

[54] **KISSING DOLL ACTUATED BY PRESSURE APPLIED TO LIPS**

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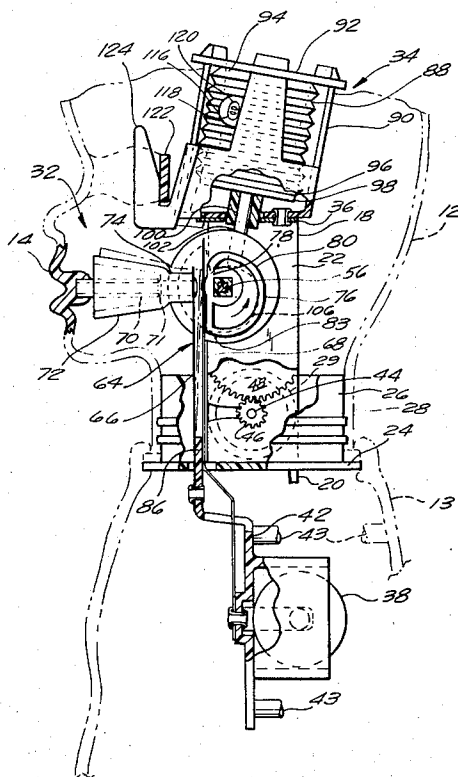
