WIRELESS ENABLED BAGS AND CONTAINERS

This application is a divisional application of Singapore Patent Application No 200904296-1 “WIRELESS ENABLED BAGS AND CONTAINERS” filed on 23.06.2009.

Field of the Invention

The present invention relates to a process ~~and device~~ for incorporating wireless enabled devices permanently into disposable bags and containers. More particularly, it relates to the incorporation of a wireless device, such as a RFID tag, into the structure of the bag or container or a component of the bag or container that is permanently attached to the bag or container. WO 99 119 651 discloses such a process.

Background of the Invention

The use of identification and preferably active or interactive identification devices is becoming a popular item for several businesses. These range from simply bar codes to three dimensional bar codes to more recently wireless devices such as read only or read-write RFID chips (active or interactive systems).

In many products, the wireless device is simply attached to the carton in which it is shipped and is useful only during storage and transport.

More recently, the wireless devices have begun to be attached to the product itself so that it can be enquired any time during its life.

On plastic parts such as tubing and filters, various methods have been suggested for attaching such a tag. These include molding the tag onto a collar on the tubing or to mold the tag as part of the tubing or filter housing. In other applications, the use of an adhesive patch or pouch to bond the tag to the product has been suggested. The use of a spiral wrap of tape to contain the tag

has also been suggested. Lastly, the use of straps or "dog tags" containing the tag that are then attached to the device has been suggested.

~~Many of these approaches such as molding as part of the formation of the plastic material will not work for plastic films used to make bags and containers. The film manufacturing process is difficult and the placement of the tag in the film as it is being made is near impossible. Additionally as films are used to make different sized bags, the placement of the tags would have to be far enough apart to accomplish this while providing a tag for each container. This leads to waste of plastic or of the tags themselves in making the different sized bags.~~

Other means such as the pouch, strap or dog tags all occur as a separate step and there is the risk that they may be forgotten. Additionally, they are an additional processing step and require the use for an additional element (pouch or patch, strap or dog tag).

What is needed is a process for incorporating the tag as part of the manufacture process of the container and a device having such a tag feature.

Summary of Invention

The present invention provides a process for incorporating a wireless device into a plastic container (be it a bag or rigid plastic container) as part of the steps of manufacturing the container.

Most plastic containers are bags and are formed of one or more sheets, generally two or more sheets of plastic film. The bags are formed by sealing together adjacent edge portions of each film layer(s). One embodiment of the present invention is to incorporate a wireless device between the edge portions of the film(s) before sealing so that the device becomes permanently sealed into the film but is isolated from both the bag interior and the outside environment. The wireless device may be adhered to a film surface if desired.

Claims

1. A process for incorporating a wireless device (200;300;400) permanently into a disposable container (2) comprising the steps of
    a. providing plastic components (4) for making a container (2),
    b. selecting a wireless device (200;300;400) having a memory (202;402), an antenna (204;404) and a communications component, the wireless device (200;300;400) being formed as a single entity on a substrate (206;406) and the substrate (206;406) is elected from the group consisting of a substrate having one or more holes (208;408) formed through it and a substrate made of like materials to the plastic components (4) for the container (2), and
    c. incorporating the wireless device (200;300;400) into the components (4) such that the wireless device (200;300;400) is permanently sealed into the container (2) as it is formed.

2. The process of claim 1 wherein the wireless device (200;300;400) is sealed into a seam formed in the container (2).

3. The process of claim 1 or 2 wherein the plastic components are at least two films (4) of plastic having corresponding and matable edges (6) that are capable of being fluid tightly sealed to each other and the wireless device (200;300;400) is placed between the matable edges (6) and retained there before or during the sealing of the matable edges (6) to each other.

4. The process of any one of claims 1 to 3 wherein the wireless device (200;300;400) is incorporated into a plastic component that is sealed to the container and the plastic component is selected from the group consisting of ports, eyelets and alignment plates.

