



(19) **United States**

(12) **Patent Application Publication**
Chu

(10) **Pub. No.: US 2001/0042262 A1**

(43) **Pub. Date: Nov. 22, 2001**

(54) **ACTIVE LABELS FOR PRODUCTS**

(52) **U.S. Cl. 2/246**

(76) **Inventor: Victor Chu, New York, NY (US)**

Correspondence Address:
COATS & BENNETT, PLLC
P O BOX 5
RALEIGH, NC 27602 (US)

(57) **ABSTRACT**

(21) **Appl. No.: 09/902,834**

(22) **Filed: Jul. 12, 2001**

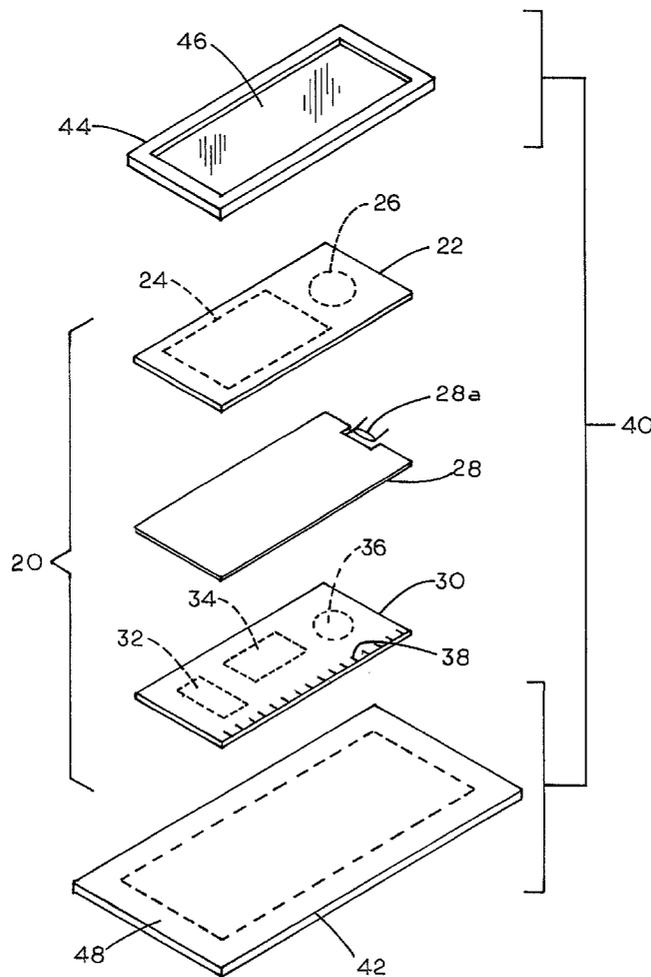
Related U.S. Application Data

(63) **Continuation-in-part of application No. 08/770,712, filed on Dec. 19, 1996.**

Publication Classification

(51) **Int. Cl.⁷ A41D 27/08**

A label for a product including an electronic display such as a liquid crystal display for displaying label information. The label information may include a company name or logo that identifies the source of the product, product information such as the material content of the product or care instructions, and manufacturer information. The label information can be contained in multiple screen images which can be stepped through by pressing a button or touch-sensitive area of the display. The display can also be programmed to display a series of related images in sequence to produce an animated logo.



