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(54) Return mailer

(57) A return mailer that is adeptly suited for containing a data logger and mailing the data logger upon completion of environmental monitoring. The return mailer includes a pouch having an interior space and opening for receiving the data logger, and a detachable flap. The detachable flap includes a line of weakening for detaching the flap from the pouch, and first and second zones of adhesive disposed on opposite sides of the line of weakening. A single release liner covers both adhesive zones. Removal of the release liner exposes both zones of adhesive so that the first zone of adhesive can seal the opening of the pouch and the second zone of adhesive attaches the return mailer to an object. The pouch can be separated from the flap by tearing along the line of weakening. The pouch can then be mailed to a desired location.

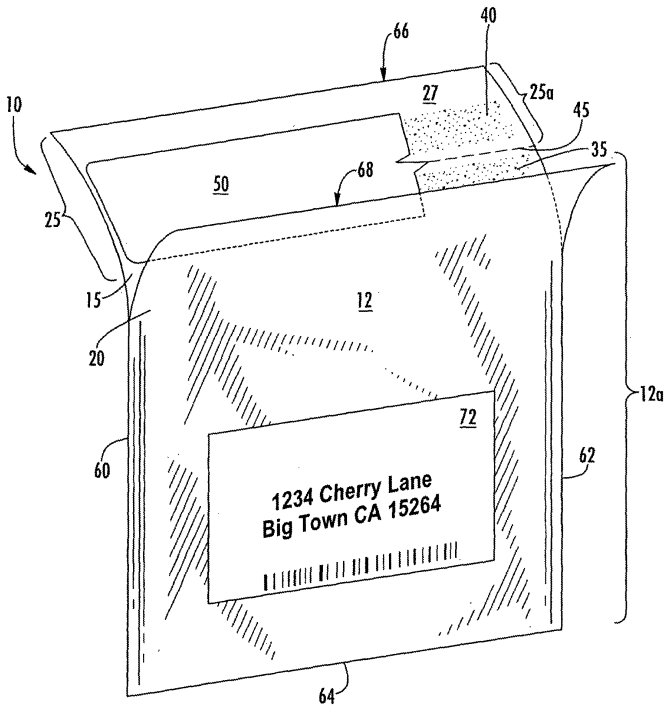

FIG. 1

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Description

BACKGROUND OF THE INVENTION

[0001] The invention relates generally to return mailers, and more particularly to return mailers adapted for attaching an enclosed article to an object during shipment, and returning the article after the object has reached its destination.

[0002] There are many circumstances where it may be desirable to monitor and record the environmental parameters to which objects are exposed during transit. For example, the quality and safety of pharmaceuticals, food products, chemicals, and biological products can be adversely affected by improper temperature control during processing, distribution, and storage.

[0003] Electronic monitoring devices, such as data loggers, can be used to monitor and record a variety of different environmental parameters during transit. Data loggers are small, battery-powered devices that may be equipped with a microprocessor, instruments, and a memory for storing data. Data loggers may be programmed to take specific measurements at desired time intervals. Data loggers can also be programmed with unique identification codes that can be used to identify the environmental conditions to which a specific object has been exposed. The information stored on a data logger can be retrieved and analyzed by connecting the data logger to a computer or reader that can retrieve and display the stored readings. Depending upon design, data loggers can be activated wirelessly with a reader, or manually by pushing a button or flipping a switch.

[0004] Retrieving and storing data may help suppliers and manufacturers improve quality control and track possible environmental conditions that could adversely affect the object being shipped. To accomplish this task, a data logger may be shipped with an object. Upon reaching its destination, the information stored in the data logger can be retrieved for analysis and storage. In some cases, it may be desirable to return the data logger to the point of origin or some other location for data retrieval and possible reuse. To return the data logger, the individual returning the data logger would typically need to place it in an envelope to be shipped an appropriate destination. Return mailers could also be used to return the data logger. The majority of currently available return mailers are designed to be sealed for an initial mailing and then are opened, and resealed for the return mailing.

[0005] The above methods typically require the recipient of the object being monitored to place the data logger in an envelope and deposit it with a mail delivery service. This could require the sender to handle the data logger, address a label, and ensure that the data logger is properly secured in the envelope. In some cases, the organization or individual may not be inclined to take the effort to timely place the data logger in an envelope or reseal the return mailer. In other cases, it may difficult to locate the data logger for return shipment. In still other cases, the data logger or multiple data loggers could be misplaced or misidentified. All of the above problems may result in efficiencies in using and returning the data loggers.

[0006] Thus, there exists a need for a return mailer that can be used to securely attach a data logger to an object, and to quickly and efficiently return the data logger after it has reached its destination.

BRIEF SUMMARY OF THE INVENTION

[0007] The present invention is a return mailer that is adeptly suited for return shipment of data loggers after they have completed their environmental monitoring functions. The return mailer comprises a pouch for receiving a data logger and a flap having a sealing agent that is separated into first and second zones by a line of weakening. The first zone of sealing agent seals closed the opening of the pouch, and the second zone of sealing agent attaches the mailer to an object. Both zones of sealing agent are covered with a single release liner. Removing the release liner exposes both zones of sealing agent so that the mailer can be quickly sealed and attached to an object. After the object has reached its final destination, the return mailer portion can be separated from flap by tearing along the line of weakening. The previously sealed return mailer can then be deposited with a postal or parcel delivery service for return delivery.

[0008] The return mailer of the invention provides an apparatus and method for efficiently and quickly returning a data logger or other device to its source. The line of weakening allows the recipient to easily remove the return portion of the mailer from the object. The return mailer can also be placed on an outside surface of an object so that it may be easily located by the recipient of the object. Additionally, sealing the opening of the pouch at the point of origin ensures that the data logger is secured within the pouch and may help reduce the need to further handle the data logger at the destination of the object.

[0009] Thus, the invention provides a return mailer that can be used to efficiently and quickly attach a pouch containing an electronic monitoring device to an object, and return the electronic monitoring device to a desired destination after it has completed its monitoring functions.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0010] Having thus described the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

Figure 1 is a graphical illustration of a return mailer that is in accordance with the invention;

Figure 2 is a side view of the return mailer illustrated in FIG. 1;

Figure 3 is a graphical illustration of an alternate em-

bodiment of a return mailer having sides edges that are affixed to each other adjacent to the opening of the mailer;

Figure 4 is a graphical illustration of a return mailer attached to the side of an object; and

Figures 5A through 5F graphically illustrate the return mailer of the invention being used in a step-wise manner.

