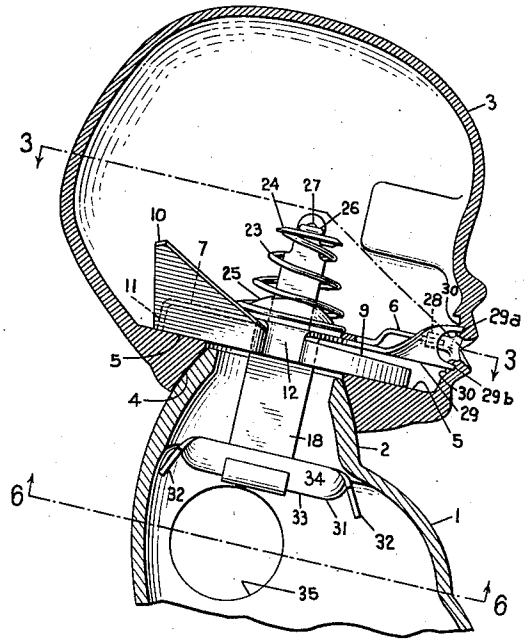


FIG. 5

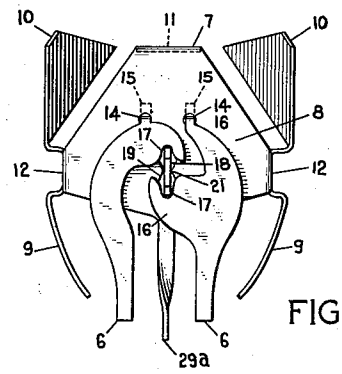


FIG. 7

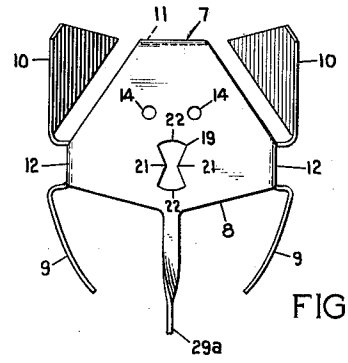


FIG. 8

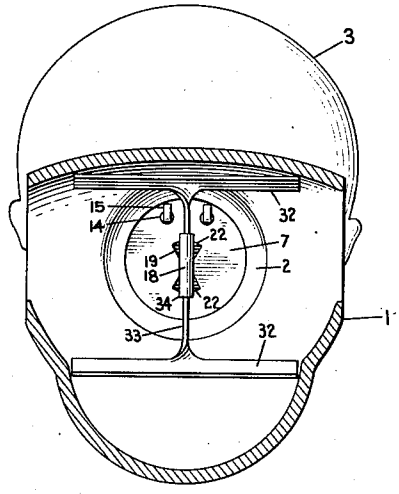


FIG. 6

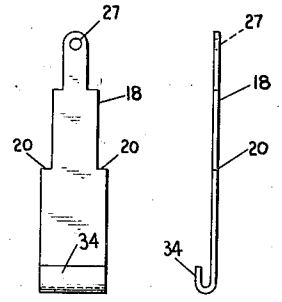


FIG. 9 FIG. 10

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UNITED STATES PATENT OFFICE

2,101,102

DOLL

Edward G. Schaeffer, New York, N. Y., assignor to Cecilia E. Bowers, Washington, D. C.

Application July 9, 1935, Serial No. 30,553

16 Claims. (Cl. 46—135)

My invention relates to dolls and it has for its principal object the provision of an improved and simplified means for varying the facial expressions thereof.

One of the primary features of the invention consists in providing a doll with a movable head and in combining therewith mechanism for varying the facial expression of the doll which is operable upon relative movement of the doll's head and torso.

Another feature of the invention consists in rotatably mounting the doll's head on the torso and in providing mechanism including a plurality of levers operable upon relative rotation of the head and torso for varying the facial expression of the doll.

A further feature of the invention consists in providing a doll with a relatively movable head and torso and in providing means whereby upon relative movement of the head and torso in one direction a facial expression simulating a smile is produced and upon relative movement of the head and torso in the opposite direction a facial expression simulating a pout is produced.

Other and more specific features of the invention residing in advantageous forms, combinations and relations of parts will hereinafter appear and be pointed out in the claims.

In the drawings illustrating a preferred embodiment of the invention,

Figure 1 is a fragmentary front view of the doll illustrating the relative position of the head and torso after the former has been moved to effect a facial expression simulating a pout.

Figure 2 is a fragmentary front view of the doll illustrating the relative position of the torso and head after the latter has been moved to effect a facial expression simulating a smile.

Figure 3 is a substantially horizontal sectional view taken through the doll's head on a line corresponding to line 3—3 of Fig. 5 showing the mechanism for varying the facial expression of the doll in position for effecting a smile.