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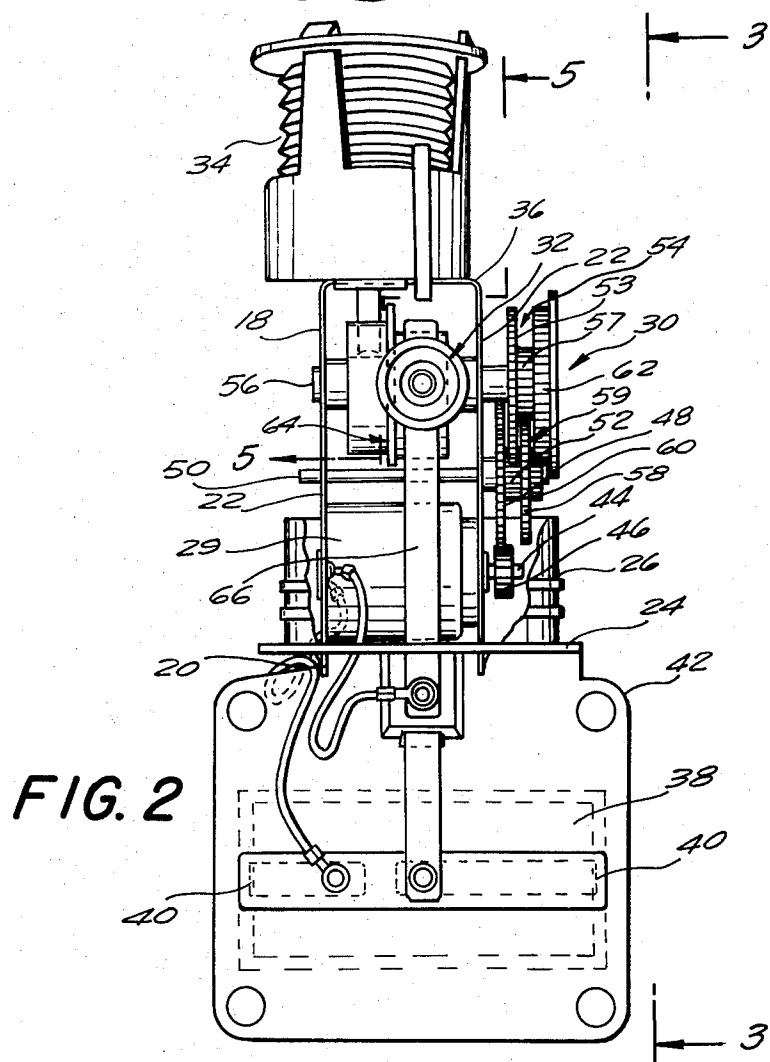
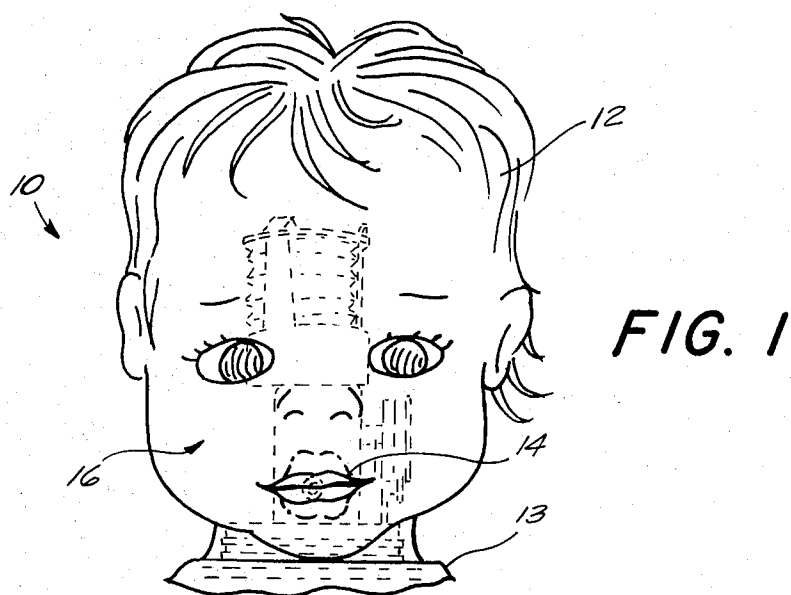
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