DETAILED DESCRIPTION OF THE INVENTION

[0011] The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all embodiments of the invention are shown. Indeed, the invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy applicable legal requirements. Like numbers refer to like elements throughout.

[0012] With reference to FIGS. 1 and 2, a return mailer in accordance with the invention is illustrated and broadly designated as reference number **10.** The return mailer comprises a pouch **12** and a main flap **25** having a portion comprising a detachable flap **25a.** The pouch **12** comprises a front sheet **15** and a rear sheet **20** that are oriented face-to-face and affixed to each other at side edges **60, 62** and bottom edge **64.** Preferably, each of the side edges and bottom edge are permanently sealed. In some embodiments the front and rear sheets may comprise two separate sheets, or alternatively, a single sheet that has been center-folded at bottom edge **64.** Together the sheets define pouch **12** having an interior space for receiving an article and a pouch opening **14** through which an article can be placed into the interior of the pouch.

[0013] The top edge **66** of main flap **25** extends from the front sheet **15** beyond the top edge **68** of the rear sheet along the opening **14** of the pouch. The main flap **25** in some embodiments may merely be a continuous extension of front sheet **15.** The main flap **25** has an inner surface **27** facing in the direction of the rear sheet **20.** In some embodiments, the detachable flap **25a** may be connected to the pouch by a line of weakening **45,** for example by providing a score line or plurality of perforations in a single sheet to form two portions connected to each other by the line of weakening. The term "line of weakening" includes any structure or configuration adapted to facilitate the selective removal of one portion on one side of the line of weakening from another portion on the opposite side of the line of weakening. In some embodiments, the line of weakening **45** may extend laterally across the main flap **25.** In other embodiments, the line of weakening may be disposed within the interior of the pouch **12** and extend laterally across the front sheet **15.** Typically, the line of weakening **45** may be disposed adjacent and parallel to the opening **14** of the pouch. The line of weakening defines detachable flap **25a** and a removable pouch portion **12a.** The line of weakening **45** may be provided by a plurality of openings or perforations that extend across the surface of the main flap. The perforations should be spaced sufficiently close to one another along the line **45** so that the removable pouch portion can be easily separated from the detachable flap.

[0014] A sealing agent, such as a pressure sensitive adhesive, is disposed at least partially on the inner surface **27** of the detachable flap **25a.** The sealing agent typically comprises first **35** and second **40** sealing agent zones, also referred to as adhesive zones, disposed on opposite sides of the line of weakening **45.** The first adhesive zone **35** is typically disposed between the pouch opening **14** and the line of weakening **45.** The first adhesive zone **35** is adapted for sealing closed the opening of the pouch, and the second adhesive zone **40** is adapted for attaching the pouch **12** to an object. The adhesive zones may comprise a continuous surface of adhesive separated by the line of weakening, or alternatively, may comprise separate and distinct stripes of adhesive that are spaced apart. The sealing agent may comprise a variety of materials including, but not limited to, adhesive or paste, tape, and similar materials that are suitable for sealing the opening of the pouch and attaching the flap to the surface of an object.

[0015] In some embodiments, the first and second adhesive zones may be substantially disposed on the main flap **25.** In this embodiment, the first adhesive zone may cooperate with a closure flap disposed on the rear sheet opposite the first sealing agent zone. In this regard, FIG. 2 illustrates a return mailer **10** having a detachable flap **25a** and a closure flap **30.** The front and rear sheets **15, 20** are attached at side edges **60, 62.** An upper portion of the rear sheet **20** extends upwardly above the attached side edges **60, 62** defining closure flap **30.** At a desired time, the first adhesive zone **35** may be brought into face-to-face sealing contact with the closure flap **30** to seal closed the opening **14** of the pouch.

[0016] Alternatively, the first adhesive zone **35** may be at least partially disposed on an interior surface of the front sheet. In this embodiment, the first zone of adhesive may be disposed in the interior of the pouch adjacent to the opening **14** of the pouch. In this regard, FIG. 3 illustrates a return mailer **10a** having the first adhesive zone **35** disposed on the interior surface of the front sheet **15.** As shown in FIG. 3, the return mailer **10a** may have side edges **60, 62** that are attached to each other adjacent to top edge **68** of the rear sheet **20.**

[0017] The return mailer **10, 10a** may also comprise a release liner for protecting the adhesive from premature contact with objects or other portions of the mailer. In this regard, FIGS. 1 through 3 illustrate a return mailer having a release liner **50** covering both adhesive zones **35, 40** simultaneously. The release liner is releasably adhered to the adhesive zones and protects the adhesive before use. At a desired time, the release liner **50** can be removed to expose both adhesive zones. The pouch opening **14** can then be sealed closed by pressing the first adhesive zone **35** into sealing contact with the closure

flap **30** or an inner surface of the rear sheet **20** that is opposite the first adhesive zone. The second adhesive zone **40** can then be brought into sealing contact with a surface of an object to which the return mailer is to be attached. In this regard, FIG. 4 illustrates an object **100** in the form of a package having a return mailer attached to a surface. The use of a single release liner allows the return mailer in some embodiments to be sealed closed and attached to an object substantially simultaneously. As a result, an article may be secured within the pouch so that it will not inadvertently fall out or require further handling at the point of destination. The return mailer provides an efficient process for returning an article, such as a data logger, to the point of origination or some other desirable location. In some embodiments, the return mailer may also include a return address indicia **72** that can be preprinted onto the return portion of the pouch. In some embodiments, the return address may be printed on a card or label that has been inserted into the interior of the pouch. The return address indicia should make it easier for the recipient to deposit the return pouch portion of the mailer with a postal or parcel delivery service. The interior of the pouch may also include a cushioning material, such as an air cellular material, for protecting the article from damage that could occur during transit.

[0018] The material from which the pouch may be formed comprises a wide variety of materials including, but not limited to, thermoplastic material, cardboard, paperboard, paper, or the like. The edges **60, 62, 64** of the pouch can be attached to each other using a variety of bonding techniques including, for example, an adhesive. In embodiments where the pouch **12** comprises a thermoplastic material, the edges **60, 62, 64** of the pouch can be formed by bonding the front and rear sheet to each other with an adhesive, thermal, ultrasonic fusion, or other suitable bonding method.

