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(54) **ANNUNCIATING ARTIFICIAL NAILS**

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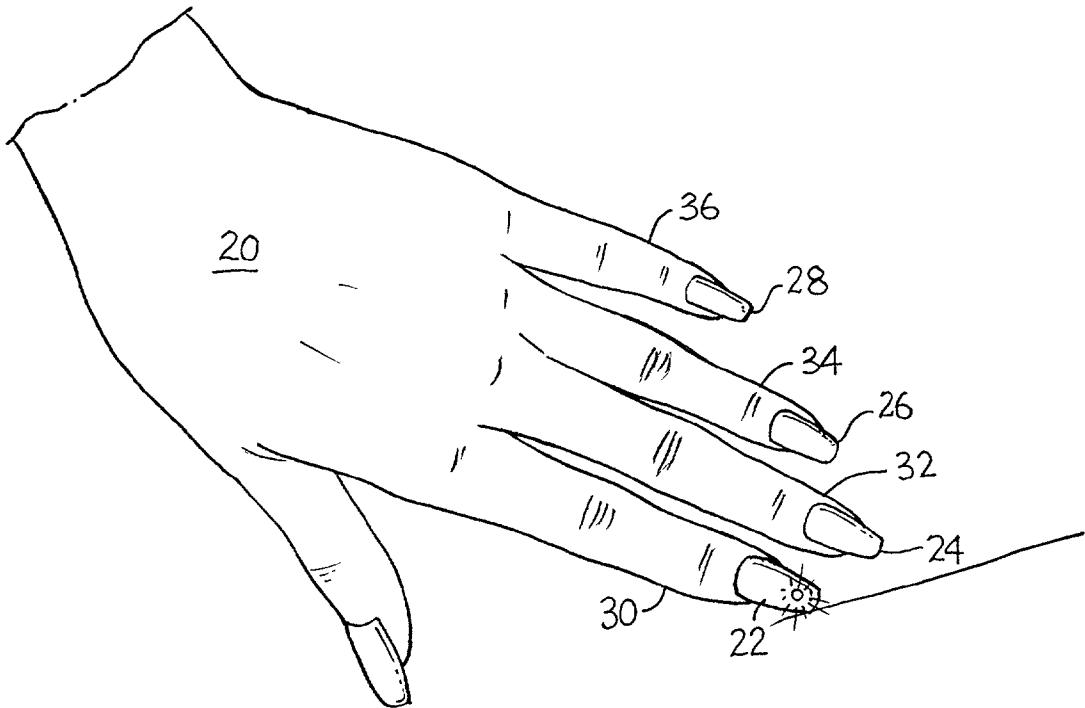
(57) **ABSTRACT**

One or a set of toy artificial finger nails for attachment to natural finger nails. Switches, such as direct contact type or inertial type cause the nails to respond to tapping on a hard surface to produce flashes of light and/or sounds, like one major octave of the musical scale when eight different nails are used.

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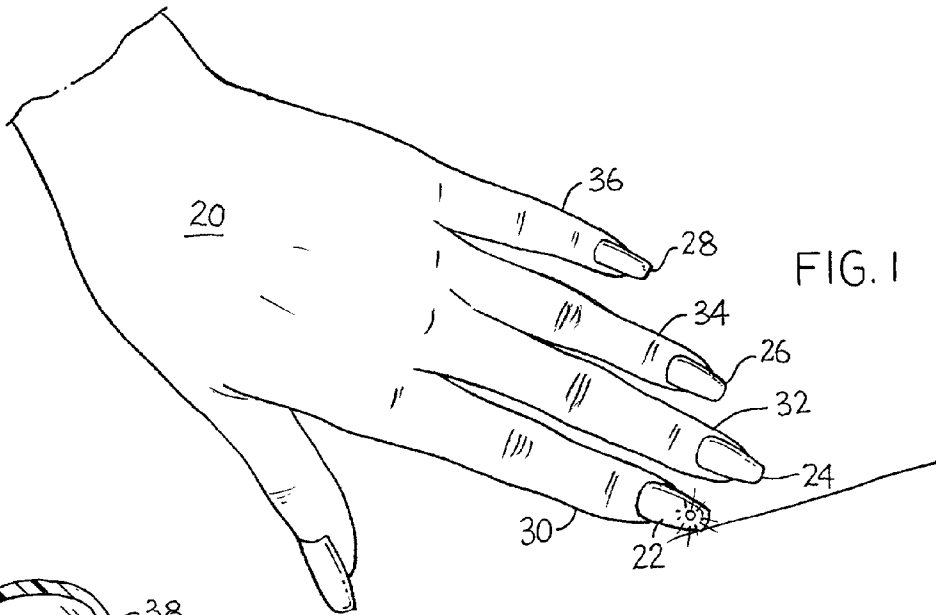