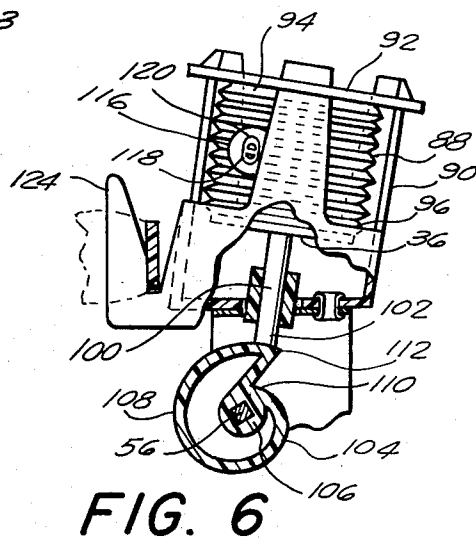
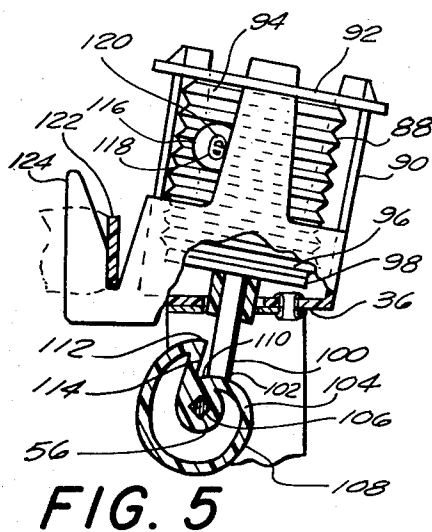
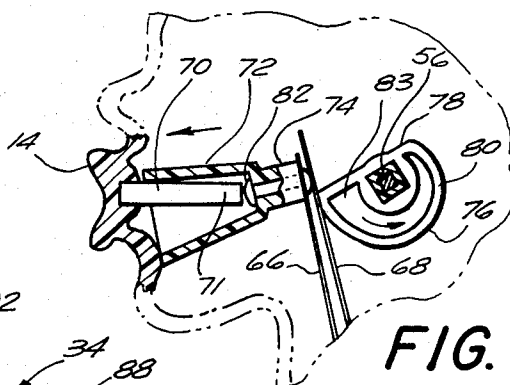
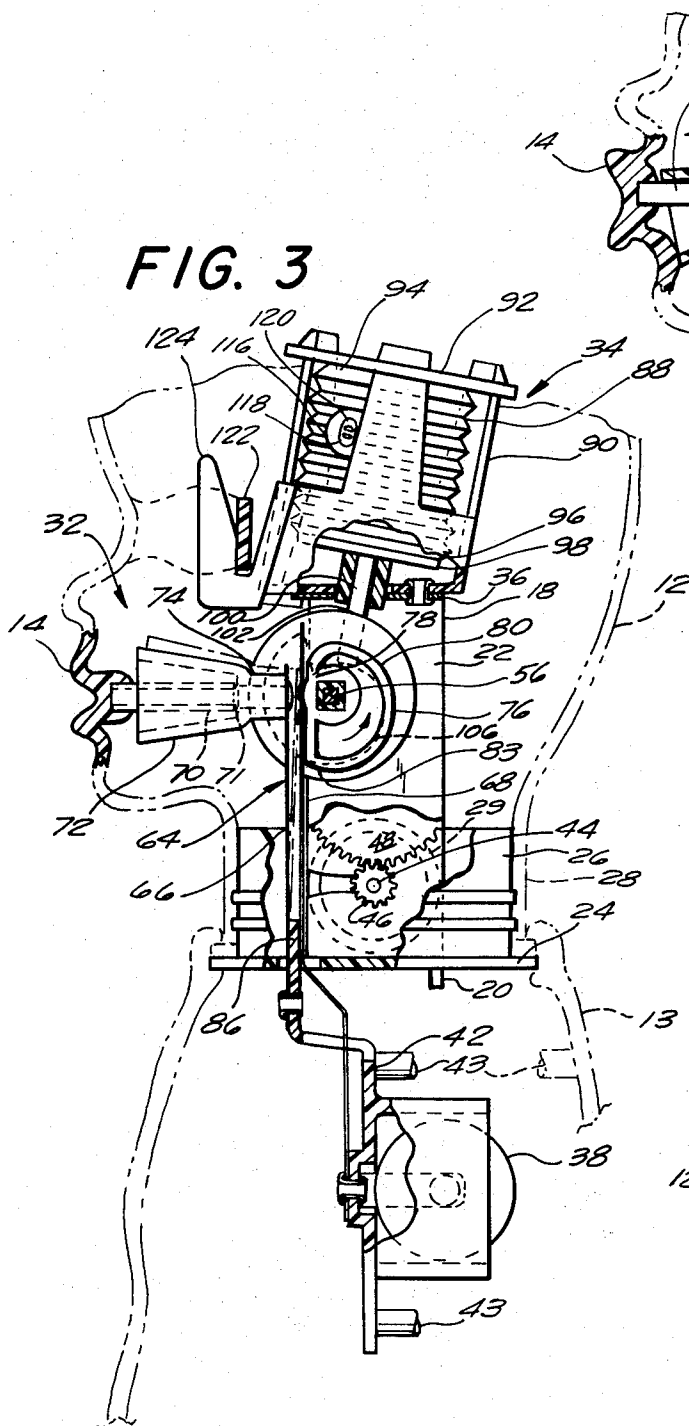
[57] **ABSTRACT**