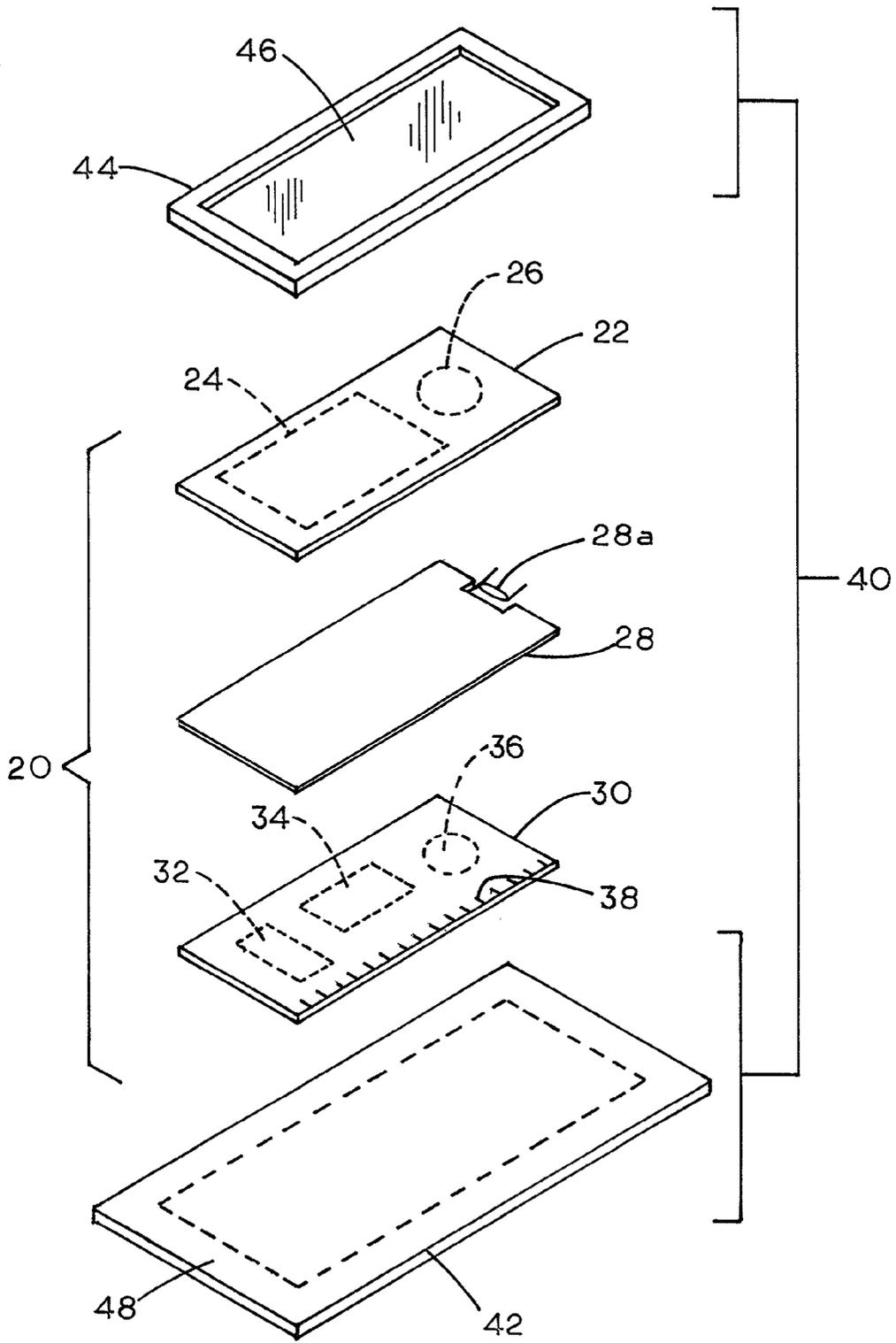


FIG.1

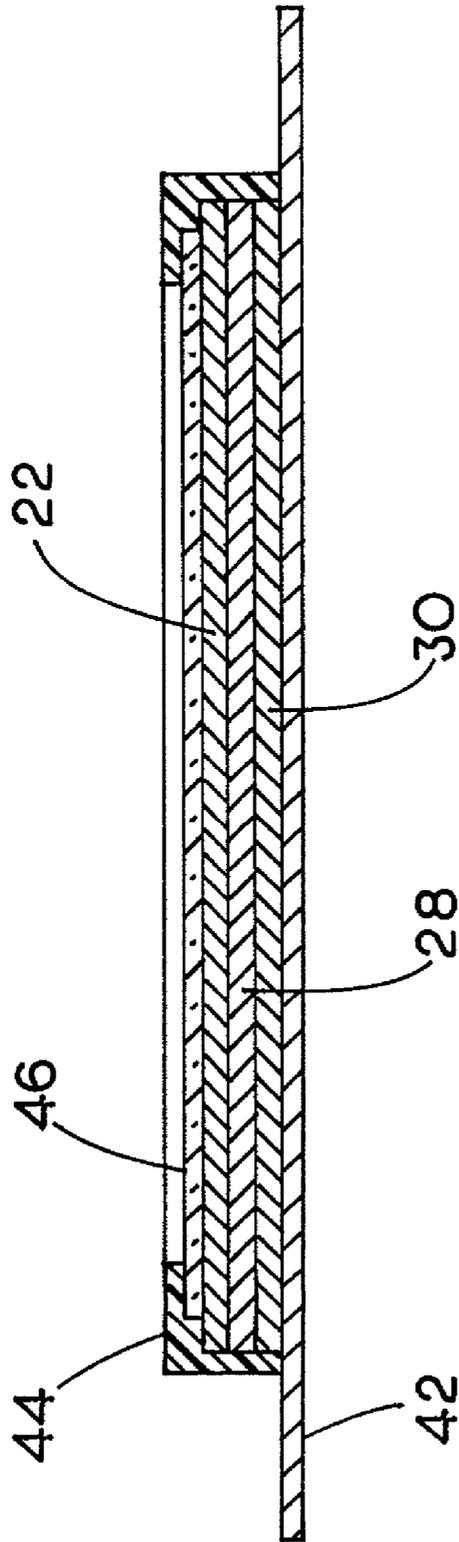


FIG. 2

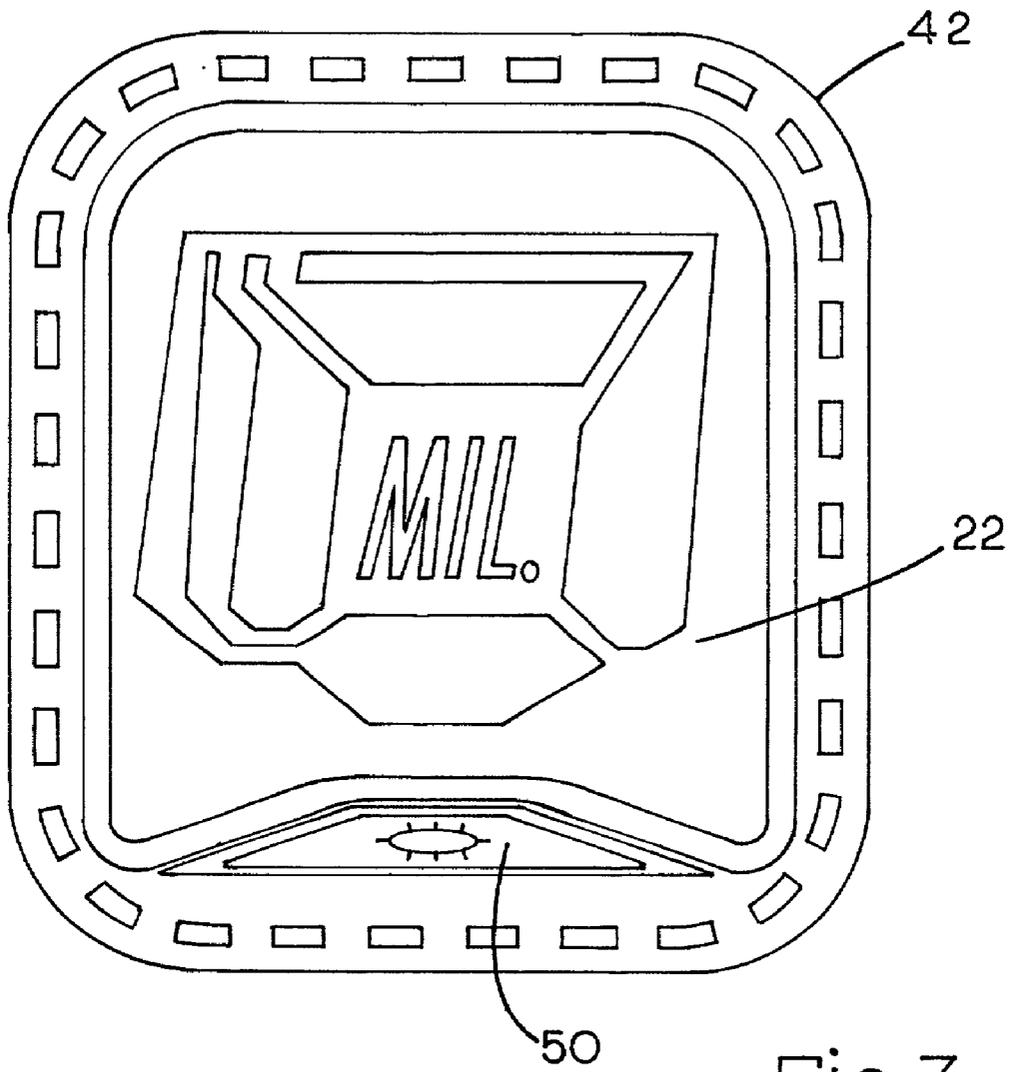


FIG.3

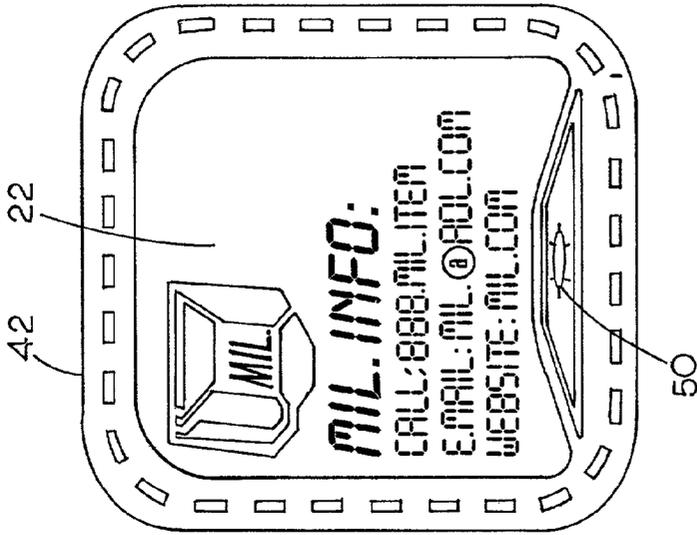


FIG. 4C

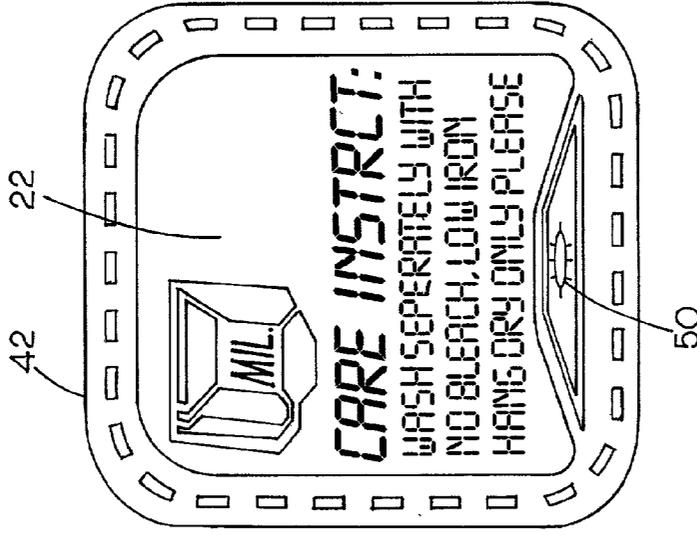


FIG. 4B

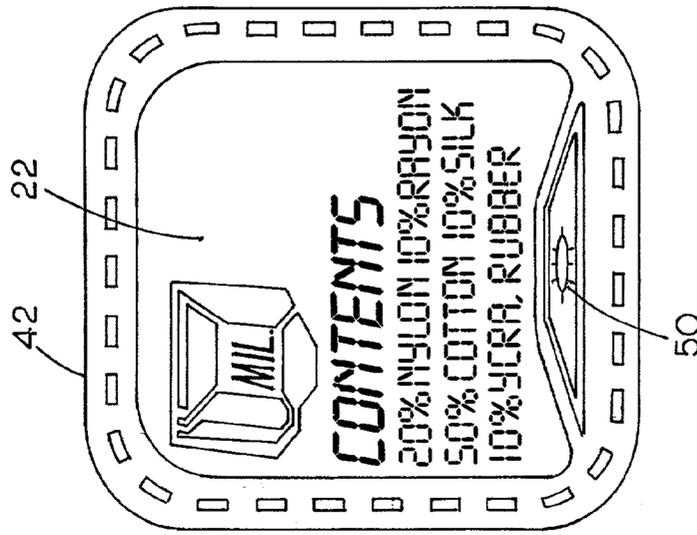


FIG. 4A

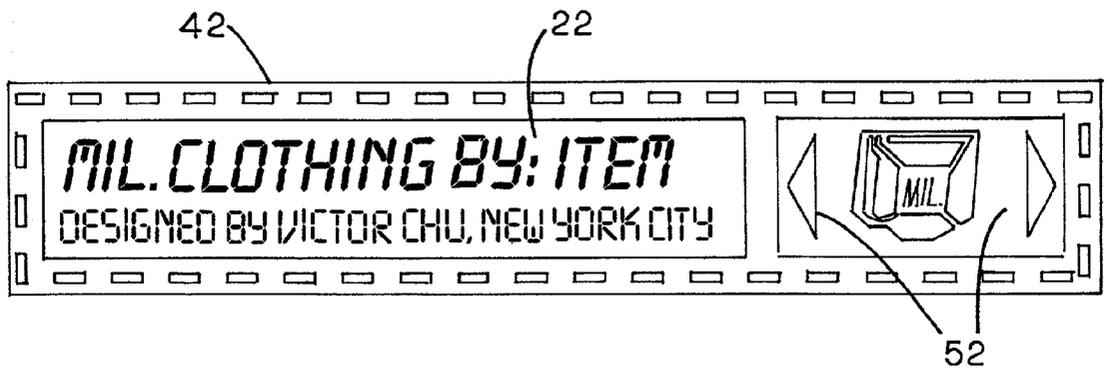


Fig. 5

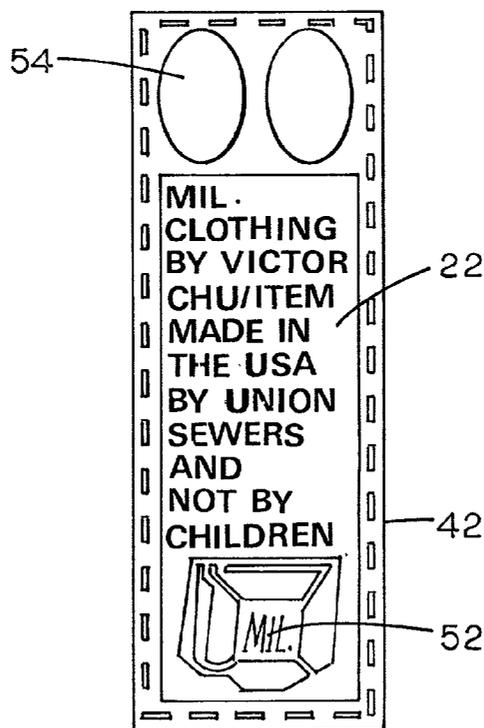


Fig. 6

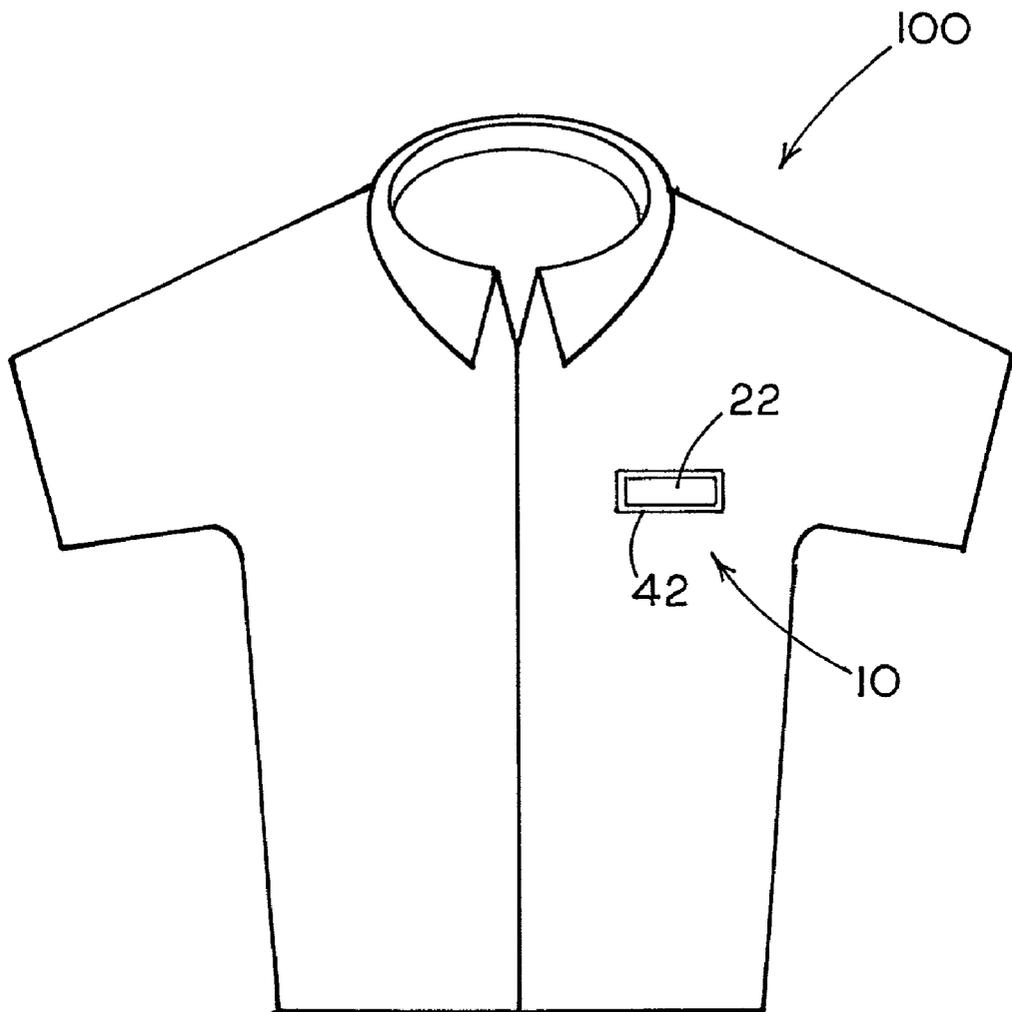


Fig. 7

ACTIVE LABELS FOR PRODUCTS

RELATED APPLICATION

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 08/770,712 filed on Dec. 19, 1996 entitled "Active Labels for Garments."

FIELD OF THE INVENTION

[0002] The present invention relates generally to the field of labels and tags for products and more particularly to electronic labels for products.

BACKGROUND OF THE INVENTION