FIG. 1

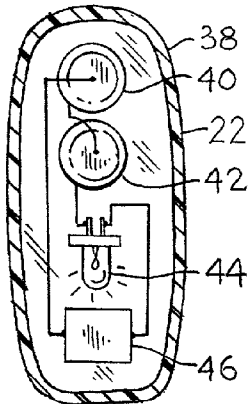


FIG. 2

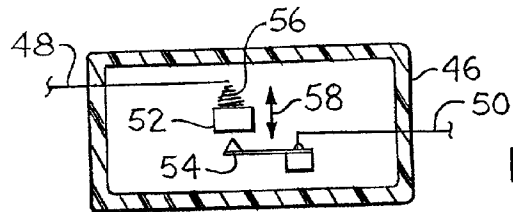


FIG. 3

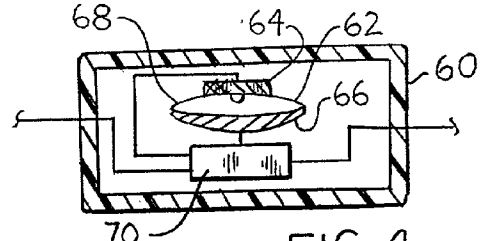


FIG. 4

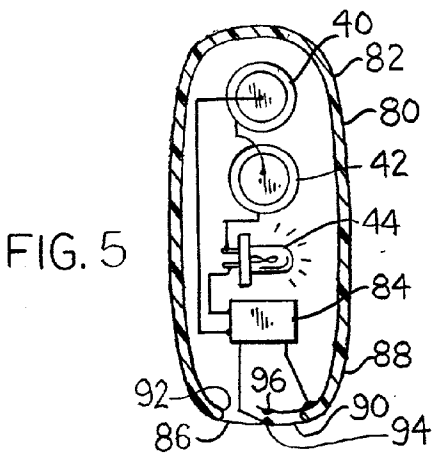


FIG. 5

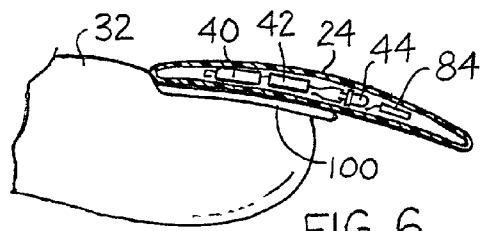
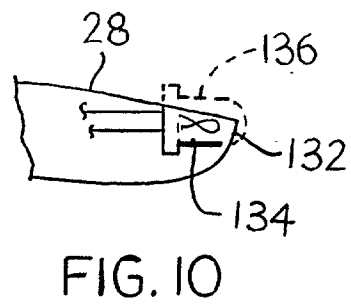
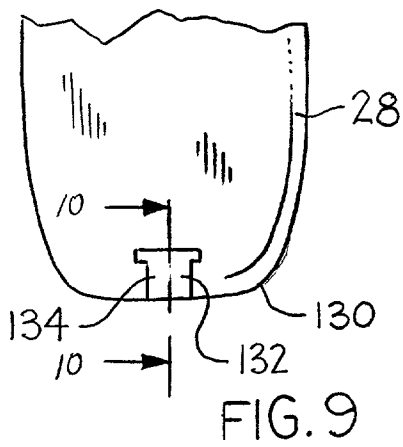
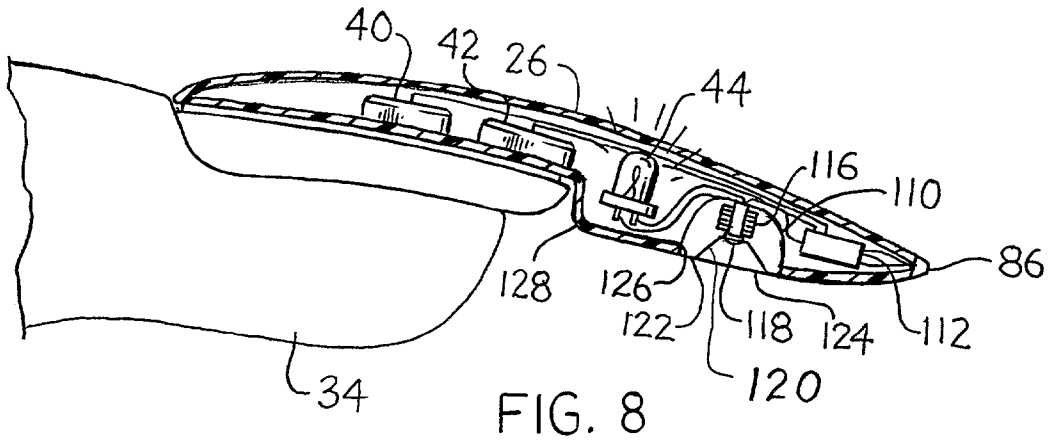
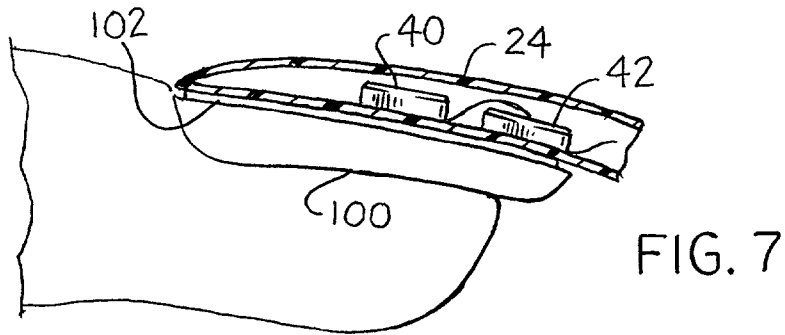