The head of a toy doll is formed with a flexible face including a pair of movable lips within the doll are a motor driven cam and push rod for moving the lips from their normal position to an extended puckered position, and a motor-driven cam and bellows sounder arranged to be actuated together to simulate the lip movement and the sound of a kiss. An actuating switch device is positioned to turn on the motor in response to slight external pressure on the doll's lips.

16 Claims, 6 Drawing Figures







KISSING DOLL ACTUATED BY PRESSURE APPLIED TO LIPS

The present invention relates to toy dolls, and more particularly to a toy doll which is capable of producing a realistic lip movement and a coordinated sound simulating a kiss.

Numerous dolls have been previously proposed and constructed for the purpose of simulating a variety of human actions. One of the most difficult of such actions to be produced with a toy doll is that of a realistic kiss. While several dolls have been developed which attempt to simulate a true kissing action, they are relatively complicated and normally require movement of an external portion of the doll's body which is normally not associated with a kiss. Typically, most previously-proposed kissing dolls require that the torso of the doll be squeezed or that the arms thereof be moved in order to activate a mechanical mechanism in the doll which moves its lips to simulate the kiss. Such mechanisms generally are not entirely satisfactory in operation and normally are too expensive to use in toy dolls.

Accordingly, it is an object of the present invention to produce a toy doll which will realistically simulate a kissing action and sound.

Another object of the invention is to realistically produce a kissing motion in a doll's lips in conjunction with a coordinated kissing sound.

Another object of the present invention is to provide a doll which is adapted to simulate a kissing action and sound with a drive mechanism which does not require manipulation of an external portion of the doll itself or any external controls.

Yet another object of the present invention is to produce a toy doll which is adapted to simulate a kiss and which is durable and inexpensive in construction and simple in operation.

In accordance with one aspect of the present invention a toy doll includes a head which is formed with a flexible face having a pair of movable lips. These lips are normally in a closed or natural configuration and are operatively connected to a lip moving mechanism which causes the lips to be extended to a puckered or pursed configuration simulating the action of a kiss. The drive mechanism is constructed to release the lips so that they return to their normal configuration, after reaching their fully extended or puckered position, while simultaneously operating a sound mechanism to produce a sound simulating that of a kiss. In a preferred embodiment of the invention the drive mechanism is activated by contact of the doll's lips with a surface, such as the cheek or lips of a child. This contact closes an electrical switch which causes actuation of a motor and drive means connected thereto which causes extension of the lips.

The above and other objects, features and advantages of the present invention, will be apparent from the following detailed description of an illustrative embodiment thereof which is to be read in connection with the accompanying drawings, wherein:

FIG. 1 is a front view of the head of a doll incorporating a kissing mechanism constructed in accordance with the present invention;

FIG. 2 is an enlarged elevational view of the drive mechanism used in the doll of FIG. 1;

FIG. 3 is a side sectional view, with parts broken away, taken along the broken line 3—3 of FIG. 2 and

showing the configuration of the drive mechanism in the normal position of the doll's lips;

FIG. 4 is a partial sectional view similar to FIG. 3 showing the extended position of the doll's lips;

FIG. 5 is an elevational view taken along the broken line 5—5 of FIG. 2 showing the sound producing device used in the present invention; and

FIG. 6 is a view similar to FIG. 5 showing the position of the sound making mechanism at the fully extended position of the doll's lips and just prior to the production of the kissing sound.

Referring now to the drawing in detail, and initially to FIG. 1 thereof, it is seen that toy doll 10 includes a head 12 formed on a flexible plastic material and a conventional front-back split torso 13. The head has facial features formed thereon, including a pair of lips 14 which are normally at rest in the position shown in solid lines in FIG. 1 and adapted to be extended to a puckered configuration, (shown in phantom lines) to simulate a kiss. These lips are moved between their normal and puckered configurations by a drive mechanism 16 located within the head of the doll.

Drive mechanism 16, as more clearly shown in FIGS. 2 and 3, includes an inverted generally U-shaped frame 18 having the free ends 20 of its legs 22 secured, in any convenient manner, in the base 24 of a neck support member or collar 26. The latter, as seen in FIG. 3, is engaged and rigidly secured to the neck 28 of the doll's head 12 in any convenient manner. Collar 26 and head 12 are fixed in position with respect to torso 13 in the manner more fully described hereinafter.

A small electric motor 29 is mounted in frame 18, adjacent base 24, and drives a gear train 30 which moves a push rod and guide assembly 32 between retracted and extended positions, respectively shown in FIGS. 3 and 4 of the drawing, thereby to simulate a kissing action with lips 14. In addition, gear train 30 is operatively connected to a sound making bellows arrangement 34, mounted on the bight portion 36 of frame 18 which is adapted to make a sound simulating the sound of a kiss when the lips 14 are fully extended.

Motor 29 is preferably a miniature electric motor to which power is supplied from a battery 38. The latter is mounted between a pair of spring contact members 40, of conventional construction, secured to a support plate 42 rigidly secured to or integrally formed with base 24 of collar 26. As seen in FIG. 3, support plate 42 normally extends into and is rigidly secured to the rear half of the split torso 13 of doll 10, for example by a plurality of pegs 43 formed integrally with the rear portion of the doll's torso, with access to the support plate and battery 38 being provided through an opening (not shown) in the rear of the doll. In this manner plate 42 is held in a fixed position in torso 13 and as a result of its rigid connection with collar 26, that collar and head 12 are also held in a fixed position with respect to the torso.

