METHODS AND SYSTEMS FOR MONITORING A SHELF LIFE OF A PRODUCT STORED WITHIN A CONTAINER

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ABSTRACT

A system for monitoring a remaining shelf life of a product stored within a container is provided. The system includes a container having a bottom and at least one side extending from the bottom, a timer device coupled to the container, and a display coupled to the timer device. The timer device includes an integrated circuit programmed as a timer, and an output device electrically coupled to the integrated circuit. The display is in communication with the output device for displaying the remaining shelf life of the product stored within the container.
FIG. 4
500

Providing a timer device

502

Attaching timer device to container

504

Coupling a display to the timer device

506

Programming timer device to determine remaining shelf life of product

508

Determining remaining shelf life of product

510

Displaying remaining shelf life of product

512

FIG. 6
METHODS AND SYSTEMS FOR MONITORING A SHELF LIFE OF A PRODUCT STORED WITHIN A CONTAINER

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to monitoring a shelf life of a product and, more particularly, to a container configured to monitor the remaining shelf life of a product stored within the container.

[0002] The food industry is a large and diverse industry that provides food products to consumers throughout the world. Food safety is an important issue to the food industry. The shelf life of food is a critical factor impacting food safety, consumer acceptability of food and the economics of the food industry. Accordingly, the ability to monitor the shelf life of a food product is critical to the food industry.

[0003] The shelf life of food is generally defined as the period of time a food vendor can properly store a food product before selling the food product to the public for consumption. Different types of food may have different shelf lives. For example, fresh meat may have a shelf life of 30 days when properly stored within a refrigerated area, while fresh fish may have a shelf life of 10 days. In other words, the shelf life of food is a unit of measure that indicates the period of time that the vendor (i.e., a butcher or grocer) can properly store the product before selling it to the public. Because the shelf life of food directly impacts food safety and the economics of the food industry, it is important for a food vendor to be able to monitor the shelf life of food products such that the food products are timely sold. By monitoring the shelf life of its food products, a food vendor is better able to control food safety and reduce food waste.

[0004] The food industry, however, lacks a device for easily identifying whether a food product is being sold within its shelf life. For example, at least one known process currently employed in the meat industry for monitoring the age of food includes placing labels on the boxes used for shipping the meat to the vendor wherein the labels include an expiration date printed thereon. However, the labels currently used are not easy to read from a distance and do not show how many days are remaining on the shelf life of a product, but rather only show the date by which the product is to be sold. Accordingly, when using this type of labeling system, a user must be close enough to read the box label and must calculate the remaining life from the date printed on the case. The current labeling system results in loss of worker time and increased food waste.

[0005] There are at least some patents that describe processes and/or devices for tracking the age of food. For example, U.S. Pat. No. 5,711,160 issued on Jan. 27, 1998, which is a continuation-in-part of U.S. Pat. No. 5,487,276 issued on Jan. 30, 1996, and which is a continuation-in-part of U.S. Pat. No. 5,335,509 issued on Aug. 9, 1994, to Namisniak et al. describes a food storage tracking system placed on a refrigerator door that includes a rectangular base unit with a magnetic back that has an electronic recording microprocessor, a column of preprinted magnetic tabs identifying foods and lifetime, a column timing display in days, a column of start buttons, a column of stop buttons, and a dry eraseable pen in a pen holder.


[0007] U.S. Pat. No. 5,243,579 issued on Sep. 7, 1993, to Potthof describes an electronic apparatus for monitoring the remaining storage period of frozen foods that includes a module incorporating an electro-optical display, a control electronics with a memory or data storage, input elements for entering the type of food and remaining storage period, a switch element for initiating data storage, an identification number of the food, and indication of an expired storage period for a food by generating a warning signal.

[0008] U.S. Pat. No. 5,892,734 issued on Apr. 6, 1999, to Flores et al. describes a magnetic-backed time-indicating device that includes a clock movement with hour and minute hands mounted on a ferrous clock face by a magnet.

[0009] U.S. Pat. No. 4,285,697 issued on Aug. 25, 1981, to Neary describes a food spoilage indicator device that includes a liquid crystal such as a cholesteryl chloride disposed in a carrier of plastic tape, wherein at least one portion of which is semi-permeable to gases generated in food spoilage.


[0012] U.S. Design Pat. No. 125,764 issued on Mar. 11, 1941, to Graesser et al. describes a design for a gauge dial comprising a circular face with numerical indices from zero to 15.