[0003] It is typical for the manufacturer of a product to affix a label to the product which bears the manufacturer's brand name or logo. Labels are also used to describe the material contents of a product, to give care instructions, or to display manufacturer information, such as the manufacturer's RIN number in the case of clothing products. Because labels are typically small, they can carry only a limited amount of information. Therefore, it is not at all uncommon to find two or more labels affixed to different locations of a single product. For example, a shirt may carry a brand label which is placed in a visible location, and a neck label to give product information. However, there is a small, finite limit to the number of labels which can be applied to a product without cluttering the product.

[0004] Another problem with conventional labels for products is that only static designs and information can be contained in the label. Animated designs and logos are not possible with conventional woven, printed or stamped labels. Also, conventional labels cannot display information which may change over time.

SUMMARY OF THE INVENTION

[0005] The present invention is an active label for products that is characterized by a changeable display. The label includes a thin, flexible LCD panel on which various types of label information can be displayed. The LCD panel is contained in a water-tight encasement made from an elastomeric material which can be affixed to a product. The label can be attached to products by any suitable means, which will vary depending on the product.

[0006] The label information which is displayed can include a company name and/or logo, material content information, care instructions, source information, e-mail address, web page address, telephone numbers or other source information which the manufacturer or seller wants to include on the label. This information can be included in multiple screen images which can be advanced by pressing a button or touch-sensitive input on the display. Also, information which changes over time can be displayed.

