

"CLOSURES FOR CONTAINERS".

The present invention relates to a closure for a container.

At present, it is known to label containers with visual information which often a user of the product ignores or does not take full cognisance of. It is particularly important when packaging toxic chemicals or pharmaceuticals, for example, to ensure that the user is made fully aware of the properties of the product and in certain applications, of the history of the product, such as the packing date, the identity of the packer, the batch number, the use-by date of the product, etc..

The present invention aims to provide a means for more effectively communicating information relating to the product in the container to a user.

The present invention provides a closure for a container, the closure including means for reading encoded data from a removable label portion and means for outputting a visible and/or audible signal relating to the encoded data.

Embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings, in which:-

Figure 1 shows a perspective view of a bottle having a removable closure in accordance with a first embodiment of the invention;

Figure 2 shows a label as carried on that bottle shown in Figure 1;

Figure 3 is a longitudinal section through the closure shown in Figure 1;

Figure 4 is a longitudinal section through a closure in accordance with a second embodiment of the present invention; and

Figure 5 is a longitudinal section thorough a closure in accordance with a third embodiment of the present invention.

Referring to Figure 1, a bottle 2, which is typically of plastics material, is closed by a removable closure 4 in the form of a threaded cap which is also typically of plastics material, the closure 4 being screwed on to the neck 6 of the bottle 2. Alternatively, the closure 4 may be a push-on closure. The closure 4 is provided at its lower circumferential edge with an integral tear-off strip 8 constituting a tamper-indicating band. The bottle 2 carries a label 10, the label being adhered by its rearwardly-directed surface to the cylindrical outer surface of the bottle 2. The label 10 comprises a main portion 12 which carries printed information and a removable portion 14 which is divided from the main portion by a weakened tear line 16. The removable portion 14 carries encoded data by incorporating thereon a strip 18 of magnetic material which has been recorded with the encoded data. The encoded data can be recorded onto the strip 18 of magnetic material either during manufacture of the label or at a packing station at which the containers are labelled and/or filled. The removable portion 14 can be torn off from the main portion 12 by tearing along the weakened tear line 16 thereby to provide a separate encoded readable strip. In an

alternative arrangement as shown in Figure 2, the label 110 has a removable portion 114 which comprises a second removable layer of paper or plastics which incorporates a strip 118 of magnetic material and is removably adhered to an outer surface 113 of the main portion 112. Optionally, the encoded data may be in the form of a bar code rather than recorded on a strip of magnetic material.

The removable portion 14 or 114 can be read by reading means in the closure which will be described with reference to Figure 3.

Referring to Figure 3, in the top wall 20 of the closure 4 which is above the downwardly depending threaded skirt 22 is disposed means for reading the encoded data on the removable portion and for outputting a visible and/or audible signal relating to the encoded data. The top wall 20 incorporates a diametrically directed slot 24 therethrough in which is located a magnetic reading head 26. The slot 24 and the magnetic reading head 26 are adapted so as to permit the removable portion 14 (or 114) to be passable through the slot 24 with the strip 18 of magnetic material being read by the magnetic reading head 26 as the strip 18 passes thereunder. The magnetic reading head 26 and the other electronic components in the closure 4 described hereunder are powered by a power source 28 such as a lithium cell. A signal from the magnetic reading head 26 is passed to a processing unit 30 which delivers a signal to a visual display device 32 which is disposed in the top surface 34 of the closure 4. The visual display device 32 may comprise a liquid crystal or similar display.

In use, the removable portion 14 is fed through the slot 24 and the encoded data on the magnetic strip 18 is read, processed and displayed on the visual display device 32. The information displayed can relate to the use of the product in

the container or precautions required when using the product. The combination of the closure, the container and the label provides a unique and convenient combination for providing additional information relating to the product into the container. This provides the benefit of a user being able to employ the two components of the removable strip and the closure to cross check the relevant product and packing information. The processing unit 30 can be adapted to store information read from the strip 18 and to output that information, e.g. to the visual display device or to a remote interrogating processor when required, e.g. after a prescribed time period.

Figure 4 shows a closure in accordance with the second embodiment of the present invention which is a modification of the closure shown in Figure 3. In this embodiment, electrical power is provided by a solar cell 36 which is disposed on the outer surface of the downward depending skirt 22. In addition, the processor unit 30 incorporates a speech synthesizer unit and a speaker 38 is disposed in the top surface 34 of the closure 34. With this embodiment, the closure 4 can output from the speaker 38 an audible signal relating to the encoded data in addition to the visible signal on the visual display device 32. In an alternative arrangement, the visual display unit 32 may be omitted whereby the closure is adapted only to output an audible signal from the speaker. GB 2186273 published 12th August 1987 in the name of the applicant discloses a suitable arrangement of a speech synthesizer unit for incorporation into the closure. In a further alternative modification, the processing unit 30 could simply include means for emitting signals which are outputted from the speaker 38 in the form of audible bleeps.

Figure 5 shows a third embodiment of the closure in accordance with the present invention which is a further

modification of the embodiment of Figures 1 and 3. In this embodiment, the closure 4 is additionally provided with a sensor 40 thereon. The sensor 40 comprises a pressure sensor 40 which is activated by the application by manual pressure to the closure 4 by a user. When the pressure sensor 40 is activated, the processing unit 30 is adapted to transmit a stored signal to the visual display device 32 whereby information is displayed on the visual display device 32. Typically, the processing unit 30 has a memory which stores information relating to instructions as to how to use the removable portion 14 and feed it through the slot 24, which information is then displayed on the visual display device 32. In a further alternative modification, the sensor 40 may comprise a heat sensor which is activated by the application of heat thereto, e.g. by a user's hand. The central processing unit 30 can store in a non-volatile memory thereof relatively large amounts of information relating to the product in the container which can be displayed on the visual display unit 32. The closure 4 is also provided with a connector 42, typically a plug or socket connector, which enables the processing unit 30 to be connected to a remote or external interrogating processor which can read and store information from the processing unit 30.

CLAIMS:

1. A closure for a container, the closure including means for reading encoded data from a removable label portion and means for outputting a visible and/or audible signal relating to the encoded data.
2. A closure according to claim 1 wherein the reading means comprises a magnetic reading head for reading a recorded strip of magnetic material.
3. A closure according to claim 1 or claim 2 wherein the outputting means includes a visual display device.
4. A closure according to any one of claims 1 to 3 wherein the outputting means includes means for electronically generating an audible signal.
5. A closure according to claim 4 wherein the generating means comprises a speech synthesiser.
6. A closure according to any one of claims 1 to 5 further comprising memory means which stores encoded information.
7. A closure according to claim 6 further comprising means for triggering the outputting means to output a visible and/or audible signal relating to the encoded information.
8. A closure according to claim 7 wherein the triggering means comprises a pressure sensor which is actuated by the application of manual pressure to the closure.
9. A closure according to claim 7 wherein the triggering means comprises a heat sensor which is actuated by the application of heat to the closure.



10. A closure according to any one of claims 6 to 9 further comprising a connector for connecting the memory means to a remote interrogating processor.

11. A closure according to any one of claims 1 to 10 wherein the closure is a threaded cap for a container.

12. A closure according to any one of claims 1 to 10 wherein the closure is a push on closure for a container.

13. A closure for a container substantially as hereinbefore described with reference to Figures 1 and 3, Figure 4 or Figure 5.

14. A closure according to any one of claims 1 to 13 in combination with a container.

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