[0013] U.S. Design Pat. No. 260,375 issued on Aug. 25, 1981, to Kane et al. describes an ornamental timer device comprising a rectangular body with a timer face indicating a scale from 5 to 55 and a rotatable pointer. Two other switch buttons are present.

[0014] U.S. Pat. No. 5,229,981 issued on Jul. 20, 1993, to Maschi describes a digital multi-event timer device for use in childbirth comprising a rectangular module containing an electronic time base for generating clock signals, an electronic counter for generating interval signals, and a liquid crystal display representing time in hours, minutes and seconds in actual time and elapsed time.

[0015] U.S. Pat. No. 5,802,015 issued on Sep. 1, 1998, to Rothschild et al. describes a rectangular electronic timing label device for indicating the expiration of a time period attachable to a medicine bottle and the like. The label is attached by an adhesive, a magnet, a band, hook and loop fasteners, hooks, clips, static cling film, or an electroret film. The device contains a programming conductor port, a pulse generator, a binary counter, a liquid crystal display, a printed circuit board, and a battery.

[0016] U.K. Patent Application No. 2,042,775A published on Sep. 24, 1980, for Kurosawa describes a stop-watch or chronograph that includes a module containing on its face a
thermal printing head and paper, two liquid display screens for displaying lap times and the time of day (clock), and two power switches. On one side five push buttons for starting, stopping are located. A battery and electric drive circuitry are included.

[0017] U.K. Patent Application No. 2 145 699 A published on Apr. 3, 1985, for Dearing-Lambert et al. describes a box device for monitoring the use of medicines that includes a lockable container for medicines having a lid controlled by a solenoid which is automatically controlled to unlock when the circuit signals based on a clock activate an audible or visible signal.

[0018] U.S. Pat. No. 6,817,192 issued on Nov. 16, 2004, to Ector, Jr. et al. describes a food storage monitoring system device that includes a battery powered digital timer device having an LCD digital readout describing the elapsed days and hours per day, and a reset button to reset the timer. A magnet is permanently attached to the timer device, and removably attached to a ferromagnetic catch having a double sided adhesive tape attached to one face for attaching the catch to a food storage container. A set of devices can be stored on a refrigerator or freezer door. The catch is adhesively attached to a food storage container, and the timer device is magnetically attached to the catch with the timer device started. Upon retrieving the food container and emptying its contents, the timer device and the first magnet portion are returned to the refrigerator or freezer door, and the empty container and the attached catch can be washed in a dishwasher.

[0019] None of the above inventions and patents, taken either alone or in combination, describe or teach the present invention as claimed.

BRIEF DESCRIPTION OF THE INVENTION

[0020] In one embodiment, a system for monitoring a remaining shelf life of a product stored within a container is provided. The system includes a container having a bottom and at least one side extending from the bottom, a timer device coupled to the container, and a display coupled to the timer device. The timer device includes an integrated circuit programmed as a timer, and an output device electrically coupled to the integrated circuit. The display is in communication with the output device for displaying the remaining shelf life of the product stored within the container.

[0021] In another embodiment, a method for monitoring a remaining shelf life of a product stored within a container is provided. The container has a bottom and at least one side extending from the bottom. The method includes providing a timer device including an integrated circuit programmed as a timer and an output device electrically coupled to the integrated circuit, attaching the timer device to the container, and coupling a display to the timer device in communication with the output device for displaying the remaining shelf life of the product stored within the container.

[0022] In yet another embodiment, a container assembly for monitoring a remaining shelf life of a product stored within the container is provided. The container has a bottom and at least one side extending from the bottom. The assembly includes a timer device coupled to the container, and a display substrate coupled to the timer device. The timer device includes an integrated circuit programmed as a timer and having a shelf life of the product stored within the container, and a plurality of light emitting diodes electrically coupled to the integrated circuit. The display substrate includes a plurality of apertures wherein each of the plurality of apertures is configured to receive one of the light emitting diodes for displaying the remaining shelf life of the product stored within the container.

DETAILED DESCRIPTION OF THE INVENTION

[0023] FIG. 1 is a top view of an example embodiment of an Electronic Date Coder device.

[0024] FIG. 2 is a top view of an alternative embodiment of an Electronic Date Coder device.

[0025] FIG. 3 is a rear view of the example embodiment of the Electronic Date Coder device shown in FIG. 1.