[0007] The active label of the present invention obviates the need for placing multiple labels on products as is the current practice. Moreover, the active label of the present invention can display animated logos or changing information which is not possible with current labels. The active label is particularly useful for products that do not have a display as an inherent feature of the product.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is an exploded perspective view showing one embodiment of the active label of the present invention.

[0009] FIG. 2 is a section view of the active label.

[0010] FIG. 3 is a front view showing one embodiment of the active label.

[0011] FIGS. 4a-4c are front elevation views of an active label having multiple display screens.

[0012] FIG. 5 is a front elevation view of another active label including a touch-sensitive input.

[0013] FIG. 6 is a front elevation view of an active label including a solar cell and touch-sensitive input.

[0014] FIG. 7 is a front elevation of a shirt with an active label attached thereto.

DETAILED DESCRIPTION OF THE DRAWINGS

[0015] Referring now to the drawings, and particularly to FIG. 1, an active label for products is shown and indicated generally by the numeral 10. The active label is particularly useful for products that do not otherwise include a display as an inherent feature of the product, but may also be used in other circumstances. For example, in products that include a display as a functional feature of the product, the manufacturer may still use the active label 10 of the present invention to provide a separate, dedicated display for displaying trademarks, logos, brands, or slogans. In this case, the active label 10 comprises a display that is not associated with the inherent functioning of the product.