Motor 29 includes an output shaft 44 having a spur gear 46 rigidly secured thereto and drivingly engaged with a first compound gear 48 in gear train 30. Gear 48 is freely rotatably mounted on a shaft 50; rotatably mounted between the legs 22 of frame 18, and includes a smaller diameter spur gear 52 integrally formed therewith. Gear 52 is in turn drivingly engaged with the larger gear 53 of a compound gear 54 rotatably mounted on a shaft 56 rotatably mounted in frame 18. It is noted that shaft 56 has a square cross-section (see

FIG. 3), for the reasons more fully described hereinafter, and that compound gear 54 has a circular opening by which it is rotatably mounted on shaft 56 for independent rotation with respect to the shaft.

Compound gear 54 has a smaller diameter spur gear 57 formed integrally therewith and positioned in driving engagement with the larger spur gear 58 of a second compound gear 59 rotatably mounted on shaft 50. Gear 59 is free to rotate independently of compound gear 48, 52, and shaft 50, and includes an integral smaller spur gear 60 positioned in meshing engagement with a relatively large diameter spur gear 62. The latter gear has a square central opening therein which receives the complementary square shaft 56, in order to transmit rotary motion to the shaft from motor 29, through the various gears previously described. In this manner shaft 56 is rotated by motor 29 to reciprocate the assembly 32 to move the doll's lips 14 in the manner described hereinafter.

It is noted that the gear train 30, including the various gears mentioned above, is a step down gear train so that the rotation and drive of shaft 56 is substantially slower than the speed of rotation of the output shaft 44 of motor 29, in order to provide a more realistic life-like movement to the lips 14.

Electrical energy is supplied to motor 29 from battery 38 whenever the spring switch 64 in head 12 is closed. This switch includes a pair of spring contacts 66, 68 mounted on plate 42 and extending in spaced relation to each other to a position between shaft 56 and assembly 32. As shown in FIG. 2, these switch contacts are electrically connected to battery contacts 40 and motor 29 in order to supply electrical current to the motor when the contacts therebetween are closed as described hereinafter.

Spring contact 66 is operatively connected to the assembly 32 which includes a tube 70 secured at one end in the head of the doll adjacent lips 14 and received at its opposite end 71 in a generally frusto-conically shaped guide member 72. The latter has its rear end portion 74 secured to contact 66 of switch 64 by a rivet or the like. By this construction, whenever the lips 14 of doll 10 are placed with a slight pressure in contact with any surface, typically the lips or cheek of a child playing with a doll, the doll's lips 14 will move inwardly slightly, due to the flexible material of which the head is formed, thereby causing contact 66 to engage contact 68. This, of course, closes switch 64 and causes motor 29 to operate to drive gear train 30 and thus shaft 56.

By the construction of the present invention, once contacts 66 and 68 are engaged in this manner the kissing mechanism 16 keeps the contacts in engagement in order to continuously supply electrical current to the motor 29 to cause the same to drive the assembly 32 outwardly, as shown in FIG. 4, thereby to extend the lips 14 and the portion of face 12 surrounding and adjacent to the lips in the kissing action. This is accomplished by the provision of a first or compound cam element 76 mounted on shaft 56. Cam 76 includes a generally square central aperture which is complementary to and receives shaft 56 so that the cam rotates with the shaft. As seen in FIGS. 3 and 4, cam 76 has a first relatively flat cam surface 78 and a second cam surface 80 which extends with an increasing radius from one end of surface 78 to the other. Operation of motor 29 causes shaft 56, and thus cam 76, to rotate in a counter-

clockwise direction (which I refer to as the direction of increasing radius), as indicated by the arrows in FIGS. 3 and 4, thus causing the top edge of cam surface 78, and the smaller diameter portion of cam section 80, to engage spring contact 68 and hold it against spring contact 66. Accordingly, the electrical switch 64 remains closed and motor 29 continues to drive gear train 30 and thus shaft 56. This causes the increasing radius portions of cam section 80 to move in engagement with spring contact 68, thus maintaining switch 64 in its closed condition and moving assembly 32 to the left, as seen in FIGS. 3 and 4. As this occurs, the end 82 of guide member 72 pushes against the end 71 of tube 70, causing lips 14 to extend outwardly to their extended or puckered position.