[0026] FIG. 4 is a front view of the example embodiment of the Electronic Date Coder device shown in FIG. 1 attached to a corrugated container.

[0027] FIG. 5 is a schematic of an example embodiment of the electronic circuitry included within an Electronic Date Coder device.

[0028] FIG. 6 is a flowchart illustrating exemplary processes utilized by an Electronic Date Coder device.

Exemplary embodiments of the methods and systems that facilitate monitoring a remaining shelf life of a product stored within a container are described below in detail. Specifically, the exemplary embodiments below describe a device sometimes referred to as the "Electronic Date Coder." The methods and systems include providing a container having a bottom and at least one side extending from the bottom, providing a timer device that includes an integrated circuit programmed as a timer and an output device electrically coupled to the integrated circuit, attaching the timer device to the container, and coupling a display to the timer device in communication with the output device for displaying the remaining shelf life of the product stored within the container. Typically, the Electronic Date Coder device may be used for monitoring the shelf life of food products, but it can also be used for any product that may have a shelf life or any other critical period of time associated therewith that may require monitoring.

[0030] More specifically, in the example embodiment, the Electronic Date Coder device will automatically determine the remaining shelf life of a product stored within a container, and will visually signal vendors within a distribution chain of the remaining shelf life of the products stored within the container. Vendors may include any person or party involved in the production, packaging, distribution, or sale of a product. In the example embodiment, the Electronic Date Coder device can signal vendors at distances of up to fifty feet. The Electronic Date Coder device therefore enables users to more efficiently handle products in a distribution chain, for example food products, while also reducing labor costs. Furthermore, the present invention may also reduce product spoilage through more accurate and timely distribution of perishable products.
In the example embodiment, the Electronic Date Coder monitors the remaining shelf life of a product stored within a container. The Electronic Date Coder includes a display substrate which can be adhered to the side of a paperboard, corrugated paper, or plastic container in which a product that is being monitored is stored. The Electronic Date Coder further includes a timer device having an integrated circuit programmed as a timer and an output device coupled to the circuit. The output device may include a plurality of light emitting diodes. In one embodiment, the timer device is positioned within a depressed section of the display substrate. In another embodiment, the display substrate does not include a depressed section but rather is flexible such that the display substrate encases the timer device when the display substrate is adhered to the container.

The timer device is programmed with the shelf life of the product stored within the container, and is programmed with predetermined time intervals that comprise the product’s shelf life. Each time interval is associated with one of the light emitting diodes of the output device. A display unit on the front side of the display substrate is divided into sections, each having indicia to indicate the time intervals. Each section further includes an aperture through which one of the light emitting diodes of the output device are received.

In operation, the timer is configured to be activated such that the timer records a start time of when a product is stored within a container. The timer is further programmed to record the time the product is stored within the container from the start time through the shelf life of the product. In other words, the timer device is programmed as a countdown timer, counting down from the time of activation through the shelf life of the associated product. The time the product is stored within the container is divided into time intervals. Each time interval is indicated on the display unit and is associated with one of the light emitting diodes such that during the first time interval (e.g. 30-23 days remaining), the corresponding light emitting diode is illuminated by the timer device. When such subsequent time interval is reached by the timer device, the previously activated light emitting diode is no longer illuminated and the next corresponding light emitting diode is activated to indicate the next time interval on the display unit. This process is repeated until the shelf life expires.

For example, a product may have a shelf life of 30 days. Accordingly, the Electronic Date Coder would be programmed for a shelf life of 30 days, and may have five time intervals that total the 30 day shelf life of the product. Likewise, the display unit would have indicia indicating the five time intervals. Each indicia on the display unit is further associated with a light emitting diode that is positioned within an aperture. The light emitting diodes may be covered by colored lamps to further signal the different time intervals of the product shelf life. The colored lamps may include blue, green, orange, yellow, and red. The five time intervals are each associated with a different color. For example, 30 to 23 days remaining may be associated with blue, 22 to 15 days remaining may be associated with green, 14 to 6 days remaining may be associated with orange, 5 to 1 days remaining may be associated with yellow, and 0 days remaining may be associated with red.