FIG. 6



ANNUNCIATING ARTIFICIAL NAILS

BACKGROUND OF THE INVENTION

[0001] This invention relates to toy artificial fingernails which produce light, sound or other forms of annunciation when activated.

[0002] Many manually actuated sound producing and light producing toys are available to entertain children. With the availability of small efficient batteries, integrated circuits on a chip, and other micro devices, electrical toys have become practical and economical to produce.

[0003] One manually actuatable toy is a rubber finger extension for use at Halloween where forcing the end of the fake finger into a hard object closes a switch and produces a light. Other toys that produce light and sound are actuated by impact against hard surfaces, or through manual pushing on various portions, such as dolls that when squeezed, laugh, shake or produce a variety of entertaining language phrases in the major language of the country in which the toy is sold. However, up to this time, no one has exploited the availability of micro devices to produce entertaining objects which are really small and thin.

SUMMARY OF THE INVENTION

[0004] The present invention is an artificial fingernail primarily intended for girls from ages five to twelve. Although the artificial nail can be semi-permanently attached to a natural nail using cyanoacrylate instant glues, as is the practice for adult artificial nails, in the present invention, the preferable attachment method is thin double-sided adhesive tape such as that available from the 3M Company.

[0005] Preferably, the artificial nails are provided as a set of at least three active nails and a fourth dummy nail so that when the child taps her nails on a table or other hard surface, annunciations such as light and/or sound occur. An entire set of eight nails of the present invention can be provided, with each producing a different tone of a major scale so that, by tapping nails in the proper order, a tune can be produced.

[0006] Preferably, the nails include a moisture proof, sealed plastic body containing batteries, an annunciator and a switch. Numerous types of switches may be used in the present invention including inertial switches positioned in the nail, and membrane switches which may be positioned in the nail or at the outer end thereof. In more sophisticated embodiments, the switch, instead of directly operating the annunciator, activates a timer so that the annunciator is held on for a predetermined length of time or for a predetermined number of pulses. When the switch is positioned at the end of the nail, the timing circuit may be eliminated and the length of time of annunciation can be controlled by the length of time the tip of the nail is pressed against a hard surface.

[0007] Therefore, it is an object of the present invention to provide toy artificial nails that can provide surprising entertainment value to young children or playful female adults.

[0008] Another object is to provide an artificial fingernail extension which produces light signals which can be used much like a firefly to announce the presence of a female within a dark room.

[0009] Another object is to provide a toy artificial nail which can be easily removed and replaced.

[0010] Another object is to provide artificial nails with which it is possible to play a musical tune.