[0016] The active label 10 of the present invention includes an electronic display 20 for displaying label information and a case 40. For purposes of this application, the term "label information" means a brand name, logo, or slogan which identifies the source or origin of the product; product information, or source information. "Product information" means information about the features, use, or care of the product to which the label 10 is attached. "Source information" means information concerning the manufacturer, seller, or source of the product, such as an address (including an e-mail address) or telephone number for contacting the company, or an address of a web page for finding additional information about the company and its products.

[0017] The electronic display 20 is preferably a liquid crystal display. The display 20 comprises a display panel 22, a backlight panel 28 to backlight the display panel 22, and a circuit board 30 containing an integrated circuit which provides power, data, and control signals for operating the display 20. The display panel 22 is, as already mentioned, a liquid crystal-type display which comprises liquid crystal composites disposed between upper and lower substrates. Display elements are formed by etching a conductive film deposit on the inner surface of each substrate. Etched areas become the display background; unetched areas become the display elements. When a voltage potential is applied, the display elements becomes visible. The display elements can be individually addressed (i.e. their conductive surfaces energized) to selectively activate the display elements. The display panel 22 may be either a monochrome display or a color display. Also, the display panel 22 could be a passive matrix or active matrix display.

[0018] Numerous types of LCD panels can be used in connection with the present invention including reflective, transmissive, or transfective panels. However, transfective

LCD's are best suited for practicing the present invention because the display elements are visible in a wide variety of lighting conditions including both outdoor and indoor lighting conditions. Transflective displays include a backlighting panel **28** to backlight the display panel **22**. Light-emitting diodes (LEDs) **28** provide a light source. The light is transmitted by the backlight panel **28**, which serves as a light guide. An electroluminescent panel could also be used as a backlight for the display panel **22**. LED backlighting is preferred, however, because of its longevity. The backlight **28a** can be manually activated and deactivated by an illumination button **50** (see FIG. 3) on the label **10**. Alternatively, the backlight can be activated by a touch-sensitive input (i.e. touch screen) on the display panel **22**, or by a sensor that senses a condition of the environment (e.g., the brightness of the environment).

[0019] The circuit board **30** contains all of the circuitry necessary to drive the display panel **22**. The circuit board contains an integrated circuit which includes a memory **31**, a microprocessor **32**, a display driver **34**, and power supply **36**. Memory **31** stores label information and manufacturer information that is displayed by the active label **10**, as well as program instructions used to control the operation of the active label **10**. The processor **32** controls the operation of the active label **10** according to the program instructions stored in memory **31**. The processor **32** retrieves the information from memory **31** to be displayed and generates display data that is output to the display driver **34**. Display driver **34** controls the operation of the display panel **22** based on the display data from the microprocessor **32**, such that the desired information is displayed.

[0020] The circuit board **30** includes a series of terminals **38** which are electrically connected to corresponding terminals (not shown) on the display panel **22**. Such connection may be made for example by means of a conventional zebra-strip or similar conductive element. In certain cases, it may be necessary to locate the microprocessor **32** and driver circuits **34** remotely from the display panel **22**. In these cases, the microprocessor **32** and driver circuit **34** can be connected to the display panel **22** by a conventional flex connector which is disposed between two-layers of the product. The advantage of locating the circuit components remotely from the display panel **22** lies in the reduction of the size of label **20** making it possible to keep the label **10** thin. The construction of LCD's is well-known to those skilled in the art and therefore will not be described in detail herein.

[0021] The case **40** comprises a base panel **42** and a window frame **44** which has a transparent window **46** for viewing the display **20**. In one exemplary embodiment, the base panel **42** and window frame **44** are made of an elastomeric material such a flexible, sewable rubber that allows the active label to conform to contoured, as opposed to flat, surfaces. During assembly, the display **20** is interposed between the base panel **42** and window frame **44**. The window frame **44** is then glued or bonded to the base panel **42** to form a water-tight enclosure. The base panel **42** is larger than the window frame **44** so that a peripheral portion **48** of the base panel **42** extends outward from the window frame **44** on all sides. The perimeter portion **48** of the base panel **42** provides a convenient location for stitching to secure the label **10** to a product.

[0022] Referring now to FIG. 3, there is shown a front view of an active label constructed in accordance with the present invention. The label **10** shown in FIG. 3 has a generally square configuration. This embodiment uses only a single screen image for displaying a company logo and product information. An illumination button **50** is disposed along the bottom of the display panel **22** to provide a means to turn the backlighting on and off.