When the product is first stored in a container the timer is started and the first diode indicating 30 to 23 days, having a blue lamp, is activated. When the next time interval is recorded by the timer, the diode having a blue lamp is deactivated and the next diode indicating 22 to 15 days, having a green lamp, subsequently becomes activated. As such, when each following time interval is reached, the currently activated diode is no longer illuminated and the next subsequent diode becomes activated until the shelf life expires and the diode indicating 0 days, having a red lamp, is activated. The light emitting diodes are visible for up to fifty feet and allow an operator within a distribution chain to quickly determine the remaining shelf life of a product without having to be close enough to read a box label. In one embodiment, the timer switch can be reset and the timer reused to indicate the shelf life of another product. In an alternative embodiment, the switch cannot be reset because it is tamper proof. In this particular embodiment, the tamper proof switch prevents the timer from being reset so as to prevent the sale a product after its expiration date.

The methods and systems are not limited to the specific embodiments described herein. In addition, the components of each apparatus and each method can be practiced independent and separate from the other components and methods described herein. Each component and method also can be used in combination with other time indicators.

FIG. 1 is a top view of an example embodiment of an Electronic Date Coder device 10. In the example embodiment, Electronic Date Coder 10 includes a display substrate 11, at least one light emitting diode 12, a battery 14, an integrated circuit 16, and output circuitry 18. In the example embodiment, integrated circuit 16 includes a microcontroller, and output circuitry 18 is electrically coupled to at least one light emitting diode 12.

Battery 14 is electrically coupled to integrated circuit 16 which is likewise electrically coupled to output circuitry 18. Battery 14, integrated circuit 16, and output circuitry 18 are coupled to a rear side of display substrate 11. Battery 14, integrated circuit 16, and output circuitry 18 may also be part of a printed circuit board which is then coupled to the rear side of display substrate 11.

In the example embodiment, display substrate 11 includes a plurality of apertures (not shown) configured to receive each of the light emitting diodes 12. Accordingly, each light emitting diode 12 extends through one of the apertures outwardly from a front side of display substrate 11. Light emitting diodes 12 are electrically coupled to output circuitry 18. A user therefore can visually monitor each of the light emitting diodes 12 by looking at the front side of display substrate 11.

When in operation, battery 14 provides power to integrated circuit 16. Integrated circuit 16 is programmed as a timer. Integrated circuit 16 is further programmed with a shelf life of a product, and with predetermined time intervals
that total the overall shelf life. Integrated circuit 16 communicates a signal indicative of a particular time interval to the output circuitry 18. The signal received from integrated circuit 16 illuminates one of the light emitting diodes 12. By observing the light emitting diodes 12 on the front of display substrate 11, an operator can determine the remaining shelf life of a product.

[0042] FIG. 2 is a top view of an alternative embodiment of an Electronic Date Coder 100. Components of Electronic Date Coder 100, identical to components of Electronic Date Coder 10 (shown in FIG. 1), are identified in FIG. 2 using the same reference numerals as used in FIG. 1. Electronic Date Coder 100 of FIG. 2 further includes a display substrate 110 having a depressed section 120 and attachment surfaces 122. Specifically, display substrate 110 includes depressed section 120 and attachment surfaces 122 located on a rear side of display substrate 110. Depressed section 120 has a width that is less than a width of the display substrate 11, but of sufficient width such that battery 14, integrated circuit 16, and output circuitry 18 can be retained therein. Depressed section 120 further includes a depth such that battery 14, integrated circuit 16, and output circuitry 18 can be positioned at least partially within depressed section 120.

[0043] Attachment surfaces 122 of the display substrate 110 are located on the rear side of display substrate 110. Attachment surfaces 122 are configured to receive glue, adhesive or other means of attachment for adhering to a container (not shown). The configuration of display substrate 110 enables Electronic Date Coder 100 to be attached substantially flush to a container (not shown) such that the electronic components are housed within depressed section 120 and between the container and display substrate 110. Battery 14, integrated circuit 16, output circuitry 18, and light emitting diodes 12 operate in the same fashion as described in FIG. 1.

[0044] FIG. 3 is a rear view of Electronic Date Coder device 10 (shown in FIG. 1). Electronic Date Coder 10 includes display substrate 11, battery 14, integrated circuit 16, and output circuitry 18. Display substrate 11 includes a rear side 150. Battery 14, integrated circuit 16, and output circuitry 18 are all coupled to rear side 150 of display substrate 11.