[0019] With reference to FIGS. 5A through 5F, a data logger is shown being used with a return mailer that is in accordance with the invention. FIG. 5A illustrates a data logger **120** being inserted into the return mailer **10** through pouch opening **14.** Depending upon the particular design of the data logger being used, the data logger can be activated before or after it has been inserted into the pouch. The data logger may also be activated after the return mailer has been attached to the object. As shown in FIG. 5A, the return mailer may also include a return address to help facilitate the efficient return of the data logger.

[0020] FIGS. 5B through 5D illustrate removing the release liner **50** to expose the first and second adhesive zones **35, 40,** and attaching the mailer to an object. The pouch opening **14** may then be sealed closed by pressing the first adhesive zone **35** into sealing contact with the rear sheet **20.** At the same time, or in a subsequent step, the return mailer may then be attached to object **100** by contacting the second adhesive zone **40** to a surface of the object. If desired, the pouch can be sealed and attached to the object at substantially the same moment by removing the release liner followed by simultaneously pressing the second adhesive zone against the object while applying pressure against the first adhesive zone **35** so that the opening of the pouch is sealed closed. After the return mailer has been attached to the object and the data logger activated, the object is ready for shipment. During transit the data logger will monitor and record the environmental conditions to which the object has been exposed.

[0021] After the object **100** has reached its desired destination, the return pouch portion of the mailer can be easily detached from the detachable flap **25a** by tearing along the line of weakening **45.** In this regard, Fig. 5E illustrates the return pouch portion **12a** of the mailer being detached from the detachable flap **25a.** As shown in FIG. 5E, the return pouch portion **12a** can now be deposited with a postal or parcel delivery service for shipment to the point of origin. The recipient does not have to place the data logger in a return mailer or other envelope. As a result, the process for returning a data logger or other article may be simple and efficient.

[0022] In some embodiments, the recipient may also be able to retrieve data from the data logger without having to handle or remove the data logger from the pouch. In some embodiments, the data logger may include a radio frequency (RF) transceiver for wireless communication with a reader. As a result, the recipient may also be able to monitor and track environmental conditions before returning the data logger. In some embodiments, the return mailer may also be supplied with instructions for handling the mailer and retrieving stored data from the electronic monitoring device. The instructions in some embodiments may be printed on the exterior surface of the envelope, typically on the outer surface opposite the address indicia. Alternatively, the instructions could be printed on a card that may be disposed in the interior of the envelope, and that may be read through the envelope by the recipient. Possible instructions can include what to do with the object or goods if the retrieved data indicates that a predetermined environmental threshold, such as temperature exposure, has been exceeded. For instance, if the object is temperature sensitive, the instructions could instruct the recipient, for example, to retain, return, discard, or sell the object at a discounted price, or the like.

Typically, if no predetermined event or environmental threshold has been exceeded, the object will be retained and handled in a usual or ordinary manner. The instructions could also instruct the recipient on how the retrieved data should be further handled, such as analyzed, stored, deleted, forwarded to a desired recipient, or the like. In some cases, it may be desirable to compile a database for tracking various conditions and exposure histories that may occur during transit.

[0023] It should be recognized that the return mailer may be used to enclose and return a variety of different articles. For example, articles such as time-temperature indicators, shock labels, tracking data, and the like can

be used in the practice of the invention.

[0024] Many modifications and other embodiments of the invention set forth herein will come to mind to one skilled in the art to which the invention pertains having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

Claims

1. A return mailer comprising:

a pouch defining an opening through which an article can be placed;
a detachable flap connected to the pouch by a line of weakening;
a sealing agent disposed at least partially on a surface of the flap, the sealing agent being located in first and second zones on opposite sides of the line of weakening; and
a release liner releasably adhered to the sealing agent and covering said first and second zones, whereby upon removal of the release liner, the first zone of sealing agent is exposed for sealing closed the opening of the pouch and the second zone of sealing agent is exposed for securing the mailer to an object.

2. A return mailer according to claim 1, wherein the first zone of sealing agent is disposed at least partially below the opening of the pouch on an interior surface of the pouch.

3. A return mailer according to claim 1, wherein the detachable flap is adjacent the opening.

4. A return mailer according to claim 1, wherein the sealing agent is a pressure sensitive adhesive.

5. A return mailer according to claim 1, wherein the pouch comprises thermoplastic material, cardboard, paperboard, or paper.

6. A return mailer according to claim 1, wherein the line of weakening comprises a plurality of perforations.

7. A return mailer according to claim 1, wherein the first and second zones of sealing agent comprise stripes of pressure sensitive adhesive located on opposite sides of the line of weakening.

8. A return mailer assembly comprising:

front and rear sheets arranged in opposing face-to-face relation and each including a top edge, a bottom edge, and opposite side edges, the sheets being interconnected along the bottom edge and along opposite side edges to define a mailer with an interior space capable of receiving an article, and wherein the top edges of the sheets are unconnected to form an opening into the interior space;
a line of weakening formed in the front sheet adjacent the opening, wherein the top edge of said front sheet is located beyond the line of weakening to form a detachable flap along the top portion of the first sheet; and
a sealing agent disposed at least partially on an inward facing surface of the detachable flap, the sealing agent being located in a first zone between the top edge of the front sheet and the line of weakening, and in a second zone on the opposite side of the line of weakening.

9. The return mailer assembly of claim 8, wherein the sealing agent is a pressure sensitive adhesive, and the assembly includes a release liner releasably adhered to the pressure sensitive adhesive and covering said first and second zones.

10. The return mailer assembly of claim 8, wherein the first and second zones comprise stripes of pressure sensitive adhesive located on opposite sides of the line of weakening.

11. The return mailer assembly of claim 8, wherein said front and rear sheets are interconnected along said bottom edge by a fold line, and are interconnected along opposite side edges by bonds.

12. The return mailer assembly of claim 11, wherein the front and rear sheets are formed of a thermoplastic material and the bonds comprise thermal or ultrasonic fusion bonds.

13. The return mailer assembly of claim 11, wherein the front and rear sheets are formed of paper, paperboard or cardboard and the bonds comprise adhesive bonds.

14. The return mailer assembly of claim 12, wherein said rear sheet has a top portion adjacent the top edge that is not connected to the front sheet by said bonds and that forms a closure flap disposed opposite said second zone of adhesive so that upon removal of the release liner, the exposed second zone of adhesive adheres to the closure flap to seal the opening of the mailer and the first zone of adhesive is exposed for securing the mailer to an object.