[0023] FIG. 4 shows another embodiment of the active label **10** which includes multiple screen images and a button **50**. The company's logo is displayed in the upper left corner of each of the display screens. The bottom half of the display **20** is used to display information such as the material content of the product, care instructions, manufacturer information, e-mail address, telephone numbers, or other information which the manufacturer wants to include on the label. A button **50** is disposed along the bottom of the display to advance the screen image and to turn the backlighting on and off. The button **50** is preferably a two-way toggle button. Pressing the left side of the toggle button **50** advances the screen image. Pressing the right side turns the backlighting on and off.

[0024] FIG. 5 shows a third embodiment of the active label **10**. In this embodiment, the display has an elongated, rectangular shape. The larger area on the left is an information screen on which the label information is displayed. The smaller area on the right where the company logo is displayed is a touch screen **52**. The touch screen **52** includes two touch sensitive areas indicated by the triangular pointers. The left pointer advances the display screen. The right pointer turns the backlighting on and off.

[0025] FIG. 6 shows a fourth embodiment of the active label **10**. In this embodiment, the label has a vertically oriented, rectangular configuration. The upper portion of the rectangle contains one or more solar cells **54** which can be used to power the display and/or recharge the display batteries. The lower portion of the label where the company logo is displayed is a touch screen **52**. The middle portion of the label is an information screen. As in the previous embodiment, the touch screen can be used to advance the screen image and to turn the backlighting on and off.

[0026] Any suitable method of attaching the active label **10** to the product may also be used. For example, the label **10** may be secured to products by adhesives, by sewing or stitching, or by suitable fasteners, such as hooks, screws, buckles, snaps, VELCRO-type fasteners, or pins. The label **10** could also be entrapped or retained by other features of the product. For example, the label **10** could be designed as a cartridge which slides in a pocket or pouch on the product.

[0027] The present invention overcomes the problems associated with conventional woven or printed labels. Since the label can be programmed to display multiple screen images, only a single label is needed. Thus, the present invention provides a method to convey more information to consumers without cluttering the product with numerous labels. Also, the label can be easily programmed to automatically display a sequence of related images to provide an animated logo rather than a static logo.

[0028] The present invention may, of course, be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the

invention. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

What is claimed is:

1. A label for a product comprising:
 - a) a base adapted to be affixed to said product;
 - b) an electronic display panel affixed to said base and not associated with the inherent functioning of the product; and
 - c) a programmable circuit operatively connected to said display panel, said programmable circuit being programmed to output label information to said display panel for display thereon.
2. The label according to claim 1 wherein said display panel is a liquid crystal display.
3. The label according to claim 2 wherein said liquid crystal display includes a backlight.
4. The label according to claim 3 further including a power switch to alternately turn the power to said backlight on and off.
5. The label according to claim 2 further including a plurality of screen images associated with said display panel which can be selectively displayed on the display panel by the user.
6. The label according to claim 5 further including an input device to manually change the screen image.
7. The label according to claim 5 wherein said screen images include a logo screen.
8. The label according to claim 5 wherein said screen images include at least one product information screen.
9. A method for labeling a product that does not include a display as an inherent feature of the product, said method comprising:
 - a) attaching an electronic display to the product; and
 - b) programming the electronic display to display label information.
10. The method according to claim 9 wherein the electronic display is a liquid crystal display.
11. The method according to claim 9 wherein the step of programming said display comprises programming the display to display multiple screen images.
12. The method according to claim 11 wherein the electronic display includes an input device to manually change said screen images.
13. The method according to claim 11 wherein said screen images change automatically without input from the user.
14. The method according to claim 12 wherein said input device comprises a pressure-activated button on said display.
15. The method according to claim 12 wherein said input device comprises a touch screen.
16. A method for labeling a product, said method comprising:
 - a) attaching an electronic display to the product, wherein said electronic display is not associated with the inherent functioning of the product; and
 - b) programming the electronic display to display label information.
17. The label according to claim 16 wherein said display panel is a liquid crystal display.
18. The label according to claim 17 wherein said liquid crystal display includes a backlight.
19. The label according to claim 18 further including a power switch to alternately turn the power to said backlight on and off.
20. The label according to claim 17 further including a plurality of screen images associated with said display panel which can be selectively displayed on the display panel by the user.
21. The label according to claim 20 further including an input device to manually change the screen image.
22. The label according to claim 20 wherein said screen images include a logo screen.
23. The label according to claim 20 wherein said screen images include at least one product information screen.

* * * * *