Figure 4 is a view similar to Fig. 3 showing the mechanism for varying a facial expression of the doll in position for effecting a smile.

Figure 5 is a vertical sectional view of the doll's head and the upper portion of the torso, the operating mechanism being shown in elevation.

Figure 6 is a sectional view taken on line 6—6 of Fig. 5.

Figure 7 is a plan view of the mechanism for varying the facial expression of the doll.

Figure 8 is a plan view of the base member upon which the mechanism is mounted.

Figure 9 is a front view of the member for operating the mechanism.

Figure 10 is a side view of the operating member.

Referring more particularly to the drawings, 1 indicates the upper portion of the torso of the doll which is provided with a neck portion 2 and 3 indicates the head which is rotatably mounted on the torso, the lower end or under side of the head being formed with an opening 4 for receiving the neck portion 2. Both the head and torso may be advantageously made of any suitable resilient material, such as rubber, and each is preferably hollow. The portion of the head bounding the opening 4 is made relatively rigid by being of increased thickness and as indicated at 5, the inner side of this portion is formed as a substantially plane surface affording a convenient support for the mechanism employed for changing or varying the facial expression of the doll.

This mechanism includes pivoted levers 6, the inner ends of which are journalled in a base plate or member 7. The base plate may be conveniently formed from a single sheet of metal and it comprises a main body portion 8 and a pair of forwardly and rearwardly projecting arms or brackets 9 and 10, respectively, which are bent downwardly at substantially right angles to the main body portion 8 and their lower edges rest upon the upper surface 5 of the lower portion of the head. The rear portion of the base plate is also bent downwardly to form a flange 11 which likewise rests upon the surface 5.

The forwardly projecting arms 9 curve inwardly toward each other so as to conform to the curvature of the interior of adjacent portions of the doll's head and the rearwardly projecting arms 10 may be of substantially triangular shape, extending upwardly in outwardly inclined directions in engagement with the inner rear side of the head. The inner ends of the arms 9 and 10 are offset inwardly to provide recesses 12 to receive lugs 13 which are preferably formed integrally with the head and project inwardly from the sides thereof. These lugs effectively lock the base plate against rotation with respect to the head.

While the levers 6 may be pivotally connected to the base plate in any convenient manner, this may be simply and effectively accomplished by integrally forming the inner ends of the levers with relatively narrow projections which are off-

set downwardly to extend through openings 14 in the base plate and terminate in rearward extensions 15 underlying the base plate. Intermediate their ends the levers are provided with laterally offset inwardly extending portions 16 which are spaced from each other in the direction of length of the levers and their adjacent edges are formed with reentrant portions 17 for receiving an operating member 18 which extends upwardly from the torso through an opening 19 in the base plate. The operating member 18 may be conveniently formed as a flat plate or bar and intermediate its ends it is formed with shoulders 20 for engaging the under side of the base plate. The opening 19 through which the operating member 18 projects is contracted at its central portion to provide abutments 21 about which the operating member is adapted to fulcrum or rotate and portions of the opening on opposite sides of the abutments 21 are preferably of sectorial shape as indicated at 22. By forming the opening in this manner and having the operating member extend into the reenrant portion 17 of the levers 6 it will be readily perceived that the levers will be caused to rotate either toward or away from each other by simply inducing rotation of the operating member about its longitudinal axis with respect to the base member, the direction of movement of the levers depending upon the direction in which the operating member is rotated.

The operating member 18 may be operatively connected to the base member 7 by a coil spring 23 which encircles the upper end of the operating member and is confined between two disks or plates, 24 and 25, respectively. The spring is applied under compression and the upper disk 24 is restrained from moving upwardly by any suitable means such as a cotter 26 or the like passing through an opening 27 in the upper end of the operating member. The lower disk 25 overlaps the upper side of the levers 6 and in conjunction with the spring 23 serves to maintain the levers in pivotal association with the base plate.

The forward ends of the levers 6 are connected with the rear side of the face portion of the doll, preferably adjacent the corners of its mouth, by inwardly projecting elastic lugs 28 which may advantageously be of the same material as the face and be united to the inner side thereof by vulcanization or by being formed integral therewith. The inner ends of the lugs 28 are formed with slots or the like to receive the forward ends of the levers 6 which terminate inwardly of and in spaced relation to the mouth portion of the doll. The portion of the face defining the mouth is sufficiently elastic, and it may have greater resiliency or elasticity than other portions of the face, so that it may be easily expanded or contracted by the levers 6 and the lugs 28 are also sufficiently elastic to afford a resilient or yielding connection between the levers and the elastic mouth portion of the doll. As clearly shown in Figs. 3 and 4 of the drawings the lugs 28 are deformed by the levers when the latter are operated and this yielding connection between the levers and the elastic mouth portion of the doll prevents abrupt deformations in the doll's face and enables the production of natural and lifelike expressions.