[0011] These and other objects and advantages of the present invention will become apparent to those skilled in the art after considering the following detailed specification and the accompanying sheets of drawing wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] **FIG. 1** is a view of a hand with the present artificial nails installed thereon shown being used to produce a light signal;

[0013] **FIG. 2** is a top cross-sectional view of an artificial nail of the present invention;

[0014] **FIG. 3** is a highly enlarged cross-sectional plan view of an inertial switch as used in some embodiments of the present invention;

[0015] **FIG. 4** is a view similar to **FIG. 3** showing a weighted membrane switch and timer useful to control the annunciations of the present invention;

[0016] **FIG. 5** is a view similar to **FIG. 2** of a modified embodiment of the present invention having a membrane switch at the end of the nail;

[0017] **FIG. 6** is a side partial cross-sectional view of the present invention installed on a finger;

[0018] **FIG. 7** is an enlarged detailed view of a portion of **FIG. 6** showing the adhesive connection of the present invention to a natural fingernail;

[0019] **FIG. 8** is an enlarged cross-sectional view of an embodiment of the present invention including both light and sound annunciators;

[0020] **FIG. 9** is an enlarged plan view of a modified version of the present invention wherein a light emitting diode (LED) is incorporated into the end of the nail; and

[0021] **FIG. 10** is an enlarged cross-sectional view taken on line 10-10 of **FIG. 9**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] Referring to the drawings, more particularly by reference numbers, number **20** in **FIG. 1** refers to a left hand having artificial nails **22**, **24**, **26**, and **28** constructed according to the present invention attached to the finger nails at the end of fingers **30**, **32**, **34** and **36**, respectively. Similar nails could be applied to the right hand as well.

[0023] **FIG. 2** shows the nail **22** in cross-section. The nail **22** includes a plastic case **38** in which are positioned one or more batteries **40** and **42** such as those commonly used for hearing aids. An electrical circuit connects the batteries **40** and **42** to a light-emitting diode **44** (LED) and an inertial sensor **46**. When the nail **22** is tapped on a hard object the inertial sensor **46** completes the circuit between the LED **44** and the batteries **40** and **42** to produce a light output. An inertial switch **46** is shown in **FIG. 3** wherein the leads **48** and **50** thereof are connected by contact of a weighted member **52** against a switch contact **54**. The weighted

member 52 is normally supported away from the switch contact 54 by a coil spring 56 which forms part of the electrical circuit. When an impact occurs from bottom to top in the orientation of FIG. 3, the weighted member 52 moves in the directions of arrow 58. If no dampening means are supplied, a tap of the nail 22 causes inertial switch 46 to produce a plurality of short flashes of light as the weighted member 52 bounces up and down on the switch contact 54.

[0024] FIG. 4 illustrates another inertial sensor 60 which includes a membrane switch 62. In the membrane switch 62, a weighted member 64 is held above a dished contact 66 by a thin membrane 68 whose normal position holds the weighted member 64 away from the dished contact 66. When an impact occurs from the bottom of the sensor 60 as shown in the orientation of FIG. 4, the weight 64 closes contact with the dished contact 66 to produce a complete electrical circuit. The membrane switch 62, which generally has much more internal dampening than the switch of FIG. 3, is connected to a timer circuit 70 which connects the LED 44 to the batteries 40 and 42 for a specific length of time or for a time during which a pattern of light flashes are produced.

[0025] FIG. 5 shows a modified nail 80 constructed according to the present invention. The nail 80 includes a sealed plastic case 82 in which is positioned the batteries 40 and 42, the LED 44, and a timer/annunciator control 84, which may be similar to the timer 70 in FIG. 4. The timer/annunciator control 84 is connected to a membrane switch 86 at the end 88 of the nail 24. The membrane switch 86 includes a membrane 90 extending across an opening 92 in the end of the nail 24. The membrane 90 is designed with sufficient thickness and resiliency so that it normally maintains a convex curvature, but when pressed against another object flexes inwardly to connect a contact 94 thereof to a switch contact 96 to complete the circuit for the timer/annunciator control 84. Since the membrane switch 86 can be operated directly, the annunciator control 84 may be eliminated, and the batteries 40 and 42 and the LED 44 can be connected directly to the membrane switch 86.

[0026] FIG. 6 is a cross-sectional view of the artificial nail 24 of FIG. 5 attached to the natural fingernail 100 of the finger 32. FIG. 7 is an enlarged view showing doubled-sided adhesive tape 102 being used to connect the nail 24 to the natural fingernail 100. For more permanent attachment as when the nails of the present invention are being used by an adult, cyanoacrylate adhesive, known as "instant glue" may be used as is normal practice with decorative artificial nails.