[0045] In the example embodiment, rear side 150 also includes an attachment surface 152. Attachment surface 152 is configured to receive glue, adhesive or other means of attachment for adhering display substrate 11 to a container (not shown). In addition, display substrate 11 is flexible such that display substrate 11 encases battery 14, integrated circuit 16, and output circuitry 18 when display substrate 11 is adhered to the container.

[0046] FIG. 4 is a front view of Electronic Date Coder 10 attached to a corrugated container 300. Electronic Date Coder device 10 includes display substrate 11. Display substrate 11 includes a front side 302. In the example embodiment, front side 302 includes indicia 304, a shelf life indicator 306, and light emitting diodes 308. Indicia 304 further includes time intervals 310, and a plurality of multicolor sections 312. Display substrate 11 also includes a plurality of apertures 314, wherein each aperture 314 is configured to receive one of the light emitting diodes 308.

[0047] In the example embodiment, time intervals 310 include five time intervals each having a separate color associated therewith. Each time interval 310 includes indicia 304 indicating the number of days remaining in the shelf life programmed for the specific Electronic Date Coder 10.

[0048] For example, Electronic Date Coder 10 is programmed for a 30 day shelf life. The first time interval 310 includes indicia 304 showing 30 to 23 days remaining in the shelf life and is associated with the color blue. The next time interval 310 includes indicia 304 showing 22 to 15 days remaining and is associated with the color green. The next time interval 310 includes indicia 304 showing 14 to 6 days remaining and is associated with the color orange. The next time interval 310 includes indicia 304 showing 5 to 1 days remaining and is associated with the color red.

[0049] In operation, a product having a shelf life of 30 days is stored in container 300. Electronic Date Coder 10 is then started and the first diode indicating 30 to 23 days, having a blue lamp, is activated. When the next time interval is reached, the currently activated diode is no longer illuminated and the next subsequent diode becomes activated. As such, when each of the following time intervals is reached, the currently activated diode is no longer illuminated and the next subsequent diode becomes activated until the shelf life expires and the diode indicating 0 days, having a red lamp, is activated. The light emitting diodes are visible for up to fifty feet and allow an operator within a distribution chain to quickly determine the remaining shelf life of a product without having to be close enough to read a box label. After use, the Electronic Date Coder can be reset and used to indicate the shelf life of another product.

[0050] FIG. 5 is a schematic 400 of an example embodiment of the electronic circuitry included within Electronic Date Coder device 10 (shown in FIG. 1). Electronic circuit 400 includes a battery 402, a switch 404, an integrated circuit 408, and output circuitry 410. Output circuitry 410 is connected to light emitting diodes 412. Battery 402, switch 404, integrated circuit 408, output circuitry 410 and light emitting diodes 412 are electrically coupled together.

[0051] In the example embodiment, battery 402 powers the circuit when switch 404 is activated. When switch 404 is activated, signals are sent through integrated circuit 408. Integrated circuit 408 includes eight inputs 416 and eight outputs 418. When in operation, battery 402 provides power to integrated circuit 408. Integrated circuit 408 is programmed as a timer. Integrated circuit 408 is further programmed with a shelf life of a product, and with predetermined time intervals that total the overall shelf life. Integrated circuit 408 communicates a signal indicative of a particular time interval to the output circuitry 410. The signal received from integrated circuit 408 illuminates one of the light emitting diodes 412. By observing the light emitting diodes 412 on the front of the display substrate, an operator can easily see the remaining shelf life of a product.

[0052] FIG. 6 is a flowchart 500 illustrating exemplary processes utilized by Electronic Date Coder device 10 (shown in FIG. 1). In the example embodiment, flowchart 500 shows a method for monitoring a remaining shelf life of a product stored within a container using Electronic Date Coder 10. The container has a bottom and at least one side extending from the bottom. The method includes the steps of...
providing a timer device 502, and attaching 504 the timer device to the container. The timer device includes an integrated circuit programmed as a timer, and an output device electrically coupled to the integrated circuit. The method further includes coupling a display 506 to the timer device in communication with the output device for displaying the remaining shelf life of the product stored within the container.

[0053] In the example embodiment, providing a timer device 502 further includes programming 508 the timer device to determine the remaining shelf life of a product stored within the container including programming the timer device with a shelf life of the product stored within the container. The method further includes programming the timer device with a plurality of time intervals comprising the shelf life of the product, wherein each of a plurality of light emitting diodes is associated with one of the plurality of the time intervals.