While it has heretofore been proposed, in an endeavor to further heighten the naturalness of the facial expression of a doll, to provide means for inducing vertical movement of the lips, particularly the lower lip, I have found that better results are obtained by forming the mouth so that it is slighly open when in repose and in providing means for preventing substantial vertical movement of the lips. To this end the base plate 7 is provided, preferably integrally, with a forwardly projecting centrally disposed arm 29, the forward end of which is bifurcated to form vertically spaced portions 29^a and 29^b which are respectively connected to the central portions of the lips slightly inwardly of the margins thereof, as illustrated in Fig. 5. Although elastic lugs similar to those heretofore described may be employed for connecting the arm 29 to the lips, this connection may be effected by merely having the bars 29^a and 29^b extend into the inner side of the lips and, if desired, the latter may be of slightly increased thickness at these points, as indicated at 30, so that when the mouth is contracted to effect a facial expression simulating a pout and the lips are thereby caused to move outwardly slightly, the arm 29 will not become disengaged from the lips. While the arm 29 serves to prevent substantial vertical movement of the lips upon operation of the levers 6, they may move slightly in this direction due to their elasticity and the fact that the arm 29 is connected thereto inwardly of their marginal edges. In addition to this function, the arm 29 also serves to prevent the lips from pressing inwardly when the mouth is extended or stretched to effect an expression simulating a smile.

To effect operation of the levers 6 upon relative rotation of the head and torso the lower end of the operating member 18 is connected to the member 31 disposed in the upper end of the torso. The member 31 is preferably of H-shape having side pieces 32, respectively engaging the front and rear walls of the torso and a transverse or connecting piece 33. The lower end of the operating member 18 is provided with a return bend or flange 34 forming a hook adapted to engage under the transverse piece 33 of the H-shaped member 31. Upward movement of member 31 is prevented by the contracted neck portion 2 of the torso and the operating member 18 may be easily connected and disconnected therefrom by merely compressing the coil spring 23. Rotation of member 31 relative to the torso is prevented by the side pieces 32 thereof, and thus relative rotation of the head and torso will cause the operating member 18 to rotate relatively to the levers 6 and thereby actuate the latter. Not only does member 18 serve to operate the levers but it also serves as means for connecting the head and torso.

In assembling the doll, the mechanism including the base member 7, the pivoted levers 6 and the operating member 18, all of which have been previously connected together, is inserted as a unit through the opening 3 in the under side of the head. This may be accomplished by first deforming the opening so as to elongate it and then, after placing the mechanism so that the forward ends of the levers project through the opening and moving the operating member 18 so as to compress the coil spring 23, the mechanism may be easily pushed through the opening. After the mechanism is disposed within the head it is moved into a position such that the forward ends of the levers 6 may be inserted into the lugs 28 and the forward end of the arm 29 inserted into the portion 30. The torso in which the member 31 has been previously disposed by being inserted through either of the arm openings 35 thereof, is then associated with the head and the lower end of the operating member 18 may be easily

connected to the cross piece 33 by pulling downwardly on the hooked end 34 with any suitable tool and then permitting it to spring upwardly in hooked relation with the cross piece under the influence of the coil spring 23.

To produce a change in the facial expression of the doll, the head may be rotated with respect to the torso or the torso may be rotated with respect to the head. As viewed in Fig. 3 when the head is rotated in a counter-clockwise direction with respect to the torso, the levers 6 are caused to move toward each other to contract the elastic mouth portion and thereby to produce a facial expression simulating a pout and, as viewed in Fig. 4, when the head is rotated in a clockwise direction with respect to the torso, the levers are caused to move in opposite directions and thereby expand the elastic mouth portion to produce a facial expression simulating a smile.

It will of course be appreciated that a great variety of facial expressions will be produced by moving the head from the extreme position shown in Fig. 3 to the extreme position shown in Fig. 4 and that when the head occupies a central position the face will be in repose.

I claim:

1. A doll including a torso, a hollow head movably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, mechanism for varying the facial expression of the doll including movable members cooperable with said elastic portion, and means controlled by relative movement of the head and torso for actuating said movable members.

2. A doll including a torso, a hollow head rotatably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, mechanism for moving said elastic portion to vary the facial expression of the doll, and means controlled by relative rotation of the head and torso for actuating said mechanism.

3. A doll including a torso, a hollow head movably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, a pair of members movable within the head and connected with said elastic portion adjacent opposite corners of the mouth, and means actuated by relative movement of the head and torso for operating said members to vary the facial expression of the doll.

4. A doll including a torso, a hollow head movably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, means connecting said head and torso, and mechanism including movable members cooperable with said elastic portion for varying the facial expression of the doll, said connecting means being cooperable with said members and being movable with respect thereto upon relative movement of the head and torso for actuating said members.