[0027] FIG. 8 is an enlarged, partial cross-sectional view of a finger 34 having the nail 26 attached thereto. The nail 26 not only produces a light output but also produces a sound output by means of a small speaker 110 whose output is controlled by a more sophisticated annunciator control 112. As shown, the nail 26 is activated by a membrane switch 86 at the end of the nail 26 so that a tone, produced by the speaker 110, can be sustained by pressure on the membrane switch 86. The annunciator control 112 may produce continuous light from the LED 44 during the time the speaker 110 is activated, or it may produce a series of flashes during that period. The speaker 110 as shown, although tiny, is conventional in construction having a coil 116 driving a permanent magnet 118 to move a speaker cone 120. The face 122 of the speaker is covered by a membrane

124 extending across a hole 126 in the underside 128 of the nail 26. Other types of tiny sound producing devices such as piezo-electric buzzers (not shown) can be used. It is preferable that the nail 26 be sealed against moisture so that the user can wash her hands without fear of adversely affecting the operation of the nail 26.

[0028] FIG. 9 shows an embodiment of the nail 28 that is useful when an intense light is to be produced. The nail 28, whose internal electrical construction may be identical to nail 22, has its end tip 130 partially formed by the lens case 132 of an LED 134. The LED 134 is molded into the tip 130 of the nail 28 when it is constructed and then a portion 136 of the lens case 132 is machined away so that a smooth nail results with transparent plastic between the active area of the LED and the outside world.

[0029] When the user wishes the nails to merely flash light, LEDs 44 of different colors may be used and, in fact, for economical embodiments, one annunciator nail may be sold with three dummy nails so that, although the nails of the user look matched, only one produces an annunciation. On the other hand, if musical tunes are to be played, such as by the nail 26, eight nails 26 can be provided, each tuned to produce a different note of a major scale so that by skillful drumming of the nails 26 on an object, a musical tune can be produced by the user instead of, or as well as, a light display.

[0030] Thus, there has been shown and described novel annunciating artificial nails that fulfill all of the objects and advantages sought therefor. Many changes, modifications, variations, uses and other applications of the subject invention will, however, become apparent to those skilled in the art after considering the above specification and accompanying drawings. All such changes, modifications, alterations, and other uses and applications which do not depart from the spirit and scope of the invention are deemed to be covered by the invention which is limited only by the claims that follow.

1. An artificial finger nail for attachment to a person's natural fingernail, said nail including:

means for producing electrical current;

an annunciator connected to said means for producing electrical current; and

means for actuating said annunciator to produce at least one annunciation.

2. The nail as defined in claim 1 wherein said annunciator includes:

a light producing device.

3. The nail as defined in claim 1 wherein said annunciator includes:

a sound producing device.

4. The nail as defined in claim 3 wherein said sound producing device produces a single musical tone.

5. The nail as defined in claim 1 wherein said means for actuating said annunciator include:

a timer to maintain the annunciation for a time period.

6. The nail as defined in claim 1 wherein said means for producing electrical current include:

at least one battery.

7. The nail as defined in claim 1 wherein said means for actuating said annunciator includes:

an inertial sensor.

8. The nail as defined in claim 1 wherein said means for actuating said annunciator includes:

a membrane switch.

9. The nail as defined in claim 1 wherein said means for actuating said annunciator include:

a counter to annunciate multiple times.

10. A set of artificial finger nails for attachment to a user's natural fingernails, each of said nails including:

means for producing electrical current;

an annunciator connected to said means for producing electrical current; and

means for actuating said annunciator to produce at least one annunciation.

11. The nails as defined in claim 10 wherein at least one of said annunciators includes:

a sound producing device.

12. The nails as defined in claim 10 wherein each of said annunciators include:

a sound producing device, wherein each of said sound producing devices produces a different musical tone.

13. The nails as defined in claim 12 wherein each of said nails includes:

an outer tip; and

a underside adjacent said tip, and wherein each of said sound producing devices includes:

a speaker positioned on said underside of said nail.

14. The nails as defined in claim 10 wherein at least one of said annunciators includes:

a light producing device.

15. The nails as defined in claim 10 wherein said at least one of said annunciators includes:

a light emitting diode having:

a lens that extends through said nail in which said light emitting diode is present.

16. The nails as defined in claim 10 wherein said means for actuating said annunciator each include:

an inertial sensor.

17. The nails as defined in claim 10 wherein each nail has: an outer tip, and wherein of said means for actuating said annunciator include:

a contact switch positioned at said outer tip of said nail.

18. The nails as defined in claim 10 wherein each of said means for actuating said annunciators include:

a timer to maintain the annunciation for a time period.

19. The nails as defined in claim 10 further including: double sided adhesive tape for connecting said nails to the user's natural nails.

20. An artificial finger nail for attachment to a user's natural fingernail, said nail including:

a battery assembly;

an annunciator connected to said battery assembly; and means for actuating said annunciator in response to an engagement of said artificial finger nail with a surface to produce at least one annunciation.

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