[0054] The process then includes determining 510, using Electronic Date Coder 10, the shelf life of the product, and displaying 512 the remaining shelf life of the product by sending a signal from the Electronic Date Coder to the plurality of light emitting diodes.

[0055] Although the methods and systems described herein are described in the context of monitoring the shelf life of food products contained within a package, it is understood that the Electronic Date Coder methods and systems described herein are not limited to food packaging applications, but may be utilized in other non-packaging applications.

[0056] The above-described embodiments of an Electronic Date Coder provide a cost-effective and reliable means for indicating the remaining shelf life of a packaged product. More specifically, the Electronic Date Coder will provide value by improving the distribution of commercially packaged food products.

[0057] Exemplary embodiments of Electronic Date Coder methods and systems are described above in detail. The Electronic Date Coder assembly components illustrated are not limited to the specific embodiments described herein, but rather, components of each coding system may be utilized independently and separately from other components described herein.

[0058] While the invention has been described in terms of various specific embodiments, those skilled in the art will recognize that the invention can be practiced with modification within the spirit and scope of the claims.

What is claimed is:
1. A system for monitoring a remaining shelf life of a product stored within a container, the system comprising:
   a container comprising a bottom, and at least one side extending from the bottom;
   a timer device coupled to the container, the timer device comprising an integrated circuit programmed as a timer, and an output device electrically coupled to the integrated circuit; and
   a display coupled to the timer device and in communication with the output device for displaying the remaining shelf life of the product stored within the container.

2. A system in accordance with claim 1 wherein said container further comprises a top, a bottom, and a plurality of sides extending from the top and the bottom, wherein the container is manufactured from at least one of paperboard, corrugated paper, and plastic.

3. A system in accordance with claim 1 wherein the timer device is further programmed with a shelf life of the product stored within the container.

4. A system in accordance with claim 3 wherein the output device further comprises a plurality of light emitting diodes, the timer device is further programmed with a plurality of time intervals comprising the shelf life of the product, wherein each of the plurality of light emitting diodes is associated with one of the plurality of the time intervals.

5. A system in accordance with claim 4 wherein the timer device is configured to:
   record as a start time the time when the product is stored within the container;
   record the time the product is stored within the container from the start time through the shelf life of the product; and
   illuminate each of the plurality of light emitting diodes during each of the associated time intervals, wherein the first light emitting diode is illuminated during the first time interval and each subsequent light emitting diode is illuminated during each subsequent time interval.

6. A system in accordance with claim 1 wherein the display comprises a substrate comprising a plurality of apertures, the plurality of apertures configured to receive the output device.

7. A system in accordance with claim 6 wherein the output device further comprises a plurality of light emitting diodes and each of the plurality of apertures is configured to receive one of the light emitting diodes.

8. A system in accordance with claim 1 wherein the timer device is further programmed with a shelf life of the product stored within the container and a plurality of time intervals comprising the shelf life of the product, the output device further comprises a plurality of light emitting diodes wherein each of the plurality of light emitting diodes is associated with one of the plurality of the time intervals, and the display comprises a substrate comprising a plurality of apertures wherein each of the plurality of apertures is configured to receive one of the light emitting diodes, the timer device configured to:
   record as a start time the time when the product is stored within the container;
   record the time the product is stored within the container from the start time through the shelf life of the product; and
   illuminate each of the plurality of light emitting diodes during each of the associated time intervals, wherein the first light emitting diode is illuminated during the first time interval and each subsequent light emitting diode is illuminated during each subsequent time interval.

9. A system in accordance with claim 8 wherein the display substrate comprises indicia associated with each aperture, wherein the indicia for each aperture indicates the time interval associated with the light emitting diode posi-
tioned within the corresponding aperture including a period of time remaining on the shelf life of the product.

10. A system in accordance with claim 8 wherein the display substrate comprises a plurality of lamps wherein each lamp is positioned within each aperture for receiving one of the light emitting diodes, wherein each lamp is a different color and each color indicating the time interval associated with the light emitting diode positioned within the corresponding lamp including a period of time remaining on the shelf life of the product.

11. A system in accordance with claim 1 wherein the display comprises a substrate comprising a front side and a rear side, the front side comprising indicia indicating a plurality of time periods remaining on the shelf life of the product, the rear side comprising a depressed section and an adhesive section, the timer device positioned at least partially within the depressed section, the display substrate and the timer device coupled to the container by attaching the adhesive section of the display substrate to the container.