15. The return mailer assembly of claim 14, wherein said line of weakening comprises a perforation line extending parallel to the top edge of the front sheet to enable removing the sealed return mailer from the object, and wherein the return mailer includes return address indicia printed on the exposed outwardly facing surface of said rear sheet.

16. A method of using an electronic monitoring device to monitor an object comprising:

a) providing the return mailer of claim 1;
b) placing an electronic monitoring device into the pouch;
c) removing the release liner to expose the first and second zones of sealing agent;
d) sealing the pouch closed to enclose the electronic monitoring device by pressing the first zone of sealing agent against an opposite surface of the pouch; and
e) attaching the mailer to an object by pressing the second zone of sealing agent against the object.

17. The method according to claim 16, wherein the sealing and attaching steps occur substantially simultaneously.

18. The method according to claim 17, further comprising the step of activating the electronic monitoring device before placing the electronic monitoring device in the pouch.

19. The method according to claim 17, further comprising the step of activating the electronic monitoring device after placing the electronic monitoring device in the pouch.

20. The method according to claim 17, further comprising the step of activating the electronic monitoring device after the step of attaching the return mailer to the object.

21. The method according to claim 17, further comprising monitoring the environmental condition to which the object has been exposed.

22. The method according to claim 21, further comprising retrieving the environmental data from the electronic monitoring device.

23. The method according to claim 22, wherein the step of retrieving the environmental data further comprises reading the electronic monitoring device with a RF reader while the electronic monitoring device is disposed in the return mailer.

24. The method according to claim 21, including the further steps, performed upon completion of monitoring, of
detaching a return portion of the return mailer from the object; and
returning the electronic monitoring device to its origin in said return mailer.

25. A method according to claim 24, wherein return address indicia is imprinted on the return mailer, and the step of returning the electronic monitoring device comprises depositing the return mailer with a postal or parcel delivery service.

26. The method according to claim 25, wherein the step of detaching the mailer comprises tearing the return portion of the return mailer along the line of weakening.

27. The method according to claim 16, further comprising the step of supplying instructions with the return mailer for retrieving data from the electronic monitoring device.

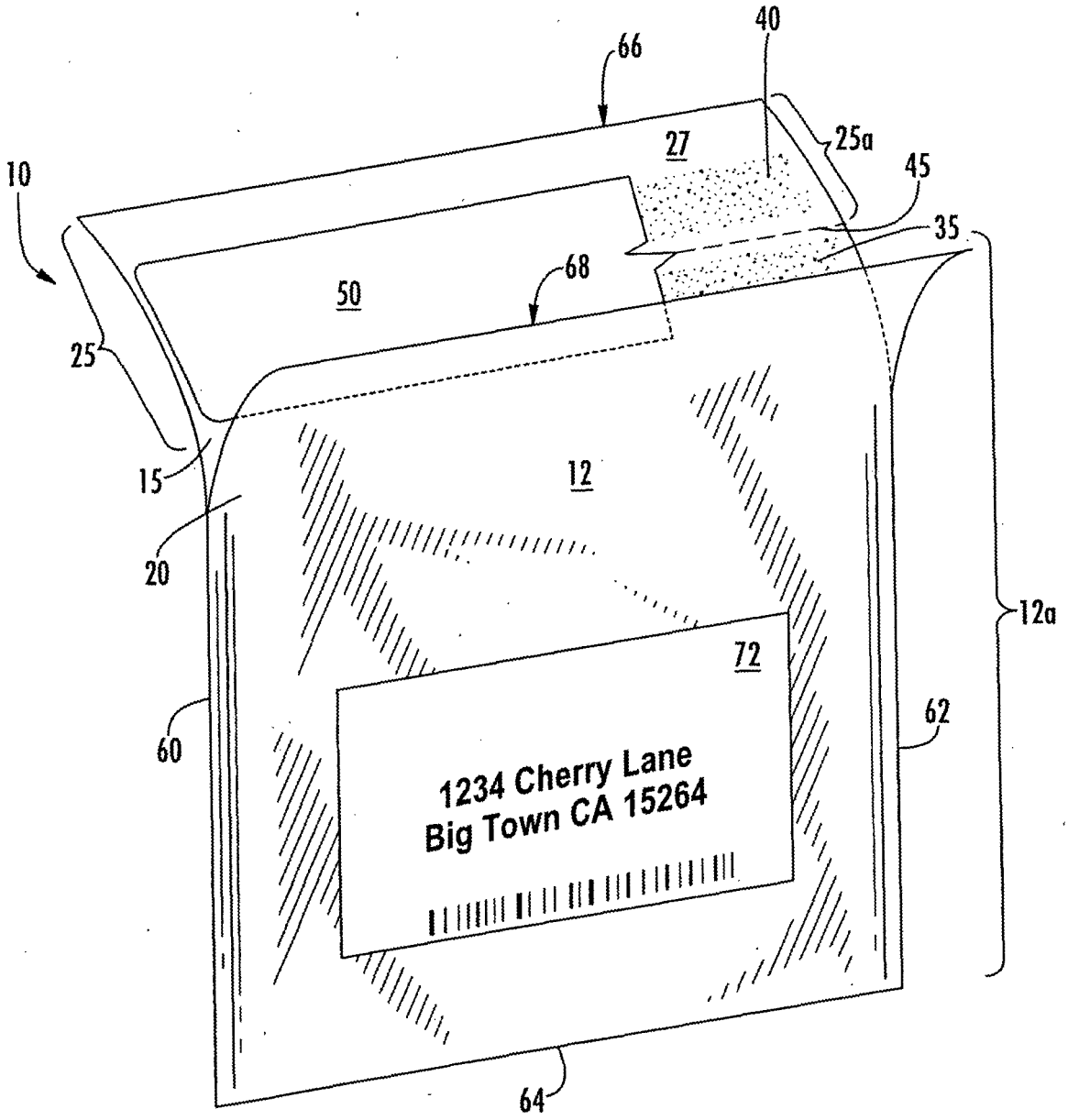
28. The method according to claim 27, further comprising retrieving stored data from the electronic monitoring device.

29. The method according to claim 28, further comprising at least one of the following steps:

analyzing data retrieved from the electronic monitoring device;
storing data retrieved from the electronic monitoring device;
forwarding data retrieved from the electronic monitoring device to a desired recipient; and
deleting data retrieved from the electronic monitoring device.

30. The method according to claim 29, wherein the step of analyzing the data further comprises at least one of the following steps:

discarding the object;
returning the object;
retaining the object; and
selling the object at a discounted price.