Due to the flexible metal material of which contacts 66 and 68 are formed, the contacts can bend about their mounting connections, in the manner illustrated in FIG. 4, while the contact therebetween is maintained by cam section 80. Due to the generally pivotal motion of the contacts, guide 72 also pivots slightly; however, due to the conical construction of guide 72, tube 70 is maintained at all times in a straight position within the guide to push lips 14 straight outwardly.

Ultimately, continued rotation of cam 80 by shaft 56 causes the largest radius portion 83 thereof to move against contact 68, thereby moving lips 14 to their fullest extension and simulating the pucker of a kiss. Further rotation causes the large radius portion 83 to move out of engagement with contact 68, thereby presenting the flat cam section 78 to that spring contact. When this occurs, spring contact 68 moves back to its original upright position, shown in FIG. 3, and the contact between the elements 66 and 68 is broken. It is noted that when the bias on spring contact 68 is relieved by the movement of cam surface 78 into the position shown in FIG. 3, the assembly 32 moves back to its original configuration, due to the resiliency of the doll's face. However, because of the spacing between contacts 66, 68 which is provided by the end 86 of plate 42, the contacts are held out of engagement with each other. Accordingly, the drive of motor 29 is stopped. Of course, if the child maintains contact of her cheek with the doll's lips so that the contact between elements 66 and 68 is maintained, the sequence of operation will repeat.

In conjunction with the simulated kissing motion provided by the present invention, a simulated kissing sound can be produced by the sound maker 34. The latter comprises a flexible plastic bellows 88 which is captured in a cage 90, mounted on the bight portion 36 of frame 18, and having a removable top 92 which restrains movement of the end 94 of the bellows. The opposite end 96 of bellows 88 is engaged with plunger 98 having a stem 100 which extends through aligned apertures in the bottom of cage 90 and bight 36. The free end 102 of stem 100 is operatively engaged against a second cam 104 mounted on shaft 56, by a square hole 106, for rotation with the shaft.

Cam 104 has a peripheral cam surface 108 of increasing radius, as seen in FIGS. 5 and 6, which extends from a point 110 of minimum radius to a point 112 of maximum radius. By this construction, an abrupt transition zone 114 is provided in the cam surface.

In the preferred embodiment of the present invention cam 104 is mounted on shaft 56 in a predetermined position with respect to cam element 76, as shown in dot-

ted lines in FIG. 3. In this position, the end 102 of plunger stem 100 is located adjacent the minimum radius portion 110 of cam 104. Accordingly, upon rotation of the shaft in a counterclockwise direction, i.e., as lips 14 are extended, cam 104 rotates in counterclockwise direction (which I refer to as the direction of increasing radius) to compress bellows 88, as shown in FIG. 6. The surface 108 of cam 104 is dimensioned so that when cam 76 is in the position shown in FIG. 4, i.e., when the lips 14 are in their fully extended position, the bellows 88 is fully compressed, with the end 102 of stem 100 against the largest radius portion 112 of cam 104, as shown in FIG. 6. Continued rotation of shaft 56 causes the end 122 of plunger 100 to move over the abrupt transition 114 of cam 104, under the influence of the compressed resilient bellows 88 so that the bellows returns to its original configuration (FIG. 5) as lips 14 achieve their fullest extension and begin to move back towards their original position.

In order to produce the kiss-like sound, bellows 88 is provided with a conventional reed-type sound maker 116 mounted in the side thereof. Sound maker 116 includes a flexible reed 118 mounted in an aperture 120 formed in the sound maker, providing communication between the interior of the bellows and the atmosphere. Reed 118 is constructed in the conventional manner to vibrate to produce a sound, when air flows into the bellows. Accordingly, when the compression on the bellows is released, i.e., when the bellows expands at the end of the kiss, air rushes past reed 118, through aperture 120 and into the bellows to fill the same. The flow of air passed the reed in this manner produces a sound which simulates the sound of kiss.