5. A doll including a torso, a hollow head movably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, movable means carried by the head for cooperating with said elastic portion to vary the facial expression of the doll, and rigid means for actuating said movable means, said rigid means being connected to the torso so as to actuate said movable means upon relative movement of the head and torso.

6. A doll including a torso, a hollow head rotatably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, a plurality of levers movably mounted within the head and connected to said elastic portion for varying the facial expression of the doll, and means operable upon relative rotation of the head and torso for actuating said levers, said means including a rigid member disposed within the torso, and extending upwardly into the head for cooperating with the levers.

7. A doll including a torso, a hollow head provided with a face having an elastic portion surrounding the mouth, and mechanism for varying the facial expression of the doll by moving said elastic portion, said mechanism comprising a base member, and a plurality of levers mounted on the base member and connected to said elastic portion, the lower portion of said head being internally formed with portions affording a support for said base member.

8. A doll including a torso, a hollow head provided with a face having an elastic portion surrounding the mouth, said head being also provided with an opening in its lower end, mechanism disposed within the head for varying the facial expression of the doll by moving said elastic portion, said mechanism comprising a base member supported by portions of the head on opposite sides of said opening, and a plurality of levers movably mounted on the base member for cooperating with said elastic portion, and means disposed within the torso and extending upwardly through said opening in the head for actuating said levers.

9. A doll including a torso, a hollow head provided with a face having an elastic portion surrounding the mouth, mechanism disposed within the head for varying the facial expression of the doll by moving said elastic portion, said mechanism comprising a base member, and levers pivotally mounted on the base member and connected to said elastic portion, said head and base member being provided with interengaging portions preventing rotation of the base member relatively to the head about an axis substantially parallel to the pivotal axes of said levers, and means for actuating said levers.

10. A doll including a torso, a hollow head movably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, and mechanism operable upon relative movement of the head and torso for moving said elastic portion to vary the facial expression of the doll, said mechanism including a plurality of movable levers connected to said elastic portion, means disposed within the torso having a portion extending transversely thereof, and a member for actuating said levers connected to said transverse portion.

11. A doll including a torso, a hollow head rotatably mounted on the torso and provided with a face having an elastic portion surrounding the mouth, mechanism operable upon relative rotation of the head and torso for moving said elastic portion to vary the facial expression of the doll, said mechanism including a plurality of movable levers connected to said elastic portion, means disposed within the torso having a portion extending transversely thereof, and a member for actuating said levers having a hook shaped lower end engaging said transverse portion, and yielding means for maintaining said lower end of the actuating member in engagement with said transverse portion.

12. A doll including a torso, a hollow head provided with a face having an elastic portion surrounding the mouth, and mechanism for varying the facial expression of the doll including

movable members connected to said elastic portion adjacent the corners of the mouth, and means for operating said levers, said means being movable in one direction to cause the levers to effect an expansion of the elastic mouth portion and being movable in the opposite direction to effect a contraction of the elastic mouth portion.

13. A doll including a torso, a hollow head provided with a face portion having an elastic portion surrounding the mouth, and mechanism for varying the facial expression of the doll including pivotally mounted levers connected to said elastic portion adjacent the corners of the mouth, and means extending upwardly between said levers for actuating the latter, said means being movable in one direction to cause the levers to effect an expansion of the elastic mouth portion and being movable in the opposite direction to cause the levers to effect a contraction of the elastic mouth portion.

14. A doll including a torso, a hollow head provided with a face having an elastic portion defining a normally open mouth, means connected to said elastic portion adjacent the corners of the mouth to effect a stretching of the elastic portion, and means rigidly mounted within the head and connected to at least one of the lips of the mouth for preventing substantial vertical movement thereof upon a stretching of the elastic portion.

15. A doll including a torso, a hollow head provided with a face having an elastic portion defining a normally open mouth, and mechanism disposed within the head for varying the facial expression of the doll, said mechanism including a base member, levers pivotally mounted upon said member and respectively connected to the elastic portion adjacent the corners of the mouth, and means rigid with said member and connected to the lips of the mouth adjacent the central part thereof for preventing substantial vertical movement of the lips upon a change in the facial expression of the doll.

16. A doll including a torso, a hollow head provided with a face having an elastic portion defining the mouth, and mechanism disposed within the head for stretching said elastic portion to effect a facial expression simulating a smile, said mechanism including a base member, levers movably mounted upon said member and respectively connected to said elastic portion adjacent the corners of the mouth, and means rigid with said member and cooperable with the lips of the mouth intermediate the corners thereof for preventing the lips from moving inwardly upon a stretching of the elastic portion.

EDWARD G. SCHAEFFER.