40
66
27
25a
45
10
35
68
50
25
15
12
20
12a
72
62
60
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Big Town CA 15264
64

FIG. 1

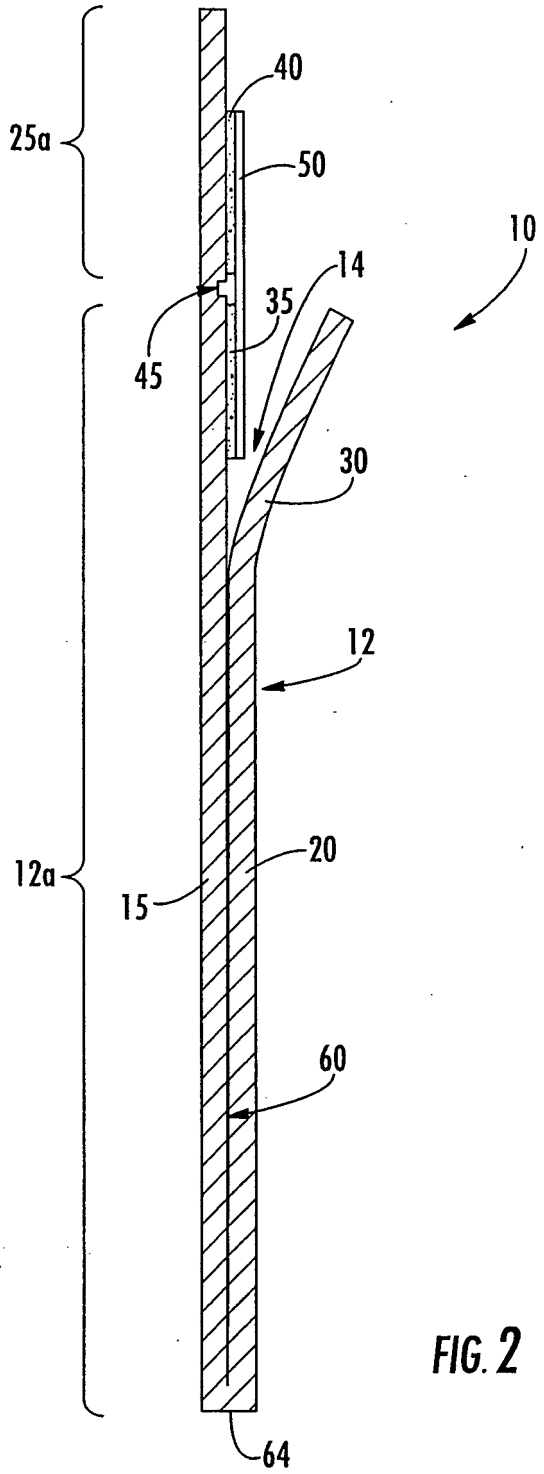

FIG. 2

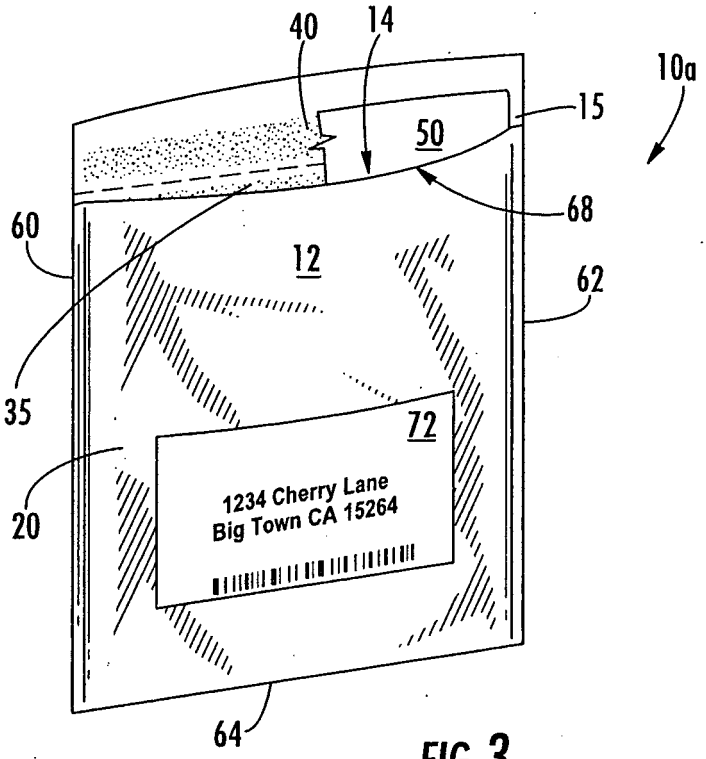
40
14
10a
15
50
68
60
12
62
35
72
1234 Cherry Lane
Big Town CA 15264
20
64