In the preferred embodiment of the invention, the doll's head 12 includes a frame member 122 mounted therein behind the eyes of the doll. This frame member is provided to cooperate with a hook 124 secured to cage 90 in any convenient manner. By this construction, the kiss mechanism of the invention is firmly related to head 12 at two positions, i.e., at the support 122 and at the mounting collar 26. Accordingly, upon rotation of cam 76, and the pushing action provided by assembly 32, only lips 14, the adjacent portions of the doll's face, assembly 32 and spring contacts 66 and 68 will be moved, i.e., the frame and the remainder of the drive mechanism remains in a rigid position against the bias provided by the resilient face of the doll.

Accordingly, it is seen that a relatively simple and inexpensively constructed doll is provided which is adapted to simulate both the action and sound of a kiss. This action is initiated simply by the touching of the lips of the doll to the lips or cheek of the child using the doll. It continues without interruption to automatically simulate the kiss. The cycle can be automatically repeated to produce a series of kisses simply by keeping the lips of the doll in contact with the child's face. Moreover, no external mechanisms and no special movements of the body are required in order to simulate the kiss.

Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to that precise embodiment, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of this invention.

What is claimed is:

1. A doll comprising a head having a flexible face including a pair of movable lips formed thereon, means mounted within said doll for moving said lips and means mounted within said doll responsive to a slight pressure applied externally to said lips to actuate said lip-moving means for moving said lips from their normal position to an extended puckered position, thereby to simulate a kissing action.

2. A doll comprising a head having a flexible face including a pair of movable lips formed thereon and means mounted with said doll for moving said lips to simulate a kiss, said means including a motor, means operatively connected to said lips and driven by said motor for moving said lips from their normal position to an extended position, and switch means, responsive to a slight external pressure applied to said lips for actuating said motor.

3. A doll comprising a head having a resilient flexible face including a pair of movable lips formed thereon and means mounted with said doll for moving said lips to simulate a kiss, said means including a compound cam rotatably mounted in said head and having a peripheral cam surface including first and second cam sections, said second cam section being curved and extending from said first section with an increasing radius, follower means operatively connected at one end to said lips and normally operatively engaged with said first cam section, and selectively operable drive means for rotating said cam in the direction of the increasing radius of said second cam section, whereby said lips are first moved outwardly with respect to said face to an extended simulated puckered configuration as said second cam section moves against said follower means and then are returned to their normal position by said resilient face as said first cam section is returned into contact with said follower means by continued rotation of said cam.

4. The toy doll as defined in claim 3 wherein said motor comprises an electric motor, and said follower includes a push member secured at one end to said lips and a spring switch for actuating said motor and including first and second normally spaced apart spring contacts, said push member being operatively connected to said first spring contact and said second spring contact being operatively engaged against said cam surface whereby, upon the external application of a slight pressure to said lips, said first spring contact is moved inwardly by said push member against said second spring contact to close said switch and operate said motor to rotate said cam, said cam rotation maintaining said spring contacts in engagement and urging said push member outwardly to pucker said lips with the engagement between said contacts being broken as said first cam section returns into engagement with said second spring contact.

5. The toy doll as defined in claim 3 including means operatively connected with said lip-moving means for simulating the sound of a kiss as said lips return from said puckered position to said normal position.

6. The toy doll as defined in claim 5 wherein said sound simulating means comprises an air bellows having an opening therein, a reed mounted in said opening, and means driven by said motor for compressing said bellows as said lips are extended by said compound cam and for releasing said bellows as said lips return to their normal position, thereby to permit expansion of the bellows and vibration of said reed as air enters said

bellows through said opening for simulating a kissing sound as the pucker of the lips is released.

7. The toy doll as defined in claim 6 wherein said means for compressing the bellows comprises a second cam mounted in said head coaxially of said compound cam for rotation therewith, said second cam having a continuous cam surface of increasing radius with an abrupt transition in said surface between the maximum and minimum radius portions thereof and positioned to rotate in the direction of its increasing radius and plunger means operatively engaged at one end against said bellows and engaged at its opposite end with said second cam, whereby said bellows are compressed as said lips are extended, said abrupt transition being located to permit return of said plunger from the highest surface portion of said second cam to the lowest surface portion thereof as said extended puckered lips begin their return to their original position, thereby to release said bellows and produce said simulated kiss sound.