5. A process for incorporating a wireless device (200;300;400) permanently into a disposable container (2) comprising the steps of
    a. providing a plastic component to be mated and sealed to the container (2),
    b. selecting a wireless device (200;300;400) having a memory (202;402), an antenna (204;404) and a communications component, the wireless device (200;300;400) being formed as a single entity on a substrate (206;406) and the substrate (206;406) is elected from the group consisting of a substrate having one or more holes (208;408) formed through it and a substrate made of like materials to the plastic components for the container (2),
    c. incorporating the wireless device (200;300;400) into the plastic component,
    d. attaching and sealing the plastic component containing the wireless device (200;300;400) to the container (2) in a desired location such that the wireless device (200;300;400) is permanently sealed to the container.

6. The process of claim 4 or 5 wherein the plastic component is selected from the group consisting of ports, eyelets and alignment plates.

7. The process of claim 6 wherein the plastic component is a port having a flange portion surrounding an opening in the container and the wireless device is attached to the flange portion of the port.

8. The process of claim 6 wherein the plastic component is an alignment plate and the wireless device is molded to the alignment plate.

9. The process of claim 6 wherein the plastic component is an eyelet and the wireless device is attached to the eyelet or is molded to the eyelet or is molded into the eyelet.

10. The process of any one of claims 1 to 9 wherein the wireless device (200;300;400) is a read only device and has data selected from the group consisting of manufacturer, lot number, manufacturing date, sterilization data and combinations thereof.

11. The process of any one of claims 1 to 10 wherein the wireless device (200;300;400) is a read/write device capable of having data written to it.

12. The process of claim 11 wherein one or more trackable events are loaded onto the wireless device.

13. The process of any one of claims 1 to 12 further comprising a second wireless memory/communication device attached to a holder for the container (2).

14. The process of any one of claims 1 to 13 wherein the wireless device (200;300;400) contains one or more sensors selected from the group consisting of pressure and temperature sensors and the one or more sensors are used to verify the sealing process conditions

1. A process for incorporating a wireless device (200;300;400) permanently into a disposable container (2), wherein said disposable container (2) comprises at least two films (4) of plastic having corresponding and matable edges (6) that are capable of being fluid tightly sealed to each other, said process comprising the steps of

providing the at least two films (4) for making the container (2),

selecting the wireless device (200;300;400) having a memory (202;402), an antenna (204;404) and a communications component, the wireless device (200;300;400) being formed as a single entity on a substrate (206;406) having one or more holes (208;408) formed through it, and

placing the wireless device (200;300;400) between the matable edges (6) of the films (4) before the edges (6) are sealed, and retaining the wireless device (200;300;400) there while the matable edges (6) are sealed to each other, such that the wireless device (200;300;400) is permanently sealed into a seam formed in the container (2) as it is formed,characterized in thatmolten plastic flows through the holes (208;408) to secure the wireless device (200;300;400) in place.

2. A process for incorporating a wireless device (200;300;400) permanently into a disposable container (2) comprising the steps of

providing a plastic port having a flange portion for surrounding an opening in the container to be mated and sealed to the container (2),

selecting the wireless device (200;300;400) having a memory (202;402), an antenna (204;404) and a communications component, the wireless device (200;300;400) being formed as a single entity on a substrate (206;406) having one or more holes (208;408) formed through it,characterized by

incorporating the wireless device (200;300;400) into the flange portion of the port in that molten plastic flows through the holes (208;408) to secure the wireless device (200;300;400) in place,

attaching and sealing the port containing the wireless device (200;300;400) to the container (2) so that the flange portion is sealed around an opening in the

container (2), such that the wireless device (200;300;400) is permanently sealed to the container (2).

3. The process of claim 1 or 2 wherein the wireless device (200;300;400) is a read only device and has data selected from the group consisting of manufacturer, lot number, manufacturing date, sterilization data and combinations thereof.

4. The process of any one of claims 1 to 3 wherein the wireless device (200;300;400) is a read/write device capable of having data written to it.

5. The process of claim 4 wherein one or more trackable events are loaded onto the wireless device.

6. The process of any one of claims 1 to 5 further comprising a second wireless memory/communication device attached to a holder for the container (2).

7. The process of any one of claims 1 to 6 wherein the wireless device (200;300;400) contains one or more sensors selected from the group consisting of pressure and temperature sensors and the one or more sensors are used to verify the sealing process conditions.