FIG. 3

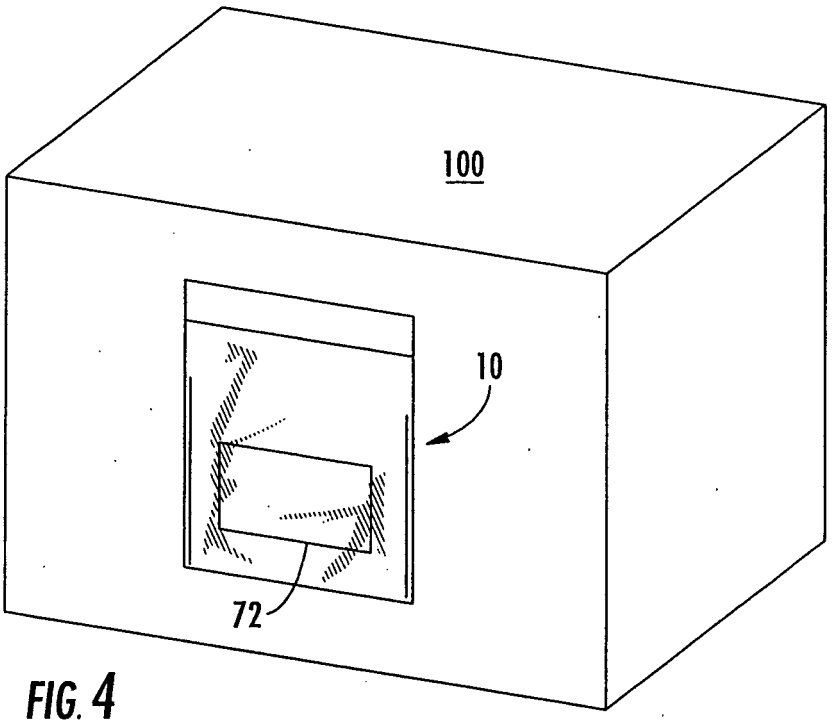
100
10
72

FIG. 4

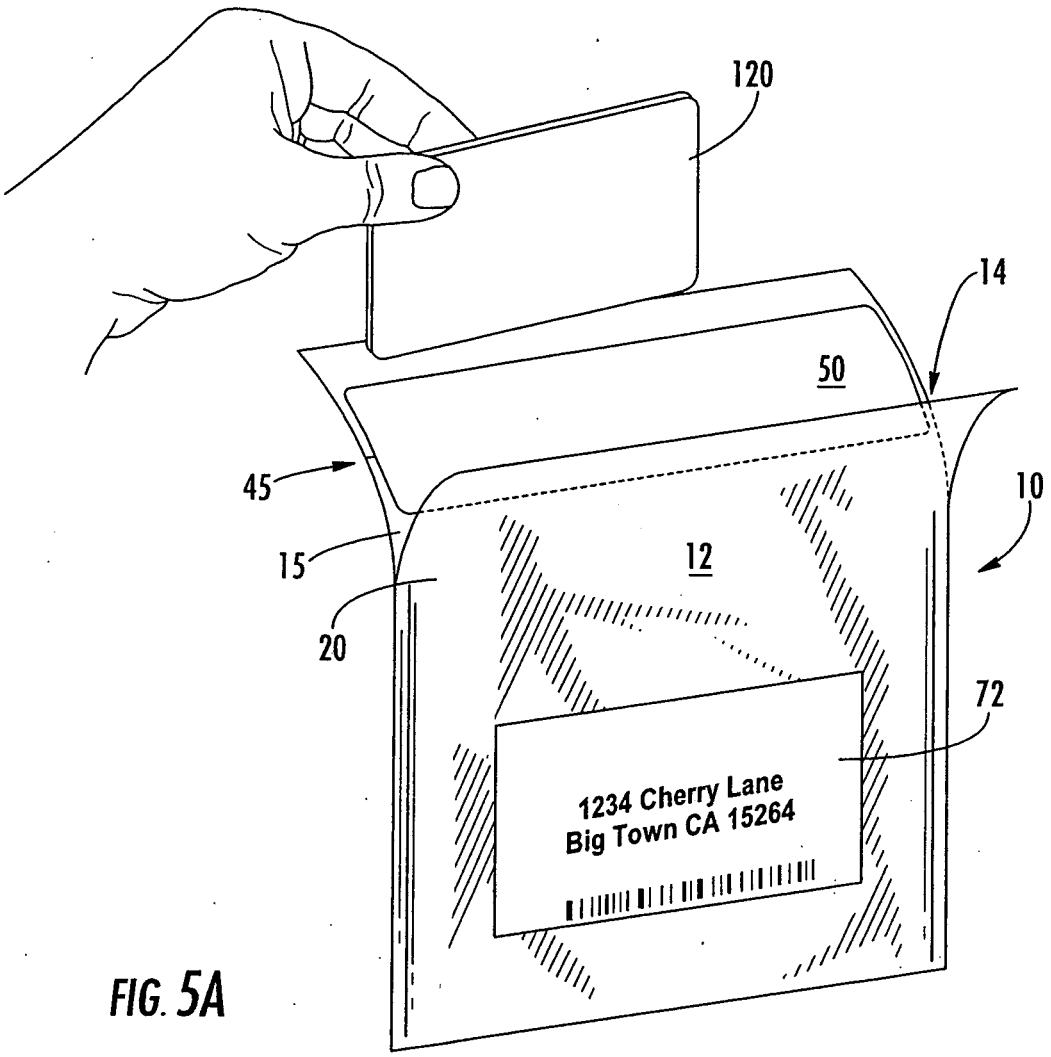

FIG. 5A

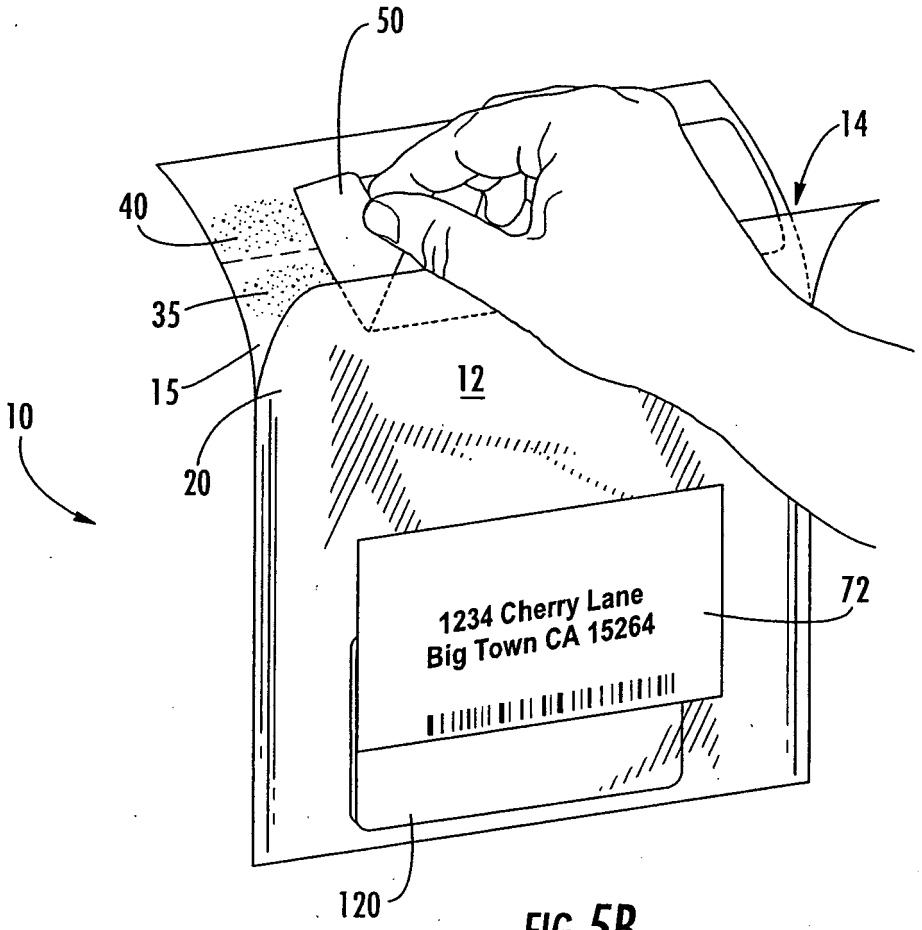

FIG. 5B

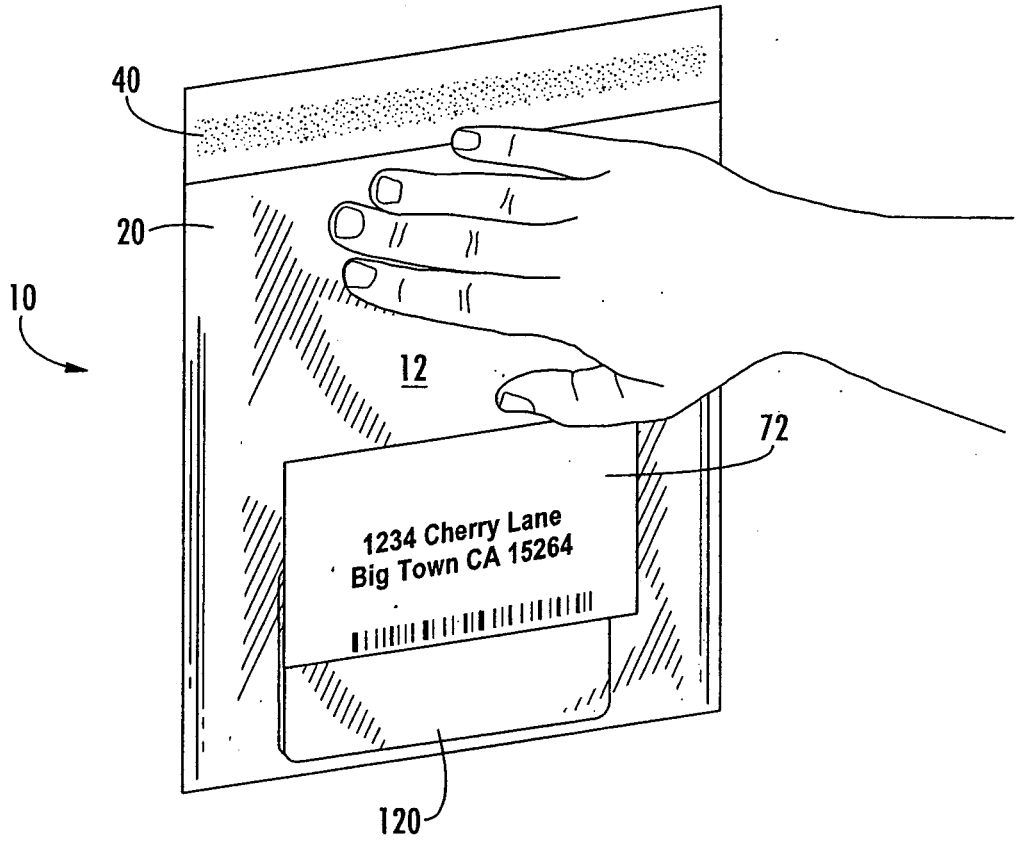

FIG. 5C

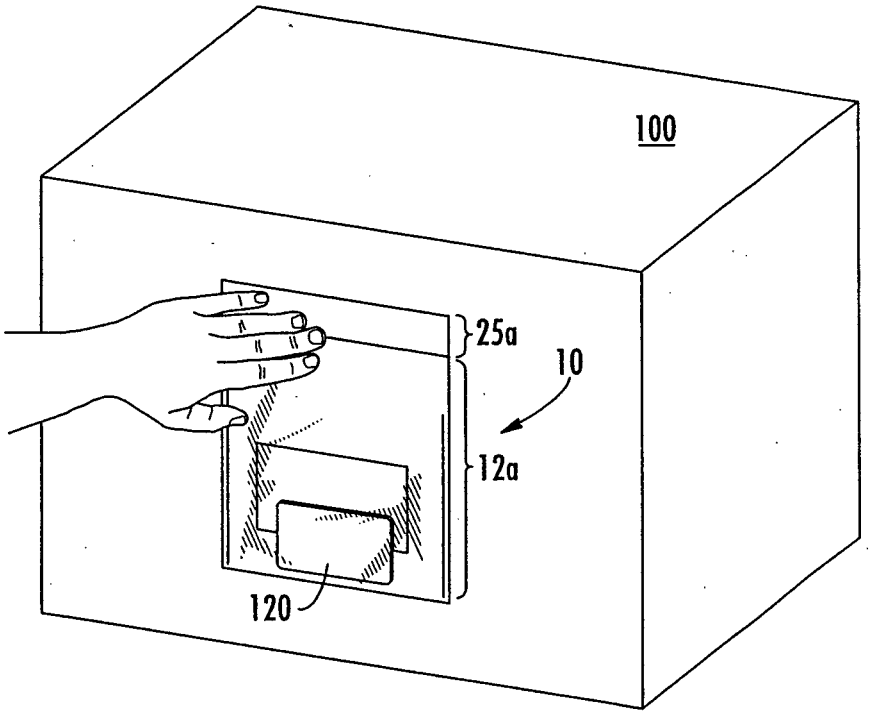

FIG. 5D

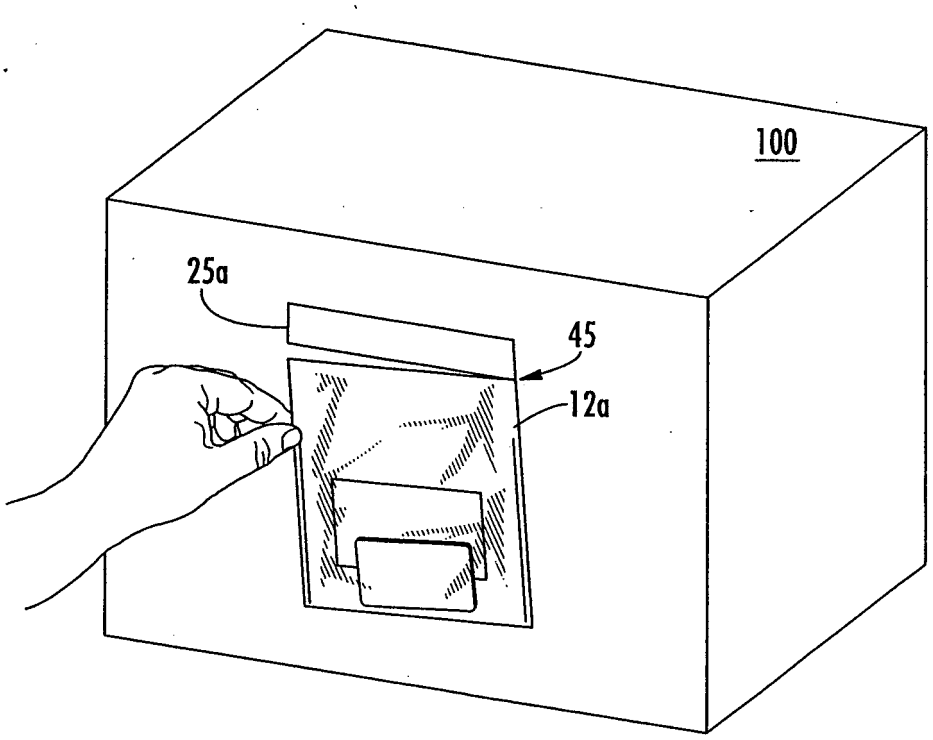

FIG. 5E

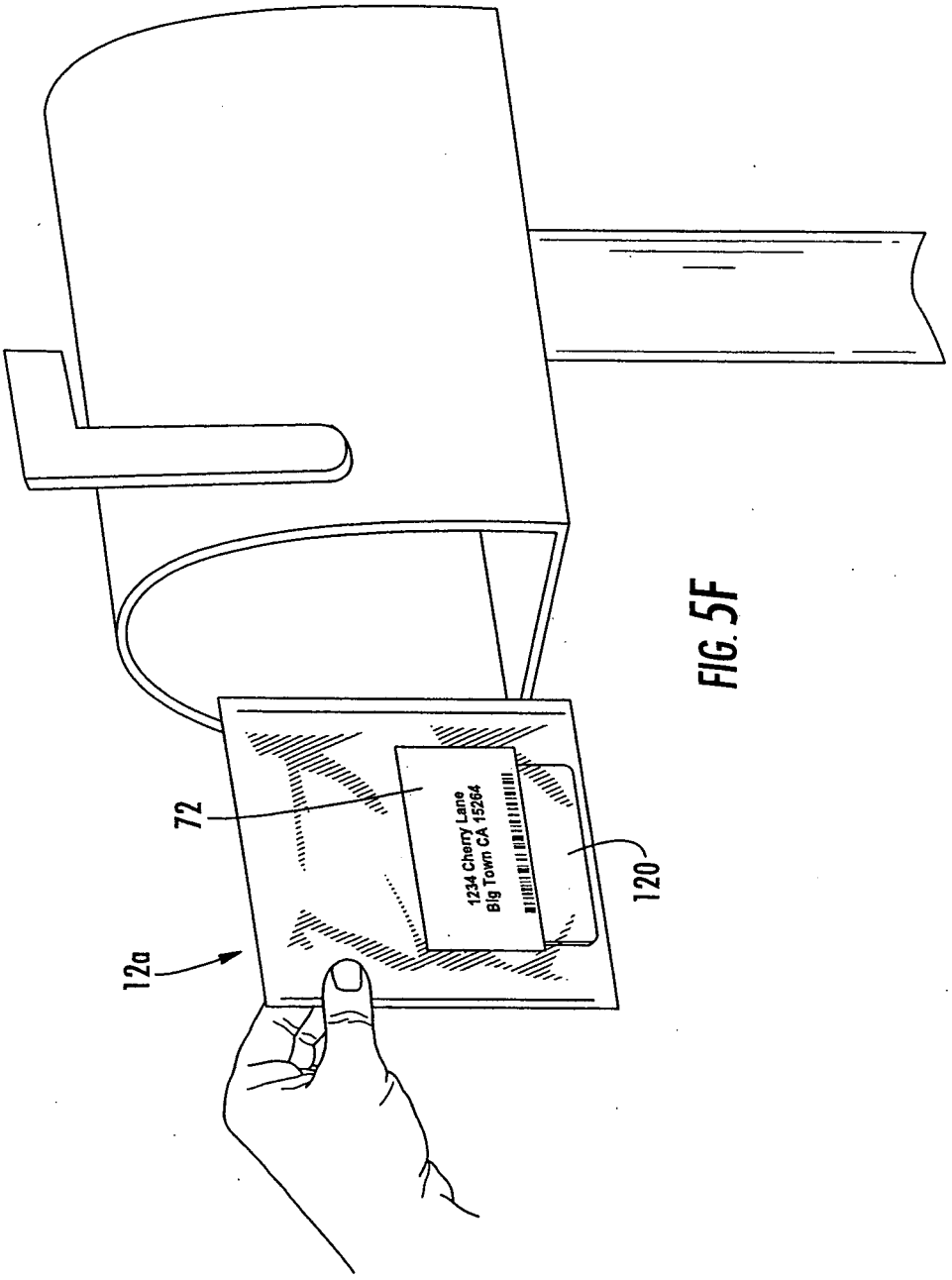

FIG. 5F

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 01 7022

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	US 1 434 097 A (CONNER SAMUEL DICKEN) 31 October 1922 (1922-10-31) * column 2, line 82 - line 102 * * column 3, line 36 - column 4, line 68; figures 1-7 *	1-10, 13-15 11,12, 16-30	B65D75/54 B65D27/06
Y	WO 99/01357 A (ISTITUTO FINANZIARIO DI SVILUPPO IMMOBILIARE S.P.A; LUCARELLI, ALBERTO) 14 January 1999 (1999-01-14) * page 1, line 18 - page 4, line 20 *	11,12	
Y	DE 198 13 842 A1 (FISCHER, MARTIN) 30 September 1999 (1999-09-30) * the whole document *	16-30	
A	US 5 624 069 A (COATS ET AL) 29 April 1997 (1997-04-29) * column 4, line 53 - column 5, line 63; figures 1,4 *	1-15	
A	FR 2 334 576 A (REVERCHON ROCAPHANE) 8 July 1977 (1977-07-08) * the whole document *	1-15	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D B42D
A	CH 630 022 A5 (SPOERRI DRUCK AG) 28 May 1982 (1982-05-28) * page 2, column 2, line 26 - line 53; figures 1-3 *	1-15	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 August 2005	Appelt, L

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
L : document cited for other reasons

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