12. A system in accordance with claim 1 wherein the timer device includes at least one of a reset switch for resetting the timer, and a tamper-proof switch for preventing resetting the timer.

13. A method for monitoring a remaining shelf life of a product stored within a container, the method comprising:

- providing a timer device including an integrated circuit programmed as a timer, and an output device electrically coupled to the integrated circuit;
- attaching the timer device to the container; and
- coupling a display to the timer device in communication with the output device for displaying the remaining shelf life of the product stored within the container.

14. A method in accordance with claim 13 wherein providing a timer device further comprises providing a timer device programmed with a shelf life of the product stored within the container.

15. A method in accordance with claim 14 wherein providing a timer device further comprises:

- providing a timer device including an output device having a plurality of light emitting diodes; and
- programming the timer device with a plurality of time intervals comprising the shelf life of the product, wherein each of the plurality of light emitting diodes is associated with one of the plurality of the time intervals.

16. A method in accordance with claim 15 further comprising:

- recording a start time using the timer device when the product is stored within the container;
- recording the time the product is stored within the container from the start time through the shelf life of the product; and
- illuminating each of the plurality of light emitting diodes during each of the associated time intervals, wherein the first light emitting diode is illuminated during the first time interval and each subsequent light emitting diode is illuminated during each subsequent time interval.

17. A method in accordance with claim 13 wherein providing a timer device further comprises:

- programming the timer device with a shelf life of the product stored within the container and a plurality of time intervals comprising the shelf life of the product;
- providing an output device including a plurality of light emitting diodes wherein each of the plurality of light emitting diodes is associated with one of the plurality of the time intervals;
- providing a display including a substrate having a plurality of apertures wherein each of the plurality of apertures is configured to receive one of the light emitting diodes;
- recording a start time using the timer device when the product is stored within the container;
- recording the time the product is stored within the container from the start time through the shelf life of the product; and
- illuminating each of the plurality of light emitting diodes during each of the associated time intervals, wherein the first light emitting diode is illuminated during the first time interval and each subsequent light emitting diode is illuminated during each subsequent time interval.

18. A container assembly for monitoring a remaining shelf life of a product stored within a container, the container having a bottom and at least one side extending from the bottom, the assembly comprising:

- a timer device coupled to the container, the timer device comprising an integrated circuit programmed as a timer and including a shelf life of the product stored within the container, and a plurality of light emitting diodes electrically coupled to the integrated circuit; and
- a display substrate coupled to the timer device, the display substrate including a plurality of apertures wherein each of the plurality of apertures is configured to receive one of the light emitting diodes for displaying the remaining shelf life of the product stored within the container.

19. A container assembly in accordance with claim 18 wherein the timer device is further programmed with a plurality of time intervals comprising the shelf life of the product, wherein each of the plurality of light emitting diodes is associated with one of the plurality of the time intervals.

20. A container assembly in accordance with claim 19 wherein the timer device is configured to:

- record as a start time the time when the product is stored within the container;
- record the time the product is stored within the container from the start time through the shelf life of the product; and
- illuminate each of the plurality of light emitting diodes during each of the associated time intervals, wherein the first light emitting diode is illuminated during the first time interval and each subsequent light emitting diode is illuminated during each subsequent time interval.
21. A container assembly in accordance with claim 18 wherein the display substrate further comprises indicia associated with each aperture, wherein the indicia for each aperture indicates the time interval associated with the light emitting diode positioned within the corresponding aperture including a period of time remaining on the shelf life of the product.

22. A container assembly in accordance with claim 18 wherein the display substrate further comprises a plurality of lamps wherein each lamp is positioned within each aperture for receiving one of the light emitting diodes, wherein each lamp is a different color and each color indicating the time interval associated with the light emitting diode positioned within the corresponding lamp including a period of time remaining on the shelf life of the product.

23. A container assembly in accordance with claim 18 wherein the display substrate comprises a front side and a rear side, the front side comprising indicia indicating a plurality of time periods remaining on the shelf life of the product, the rear side comprising a depressed section and an adhesive section, the timer device positioned at least partially within the depressed section, the display substrate and the timer device coupled to the container by attaching the adhesive section of the display substrate to the container.

24. A container assembly in accordance with claim 18 wherein the timer device includes at least one of a reset switch for resetting the timer, and a tamper-proof switch for preventing resetting the timer.