8. The toy doll as defined in claim 3 wherein said means for moving said lips includes a rigid frame, said cam being rotatably mounted in said frame and said frame being secured to said head in at least two spaced locations, thereby to prevent lateral movement of said cam in said head as said lips are extended.

9. A doll comprising a head having a resilient flexible face including a pair of movable lips formed thereon, and means mounted within said doll for moving said lips to simulate a kiss, said means including an electric motor, selectively operable switch means for activating said motor, means operatively connected between said lips and said switch for closing said switch to activate said motor upon the external application of a slight pressure to said lips, and means, driven by said motor, for moving said lips between normal and extended puckered positions and for maintaining said switch in its closed position as said lips are moved from said normal to said puckered position, thereby to maintain said motor in operation.

10. The toy doll as defined in claim 9 including sound producing means driven by said motor for producing a sound simulating the sound of a kiss as said lips return from their extended puckered position to their normal position.

11. The toy doll as defined in claim 10 wherein said means driven by said motor for moving said lips between normal and extended puckered positions includes a compound cam rotatably mounted in said head and having a peripheral cam surface including first and second cam sections, said second cam section extending from said first section with an increasing radius, said switch including first and second normally spaced contact members positioned between said compound cam and said lips, with said first contact being engaged with said cam and said second contact being connected to said means for closing the switch; said compound cam being operatively connected to said motor for rotation thereby in the direction of the increasing radius of said second cam section whereby said lips are first moved outwardly with respect to said face to an extended simulated puckered configuration as said second cam section moves against said first

contact to urge said contact into engagement with said second contact thereby to move said contacts and said means for closing the switch outwardly; said lips being returned to their normal position by said resilient force as said first cam section is returned into contact with said first contact by continued rotation of said cam.

12. The toy doll as defined in claim 11 wherein said means for closing the switch includes a push member secured at one end to said lips and positioned at its opposite end to push against said second contact, whereby upon application of a slight pressure to said lips, said second spring contact is moved inwardly by said push member against said first contact to close said switch and operate said motor to rotate said compound cam, said cam rotation maintaining said spring contacts in engagement and urging said push member outwardly to pusher said lips with the engagement between said contacts being broken as said first cam section returns into engagement with said first spring contact.

13. The toy as defined in claim 12 wherein said sound producing means comprises an air bellows having an opening therein, a reed mounted in said opening, and means driven by said motor for compressing said bellows as said lips are extended by said compound cam and for releasing said bellows as said lips return to their normal position, thereby to permit expansion of the bellows and vibration of said reed as air enters said bellows through said opening for simulating a kissing sound as the pucker of the lips is released.

14. The toy as defined in claim 13 wherein said means for compressing the bellows comprises a second cam mounted in said head coaxially of said compound cam for rotation therewith, said second cam having a continuous cam surface of increasing radius with an abrupt transition in said surface between the maximum and minimum radius portions thereof and positioned to rotate in the direction of its increasing radius, and plunger means operatively engaged at one end against said bellows and engaged at its opposite end with said second cam, whereby said bellows are compressed as said lips are extended; said abrupt transition being located to permit return of said plunger from the highest surface portion of said second cam to the lowest surface portion thereof as said extended puckered lips begin their return to their original position, thereby to release said bellows and produce said simulated kiss sound.

15. The toy as defined in claim 14 including a rigid frame located in said head, said cam means being rotatably mounted in said frame, and said frame being rigidly secured to said head in at least two spaced locations, thereby to prevent movement of said frame in said head as said lips are extended.

16. The toy doll as defined in claim 12, said means for moving said lips to simulate a kiss including a generally conically shaped guide member secured to said second spring contact and opening outwardly therefrom towards said lips, said push member being received in said guide and engaged therewith, adjacent its connection with said second spring contact, said push member and said guide forming a flexible connection between said second contact and said lips.

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